

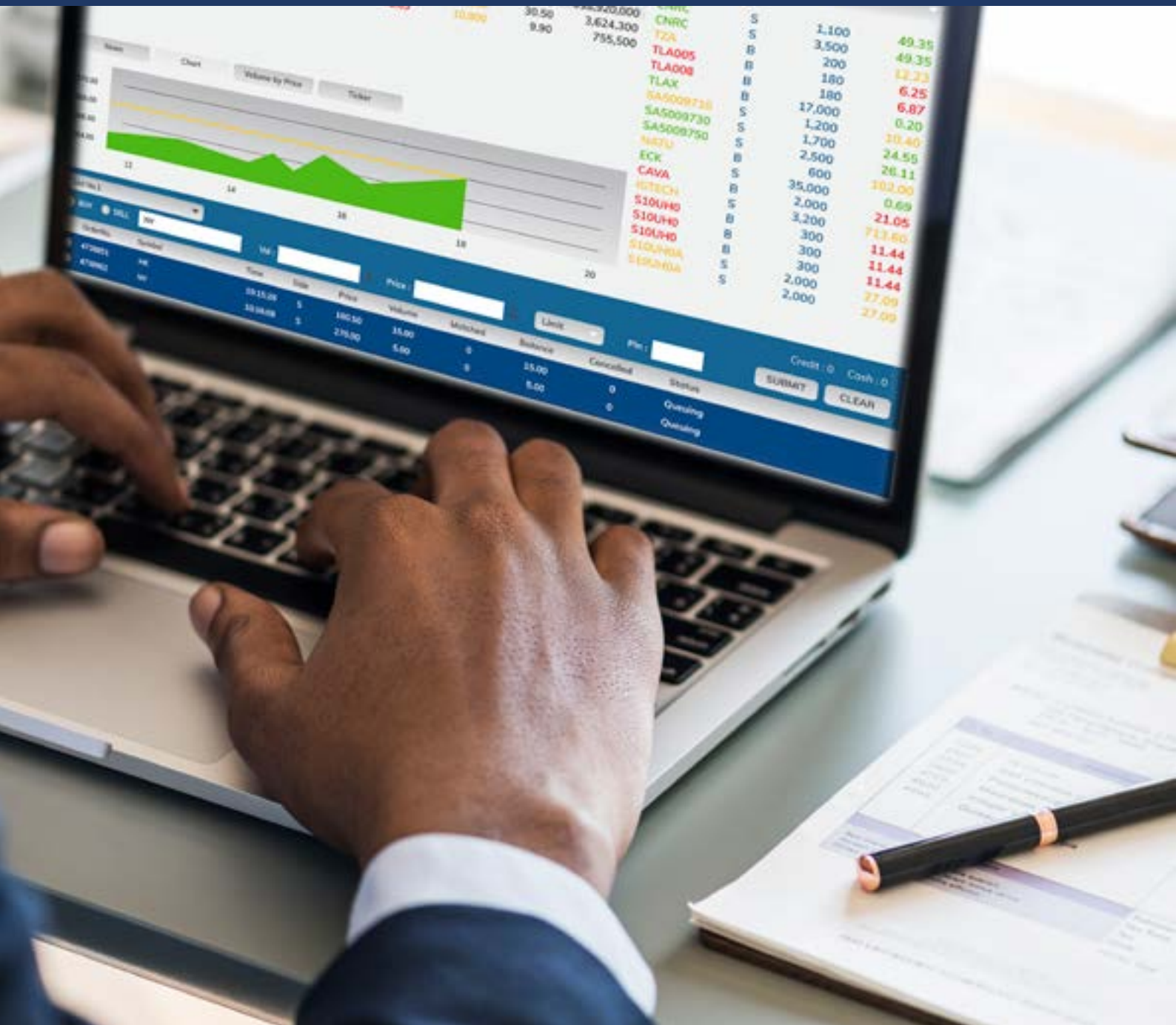


MINISTRY OF EDUCATION

ECONOMICS

for Senior High Schools

TEACHER MANUAL



MINISTRY OF EDUCATION



REPUBLIC OF GHANA

ECONOMICS

For Senior High Schools

Teacher Manual

Year Three



**NATIONAL COUNCIL FOR
CURRICULUM & ASSESSMENT
OF MINISTRY OF EDUCATION**

ECONOMICS TEACHER MANUAL

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Introduction

The National Council for Curriculum and Assessment (NaCCA) has developed the third and final set of curriculum materials to support the implementation of the new Senior High School curriculum.

This Year Three Teacher Manual for Economics covers all aspects of the content, pedagogy, teaching and learning resources and assessment required to effectively support learners in their final year of Senior High School. All the necessary information for the Student Assessment Portal has been included in the Year Three Teacher Manual to simplify the development of weekly learning plans, meaning that teachers have a single reference document.

The Year Three Teacher Manual has two main objectives:

- To support learners to consolidate and deepen their understanding of the content, pedagogy, and assessment across all three years of the new Senior High School curriculum in preparation for the West Africa Senior Secondary Certificate Examination (WASSCE).
- To equip teachers with the tools and resources needed to deliver revision-focused, assessment-led lessons that build on the knowledge learners have acquired from Year One to Year Three.

In this third year, teachers will be supporting learners to prepare for the WASSCE. Each section of the Teacher Manual is therefore structured around the highest Depth of Knowledge (DoK) levels, allowing learners to build progressively on knowledge acquired from Year One to Year Three. For each week, learning tasks and pedagogy are built around the assessment, ensuring that classroom activities directly prepare learners for the demands of the examination. Two sets of sample examination papers are also provided; one administered by Week 12 as a first semester practice examination, and one by Week 20 as a mock examination, to gauge learners' competencies and identify areas requiring remediation.

To further support teachers in delivering Year Three, NaCCA, working with the Ghana Education Service, has developed a subject specific App for each subject.

The Year Three PLC sessions have been revised in response to findings from the 2025 annual evaluation survey. The survey confirmed that teachers have made strong progress in lesson planning, use of varied instructional methods, ICT integration and modes of assessment. To address the identified gap in explaining concepts clearly using examples familiar to learners, each PLC session now includes a dedicated Content Exploration segment. This ten-

minute segment brings the subject group together to work through one challenging problem or concept from the week's Teacher Manual content, not to plan how to teach it, but to ensure that every teacher in the group fully understands it.

The PLC sessions in Year Three also place particular emphasis on connecting the week's content to equivalent topics taught in Years One and Two. Teachers are encouraged to note the recap weeks signposted throughout the Teacher Manual and to use the App to explore how content across all three years links together.

As in previous years, teachers are expected to integrate National Values, Gender Equality and Social Inclusion (GESI), Social and Emotional Learning (SEL), and 21st-century skills into their learning activities, assessment tasks, and rubrics and mark schemes. The subject-specific App will support teachers in doing this throughout the year.

Ghana Education Service acknowledges the dedication of the teachers who have implemented the new curriculum across Years One and Two and recognises that Year Three represents both the culmination of that effort and a critical moment for learners. The Year Three Teacher Manual and its accompanying resources have been developed to ensure that every learner, regardless of background, ability, or school context, is fully prepared to demonstrate what they know and can do in the WASSCE and to progress confidently to further studies, the world of work, and adult life.

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SECTION 1: ELASTICITY OF DEMAND

STRAND: **CONSUMERS' RATIONAL DECISION MAKING**

Sub-Strand: **Demand for goods and services**

Weeks 1, 2 & 3

Content Standard: *Demonstrate knowledge and understanding of elasticity of demand for goods and services*

Learning Outcome: Interpret elasticity of demand

INTRODUCTION AND SECTION SUMMARY

Section one covers consumers' rational decision making focusing on demand for goods and services. The content focuses on the elasticity of demand. The section starts by introducing elasticity to the learner after recapping lessons learnt on demand from year 1 and 2. After which the calculation of elasticity of demand is done using all the three methods. The section also looks at the factors that affect the elasticity of demand and the importance of elasticity of demand.

Teachers should note that the concept of demand for goods and service is linked to entrepreneurship in Social Studies.

The weeks and the indicators covered by the section are:

- Week 1& 2: Calculate Elasticity of Demand for goods and services
- Week 3: Evaluate factors affecting Elasticity of Demand

Recap weeks

Year 1	Week 4: Describe demand for goods and services. Week 5: State the law of demand and identify the types of demand.
Year 2	Week 3: Determine the factors that affect demand for a commodity Week 4: Differentiate between a change in quantity demanded and a change in demand

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogies to the teacher. These are collaborative learning and experiential Learning. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to calculate elasticity of demand. In experiential learning, the teacher is expected to assist learners to brainstorm the factors that affect the elasticity of demand as well as the importance of elasticity of demand.

It must be indicated that teachers apply these pedagogies based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessments in this section are level 4 for the first indicator and level 3 for the second indicator. Teachers should note that only level two, three and four questions are provided under key assessments for both indicators, to enable them to prepare learners for the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategies to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Calculate Elasticity of Demand for goods and services	3/4	Strategy: Group Mode: Class Work
Evaluate factors affecting Elasticity of Demand	3	Strategy: Group Mode: Homework

WEEK 1

Learning Indicator: Calculate Elasticity of Demand for goods and services

Focal Area 1: Introduction to Elasticity of Demand

Definition

Elasticity of Demand: This refers to the measure of the degree of responsiveness of quantity demanded to changes in determinants of demand such as price of the commodity itself, income, and the prices of related goods.

In the Ghanaian context, understanding elasticity helps businesses, consumers, and policymakers make informed decisions about pricing, taxation, and resource allocation.

Types of Elasticity of Demand

There are three main ways of measuring the elasticity of demand:

1. **Price Elasticity of Demand:** Price elasticity of demand (PED) refers to the degree to which the quantity demanded responds to a change in the price of the commodity itself.
2. **Income Elasticity of Demand:** Income elasticity of demand (YED) refers to the degree to which the quantity demanded responds to a change in consumer income.
3. **Cross Elasticity of Demand:** Cross elasticity of demand (XED) refers to the degree to which the quantity demanded of a commodity responds to a change in the price of a related commodity.

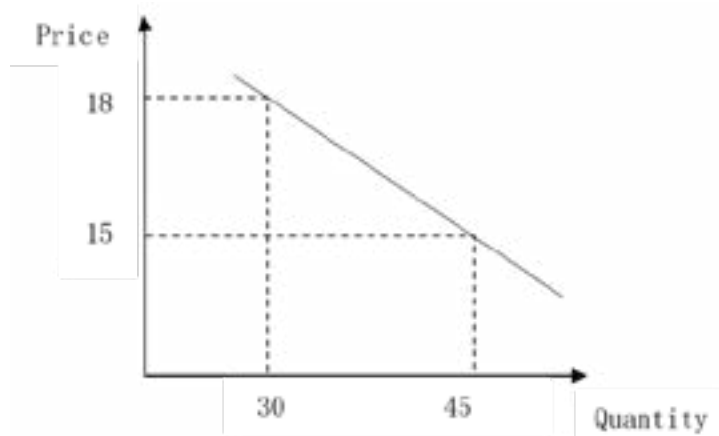
Types of Price Elasticity of Demand.

The coefficient of elasticity of demand can be interpreted as perfectly elastic, perfectly inelastic, unitary, elastic and inelastic.

1. Relatively Elastic Demand

This occurs when the percentage change in quantity demanded is greater than the percentage change in price. The price elasticity of demand coefficient is greater than 1 ($PED > 1$). It is also referred to as fairly elastic demand.

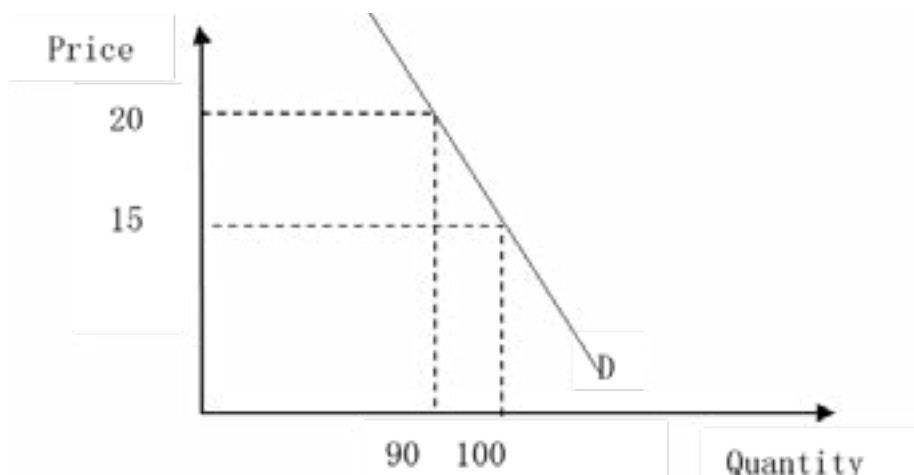
Example: When a 15% increase in the price of a specific brand of mobile phone in Accra Mall results in a 50% decrease in quantity demanded.



2. Relatively Inelastic Demand

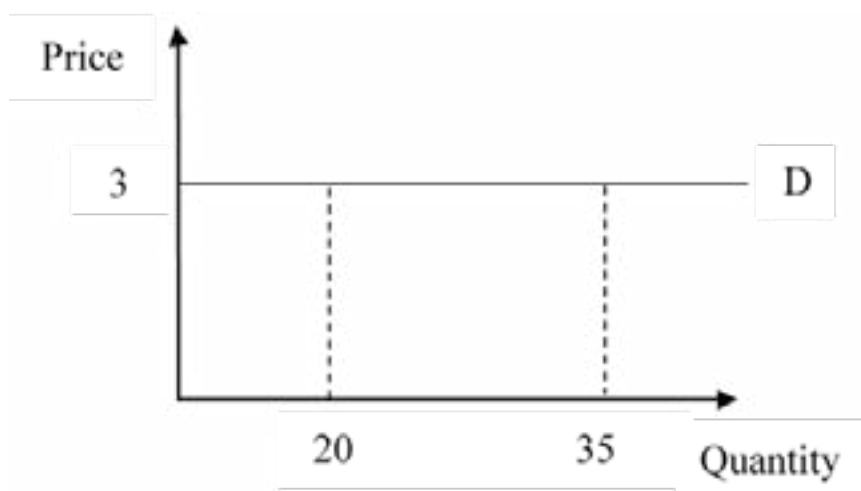
This occurs when the percentage change in quantity demanded is less than the percentage change in price, meaning the price elasticity of demand is less than 1 ($PED < 1$). It is also referred to as fairly inelastic demand.

Example: When a 25% increase in the price of petrol results in only 11.1% decrease in consumption across Ghana.



3. Perfectly Elastic Demand

This occurs when consumers only buy a product at one specific price and will buy none at all if the price increases (PED = ∞). The slope of this type of demand is zero, and it occurs mostly where there are numerous substitutes. A perfectly elastic demand curve is horizontal, and has an infinite elasticity.

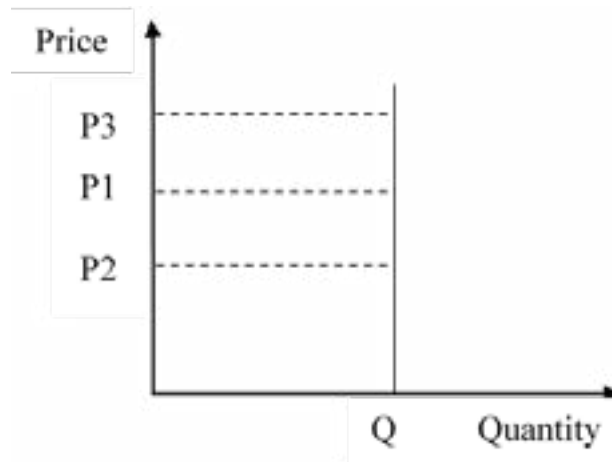


Example: In a perfectly competitive sachet market, a seller must charge exactly the prevailing market price. If the price increases even slightly, buyers will turn to other identical sellers to cause zero demand.

4. Perfectly Inelastic Demand

This occurs when quantity demanded does not change at all, regardless of price changes ($PED = 0$).

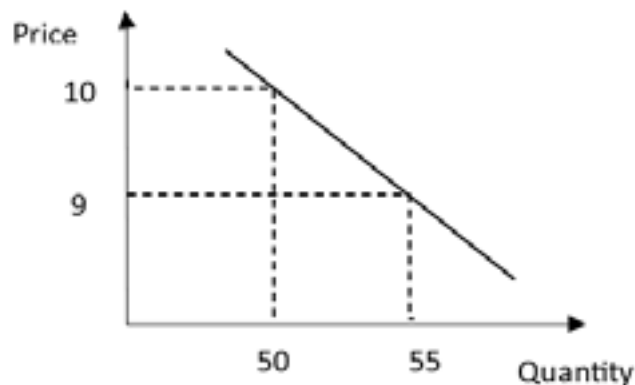
Example: Essential medications for conditions like malaria or hypertension in Ghana, where patients must purchase regardless of price.



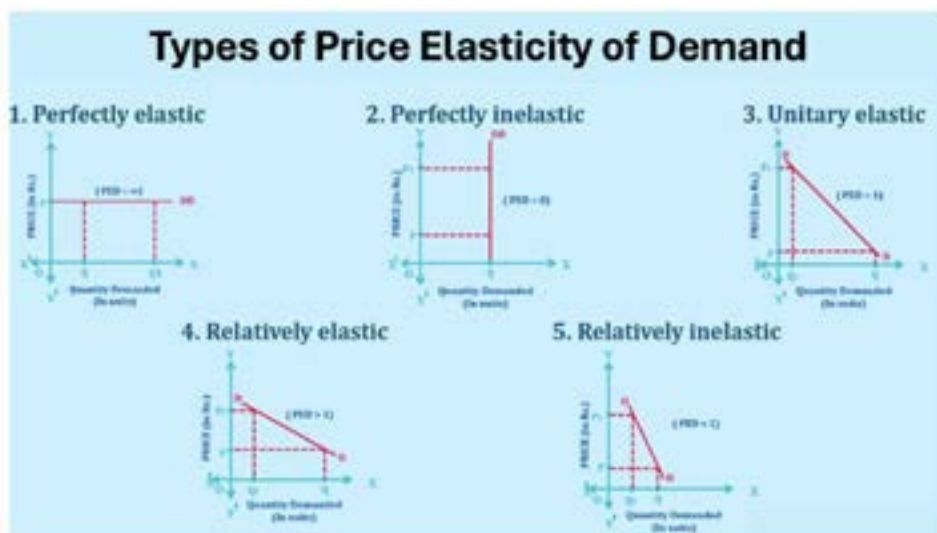
5. Unitary Demand

This occurs when the percentage change in quantity demanded is exactly equal to the percentage change in price, meaning the price elasticity of demand is equal to 1 ($PED = 1$).

Example: If the price of a kilogram of rice decreases by 10%, and the quantity demanded also increases by 10%, then the demand for rice is said to be unitary elastic. This implies that total revenue remains unchanged despite the price changes.



Graphical Representation of all the Types of Price Elasticity of Demand



Source: Author Generated, 2025

Learning Tasks

1. Recap demand for goods and services by defining demand, stating the law, identifying the factors that determine demand and differentiating between a change in demand and a change in quantity demanded.
2. Define Elasticity of Demand
3. List 10 common goods
4. Classify the demand for each good in (c) as likely elastic or inelastic
5. Explain the classification using real-world reasoning.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners form mixed groups of different abilities and genders to recap on demand for goods and services they have learned from year 1 and 2.

Focal Area 2: Calculation of Price Elasticity of Demand

Introduction

The calculation of price elasticity of demand provides a numerical value that helps categorise goods and services based on consumer responsiveness. Understanding these calculations enables businesses in Ghana to make strategic pricing decisions and helps economists analyse market behaviour.

Price Elasticity of Demand (PED): The ratio of the percentage change in quantity demanded to the percentage change in price of the good itself.

Percentage Formula: $PED = (\% \text{ Change in Quantity Demanded}) \div (\% \text{ Change in Price})$

$$PED = \frac{\% \Delta Q}{\% \Delta P} = \frac{[\% \text{ Change in quantity demanded}]}{[\% \text{ change in price}]}$$

Example

If the price of a crate of egg increases from GH¢40 to GH¢50, and the quantity demanded decreases from 500 crates to 450 crates, calculate the Price Elasticity of Demand (PED) using the percentage change formula.

Solution

Step 1. Percentage change in quantity demanded:

$$\frac{450-500}{500} \times 100 = \frac{-50}{500} \times 100 = -10\%$$

Step 2. Percentage change in price

$$\frac{50-40}{40} \times 100 = \frac{10}{40} \times 100 = 25\%$$

$$PED = \frac{-10\%}{25\%} = -0.4 = |-0.4| = 0.4$$

We take the absolute value, so $PED = 0.4$

Interpretation

Since $PED < 1$, demand is **inelastic**.

This means consumers are not very responsive to price changes. In this case, a 25% increase in price caused only a 10% fall in quantity demanded, so the seller could increase revenue despite selling fewer crates.

Midpoint formula

$$PED = [(Q_2 - Q_1) / ((Q_1 + Q_2) / 2)] \div [(P_2 - P_1) / ((P_1 + P_2) / 2)]$$

$$PED = \frac{[(Q_2 - Q_1) / (\frac{Q_2 + Q_1}{2})]}{[(P_2 - P_1) / (\frac{P_2 + P_1}{2})]} \quad \text{OR}$$

$$PED = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(P_2 - P_1) / (P_1 + P_2)]} \quad (\text{the 2 cancels out})$$

Example: The price of a bag of local Rice increases from GH¢300 to GH¢400, and the quantity demanded falls from 400 bags to 300 bags. Use the midpoint formula to calculate the price elasticity of demand and interpret your answer.

Solution:

$$PED = \frac{[(300 - 400) / (300 + 400) / 2]}{[(400 - 300) / (400 + 300) / 2]}$$

$$PED = \frac{[-100 / 350]}{[100 / 350]} = -1 = |-1| = 1$$

We take the **absolute value**, so $PED = 1$

Interpretation

A PED of 1 means **unitary elasticity**

This implies that the percentage change in quantity demanded is exactly equal to the percentage change in price.

In this case, a price increase caused a proportionate fall in quantity demanded.

Total revenue remains unchanged, what is gained in price is exactly lost in quantity sold.

Learning Tasks

1. Write the formula for Price Elasticity of Demand (PED)
2. Calculate PED when the price of bread increased from GH¢10 to GH¢12. As a result, quantity demanded dropped from 500 loaves to 400.
3. State whether demand is elastic, inelastic, or unitary and link this to values of more than 1, less than 1 and equal to 1.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners form mixed groups of different abilities and genders to calculate price elasticity of demand and interpret the results using real-world reasoning.

Key Assessment Level 4: Group Class Work

Note: The same indicator is for week 1 and 2 hence assessment questions are the same for both weeks. Check week 2 for assessment questions.

PLC Session 1

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then

- a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
- b. all teachers in the group work through a similar problem individually for 3–4 minutes
- c. the group then works through the problem together step by step
- d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about ‘How do I teach this?’ but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 2

Learning Indicator: Calculate Elasticity of Demand for goods and services

Focal Area 1: Calculation of Income Elasticity

Definition

Normal Goods: Goods for which demand increases as income increases (positive YED) and vice versa.

Example: Fresh meat consumption in Ghana tends to increase as household income rises.

Inferior Goods: Goods for which demand decreases as income increases and vice versa (negative YED).

Example: Consumption of used clothing (second-hand clothing) might decrease as Ghanaian families experience income growth, shifting to brand-new clothing.

Introduction

As Ghana continues to develop economically, understanding how consumption patterns change with income growth becomes increasingly important. Income elasticity helps explain why certain sectors grow faster than others as the country develops and why demand for certain products evolves over time.

Income Elasticity of Demand (YED): The ratio of the percentage change in quantity demanded to the percentage change in income.

Percentage formula: $YED = (\% \text{ Change in Quantity Demanded}) \div (\% \text{ Change in Income})$

Point formula: $YED = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$

Where;

$\Delta Q \rightarrow$ change in quantity demanded

$\Delta Y \rightarrow$ change in income

$Y \rightarrow$ original income

$Q \rightarrow$ original quantity demanded

Midpoint formula: $YED = [(Q_2 - Q_1) / ((Q_1 + Q_2) / 2)] \div [(Y_2 - Y_1) / ((Y_1 + Y_2) / 2)]$

$$YED = \frac{[(Q_2 - Q_1) / (\frac{Q_2 + Q_1}{2})]}{[(Y_2 - Y_1) / (\frac{Y_2 + Y_1}{2})]} \quad \text{or}$$

$$YED = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(Y_2 - Y_1) / (Y_1 + Y_2)]} \quad (\text{the 2 cancels out})$$

The coefficient of elasticity can be interpreted as Normal good if it is positive. Also, if the coefficient is Negative, the commodity is an Inferior good. However, if the coefficient is Positive but Greater than 1, then the commodity is a Superior or Luxury good. If the coefficient is Positive but less than 1, the commodity is a Necessity.

Example

A Ghanaian family's monthly income increases from GH¢2,000 to GH¢2,500. As a result, their monthly consumption of yoghurt rises from 20 cups to 30 cups. Calculate the Income Elasticity of Demand (YED) using the percentage change formula.

Solution

$$\text{YED} = \frac{\% \Delta Q}{\% \Delta P}$$

Step 1: Percentage change in quantity demanded

$$\frac{30-20}{20} \times 100 = \frac{10}{20} \times 100 = 50\%$$

Step 2: Percentage change in income

$$\frac{2500-2000}{2000} \times 100 = \frac{500}{2000} \times 100 = 25\%$$

$$\text{YED} = \frac{50\%}{25\%} = 2.0$$

Interpretation

A YED of 2.0 indicates that yogurt is considered a Normal good. Since YED is greater than 1, demand is income elastic; an increase in income results in a proportionately larger rise in demand. Therefore it is luxury type of a normal good in this context.

Example

A consumer's income rises from GH¢1,500 to GH¢2,000. As a result, their monthly demand for gari increases from 10 kg to 11 kg.

Calculate the Income Elasticity of Demand (YED) using the midpoint formula.

Solution

$$\text{YED} = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(Y_2 - Y_1) / (Y_1 + Y_2)]}$$

$$\text{YED} = \frac{[(11-10)/(10+11)]}{[(2000-1500)/(1500+2000)]}$$

$$\text{YED} = \frac{[\frac{1}{21}]}{[\frac{500}{3500}]}, \text{YED} = [\frac{0.0476}{0.1429}] = 0.33$$

Interpretation

A YED of 0.33 indicates that gari is a Normal good. Specifically, it is a necessity.

Since YED is less than 1, demand is income inelastic, meaning that as income rises, demand increases but by a smaller proportion.

Learning Tasks

1. Write the formula for Income Elasticity of Demand (YED)
2. Calculate the income elasticity of demand (YED) if a family's income increased from GH¢1,000 to GH¢1,100. Their demand for fresh vegetables increased from 50kg to 55kg.
3. Are fresh vegetables a necessity or a luxury? Explain your reasoning.
4. Interview a family member or close friend: Ask about the goods they buy and how their buying habits change when their income increases or decreases.
5. Identify if the goods they mention are normal or inferior and explain why.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners form mixed groups of different abilities and genders to understand income elasticity of demand by calculating income elasticity of demand using real-world reasoning.

Focal Area 2: Calculation of Cross Elasticity

Definition

Complementary Goods: Goods that are used together showing a negative cross elasticity.

Example: Mobile phones and mobile data in Ghana (when data prices fall, phone purchases increase).

Substitute Goods: Goods that can replace each other showing a positive cross elasticity.

Example: Different brands of sachet water or different transportation options like “Trotro” versus taxi in Accra.

Introduction

Cross Elasticity of Demand (XED) measures the responsiveness of the quantity demanded of one good (Good A) to a change in the price of another good (Good B).

In Ghana's interconnected markets, understanding the relationships between different products is crucial for business planning and market analysis. Cross elasticity reveals whether products are substitutes, complements, or unrelated, which influences pricing strategies and product development.

Cross Elasticity of Demand (XED): The ratio of the percentage change in quantity demanded of one good to the percentage change in price of another good.

Formula:

$$XED = \frac{\% \text{ Change in Quantity Demanded of Good A}}{\% \text{ Change in Price of Good B}}$$

Example

In Ghana, many people consider FanMilk yoghurt and Yogo natural yoghurt as substitutes. The price of FanMilk yoghurt increases from GH¢4.00 to GH¢5.00, leading to an increase in

the quantity demanded of Yogo from 1,000 to 1,400 cups per day. Calculate the Cross Elasticity of Demand (XED) and interpret the result.

Solution

$XED = (\% \text{ Change in Quantity Demanded of Good A}) \div (\% \text{ Change in Price of Good B})$

Step 1.

% Change in Quantity Demanded of Yogo (Good A):

$$\frac{1400-1000}{1000} \times 100 = 44\%$$

Step 2.

% Change in Price of FanMilk (Good B):

$$\frac{5.0-4.0}{4} \times 100 = 25\%$$

Step 3.

$$XED = \frac{40\%}{25\%} = 1.6$$

Interpretation

$XED = 1.6$, which is positive and greater than 1.

This shows that Yogo and FanMilk are close substitutes in the Ghanaian market.

A rise in the price of FanMilk causes a more-than-proportional increase in demand for Yogo.

General Interpretation of Results for XED

XED Value	Relationship Between Goods	Interpretation
Positive ($XED > 0$)	Substitute goods	When the price of B increases, demand for A increases (e.g., Coke and Pepsi).
Negative ($XED < 0$)	Complementary goods	When the price of B increases, demand for A decreases (e.g., phones and phone batteries).
$XED = 0$	Unrelated goods	A price change in Good B does not affect the demand for Good A.

Learning Tasks

1. Write the formula for Cross Elasticity of demand (XED).
2. Calculate XED when the price of Milo increased from GH¢10 to GH¢12, the quantity demanded for Cowbell cocoa increased from 100 tins to 130 tins.
3. Interpret results to determine whether goods are substitutes or complements.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners form mixed groups of different abilities and genders to understand how cross elasticity of demand is calculated using real-world reasoning.

Key Assessment: Group Class Exercise

Assessment should be done in group and submitted to the teacher; no group presentation is required.

QUESTION 1 (6 marks)

When the price of rice increases from €5 per kg to €7 per kg, the quantity demanded decreases from 200 kg to 160 kg per week.

- Calculate the price elasticity of demand for rice (4 marks) L2
- State whether demand is elastic or inelastic (2 marks) L3

QUESTION 2 (10 marks)

A consumer's monthly income increases from €2,000 to €2,500. As a result:

- Consumption of restaurant meals increases from 8 to 12 meals per month
- Consumption of instant noodles decreases from 20 packets to 15 packets per month
 - Calculate the income elasticity of demand for restaurant meals (4 marks) L2
 - Calculate the income elasticity of demand for instant noodles (4 marks) L2
 - Classify each good as normal or inferior and justify your answer (2 marks) L3

QUESTION 3 (8 marks)

When the price of Coca-Cola increases from €2.50 to €3.50 per bottle, the demand for Pepsi increases from 150 bottles to 210 bottles per day in a local shop.

- Calculate the cross elasticity of demand between Coca-Cola and Pepsi (5 marks) L2
- Explain the relationship between these two products based on your calculation (3 marks) L3

QUESTION 4 (12 marks)

A computer retailer observes that when laptop prices decrease from €3,000 to €2,400, the demand for laptop bags increases from 50 to 80 units per month, while the demand for tablet computers decreases from 40 to 25 units per month.

- Calculate the cross elasticity of demand between laptops and laptop bags (4 marks)
- Calculate the cross elasticity of demand between laptops and tablets (4 marks)
- Analyse the relationship between laptops and each product, and explain how this information could help the retailer's marketing strategy (4 marks)

QUESTION 5 (15 marks)

A market research study on smartphones reveals the following data for Brand X smartphones:

Scenario A: Average consumer income increases from 3,000¢ to 4,500¢ per month

- Demand for Brand X increases from 100 to 175 units per month

Scenario B: Brand X price decreases from 1,200¢ to 1,000¢ per unit

- Demand for Brand X increases from 100 to 140 units per month
- Demand for phone cases increases from 80 to 112 units per month
- Demand for competing Brand Y decreases from 120 to 84 units per month
 - a. Calculate the income elasticity of demand for Brand X smartphones (**4 marks**)
 - b. Calculate the price elasticity of demand for Brand X smartphones (**4 marks**)
 - c. Calculate the cross elasticity of demand between Brand X smartphones and phone cases (**3 marks**)
 - d. Calculate the cross elasticity of demand between Brand X and Brand Y smartphones (**3 marks**)
 - e. Based on all your calculations, provide a comprehensive analysis of Brand X smartphones in terms of:
 - Classification as luxury or necessity good
 - Market positioning relative to competitors
 - Pricing and bundling strategy recommendations (**1 mark each**)

Question 6

Data Response Question

The Ghana National Petroleum Authority (NPA) collected data on petrol consumption in Ghana over six months following several price adjustments. The table below shows the average price per litre of petrol and the monthly consumption in millions of litre across different regions of Ghana.

Table 1: Petrol Prices and Consumption in Ghana (January - June 2023)

Month	Average Price (GH¢/litre)	Consumption (million litre)	Average Monthly Income (GH¢)
January	10.50	180	2,200
February	12.00	162	2,200
March	13.20	150	2,250
April	11.80	165	2,300
May	11.00	175	2,350
June	12.50	155	2,400

- a. Using the price elasticity formula, calculate the price elasticity of demand for petrol between January and February. **(5 marks)**
- b. Calculate the income elasticity of demand for petrol between May and June. **(5 marks)**
- c. Determine whether the demand for petrol is elastic, inelastic, or unitary in your calculations from a and b and give a reason for deciding whether it is a normal or inferior good. **(4 marks)**

PLC Session 2

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)

- b. all teachers in the group work through a similar problem individually for 3–4 minutes
- c. the group then works through the problem together step by step
- d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about ‘How do I teach this?’ but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 3

Learning Indicator: Evaluate factors affecting Elasticity of Demand

Focal Area 1: Factors that Affect the Elasticity of Demand

Introduction

1. Availability of Substitutes

The more substitutes a product has, the more elastic its demand becomes.

Example: Mobile phones from different brands have many alternatives, so consumers can easily switch, making demand relatively elastic.

2. Necessity vs. Luxury

Necessities tend to have inelastic demand because people must continue buying them regardless of price changes. Luxuries, on the other hand, have more elastic demand.

Example: Water is a necessity, so its demand is inelastic. Imported chocolates are luxuries, so their demand is more elastic.

3. Proportion of Income Spent on the goods

Goods that take up a larger portion of a consumer's income tend to have more elastic demand.

Example: Refrigerators are expensive and take up a larger share of income, so demand for them is more elastic than for inexpensive items like matches.

4. Time Period

Demand becomes more elastic over a longer time period as consumers have time to adjust their behaviour.

Example: In the short term, Ghanaian consumers may continue buying petrol despite price increases, but in the long run, they may seek alternatives like carpooling or public transport.

5. Definition of the Market

The narrower the definition of a market, the more elastic the demand.

Example: Demand for a specific brand of kenkey is more elastic than demand for kenkey in general because consumers can switch to other brands more easily.

6. Habit formation by consumers

When consumers develop a strong taste or preference for a particular commodity or service, demand becomes more inelastic. On the other hand, if consumers do not like or prefer a particular commodity, the demand for that commodity becomes elastic.

Example: The demand for smartphones with a touch keypad is inelastic because consumers have got into the habit of using one. Hard keypads are inflexible whereas touch keypads can be adapted and changed to user preference. Hence, any price increase for smartphones with touch keypads would not bring about a proportionate change in demand.

7. Durability of the Commodity

When a commodity is durable, its demand tends to be more elastic because consumers can postpone its purchase when the price rises. However, if a commodity is non-durable, demand becomes inelastic since it must be purchased frequently.

Example: When the price of furniture increases, consumers can delay buying it, making demand elastic. On the other hand, goods like bread must be bought regularly, so demand becomes inelastic.

Note: Additional factors such as the number of uses of a commodity, income groups, and occasion should be discussed in class.

Learning Tasks

1. List goods and services (e.g., water, electricity, pizza, textbooks, mobile phones)
2. What factors make the demand for the listed products more or less sensitive to price changes
3. Brainstorm and answer the following questions
 - i. Are the listed goods and services substitutes?
 - ii. Is this product a necessity or a luxury?
 - iii. Does this product take up a big part of a person's income?
 - iv. Does the demand change more quickly or slowly over time?
4. Display the brainstormed findings around the room
5. Walk around and review others' work
6. Rank the top 2–3 most important factors affecting elasticity for the products.
7. Justify the rankings with reasons or real-life examples

Pedagogical Exemplars

Experiential Learning

Learners brainstorm the factors that affect the elasticity of demand. To make it more practical and participatory, learners should identify several products or services that can help them to easily brainstorm the factors that affect the elasticity of demand.

Focal Area 2: Importance of Elasticity of Demand

Introduction

Elasticity concepts are not merely theoretical but have significant practical implications for Ghana's economy. They serve as essential tools for analysing how responsive consumers and producers are to changes in price, income, and the prices of related goods. From business pricing strategies to government taxation policies and poverty alleviation measures, elasticity insights drive informed decision-making across various sectors in Ghana.

Economic Importance of the Concept of Elasticity of Demand

1. Price Determination

Businesses rely on the concept of price elasticity of demand to set prices that maximise profits or increase market share. Understanding how sensitive consumers are to price changes enables firms to avoid overpricing or underpricing their goods and services.

Example: Mobile network providers such as MTN, Vodafone, and Telecel Ghana use elasticity estimates to price data bundles and call packages. More elastic services (e.g., international calls) are often priced competitively, while inelastic services (e.g., mobile money withdrawal charges) may bear higher costs without significantly reducing demand.

2. Government Revenue and Taxation Policy

Governments apply knowledge of elasticity, particularly price elasticity of demand, when imposing taxes. Taxing goods with inelastic demand ensures more predictable and stable revenue, as demand does not decline significantly with higher prices.

Example: The Ghana Revenue Authority imposes higher excise duties on products like petroleum, alcohol, and tobacco; such goods tend to have inelastic demand. This strategy ensures steady government income while discouraging overconsumption of socially harmful goods.

3. Income Distribution and Social Welfare

Elasticity plays a role in understanding how changes in price for different goods affect various income groups. Policymakers can use this information to design subsidies or price controls that protect vulnerable populations.

Example: When prices of staple foods like maize and rice rise, low-income earning Ghanaians, who spend a large proportion of their income on food are affected most. Since demand for these goods is inelastic, they cannot easily reduce consumption. This makes food price inflation a major concern for income inequality and poverty levels.

4. Producer Revenue and Export Planning

Producers benefit from understanding elasticity to anticipate how changes in market conditions, especially international prices, affect their revenue. This is particularly important for Ghana's major export sectors.

Example: Cocoa farmers in Ghana rely on the global demand for cocoa beans. When demand is inelastic, a drop in price may lead to a proportionately smaller fall in quantity demanded, reducing income. Conversely, if demand is more elastic, price cuts may boost total revenue by significantly increasing demand from chocolate manufacturers abroad.

5. Market Structure and Competition Analysis

Cross elasticity of demand is used to examine the degree of substitutability between goods, which in turn reveals the nature of competition within a market.

Example: The high cross-price elasticity between telecommunication companies in Ghana (MTN, Telecel) shows that consumers readily switch providers when prices change. This indicates a competitive market structure, where firms must continuously innovate and adjust prices to maintain market share.

6. Inflation Management

Elasticity can also influence inflation policy. Goods with inelastic demand contribute more heavily to inflationary pressures because price increases in such goods do not lead to a proportional drop in demand.

Example: In Ghana, food and fuel prices are key drivers of inflation due to their inelastic nature. Policymakers at the Bank of Ghana monitor these items closely when adjusting monetary policy to control inflation and stabilise the economy.

7. Agricultural and Industrial Policy Planning

Elasticity helps determine which sectors require support or reform. Elastic supply in agriculture, for instance, implies that with better infrastructure and investment, Ghanaian farmers can quickly respond to higher prices by increasing output.

Example: If the supply of tomatoes in Ghana is relatively elastic, then improving road networks and storage facilities can quickly boost production and stabilise prices, benefiting both farmers and consumers.

8. Scale of Output

Elasticity of demand helps firms to determine the appropriate level of output to produce. When demand for a commodity is elastic, a fall in price leads to a large increase in quantity demanded, so firms can increase output to maximise revenue. However, when demand is inelastic, changes in price have little effect on quantity demanded, so firms may not need to expand output significantly.

Example: A firm producing soft drinks may increase its scale of output when it reduces prices because demand is elastic and sales will rise significantly. However, for essential goods like salt, demand is inelastic, so increasing output may not lead to a large increase in sales.

9. Wage Bargaining

Elasticity of demand for labour influences the ability of workers to negotiate for higher wages. When demand for labour is inelastic, employers are more willing to accept wage increases since employment will not fall significantly. However, when demand for labour is elastic, wage increases may lead to a large reduction in employment, weakening workers' bargaining power.

Example: Workers with highly specialised skills (such as doctors) have relatively inelastic demand, so they can successfully demand higher wages. However, workers in jobs with many substitutes may face elastic demand, and employers may reduce employment if wages increase.

Learning Tasks

1. Analyse the following mini case studies and discuss:

Case Study 1: The Bread Bakery (Business Perspective)

Ama's Bakery sells freshly baked bread at GHS 10 per loaf. Due to rising flour costs, Ama is considering increasing the price to GHS 12. However, she notices there are many other bakeries and supermarkets nearby selling similar bread. As business advisors, help Ama decide whether to raise the price.

i. What factors affect how customers might respond?

- ii. How important is the elasticity of demand in her decision?
- iii. What could happen if she increases the price without understanding elasticity?

Case Study 2: Government Tax on Sugary Drinks (Government Perspective)

The Ministry of Health plans to introduce a GHS 2 tax on all sugary drinks to reduce sugar consumption. Some officials worry that if demand is inelastic, people will still buy the drinks but just pay more, while others believe it will reduce consumption and improve health. As policy advisors, evaluate:

- i. Why is elasticity important in deciding whether this tax will work?
- ii. What might happen if sugary drinks have inelastic demand?
- iii. How should the government use elasticity to design this policy?

Case Study 3: Smartphone Price Drop (Consumer Perspective)

A new smartphone that normally costs GHS 4,000 is now being offered at a 20% discount. Kwame is thinking of buying it but is not sure if the deal is really worth it. He also knows other brands are available at lower prices. As consumer analysts, advise Kwame:

- i. How can understanding elasticity help him decide?
- ii. Why might the phone company be offering a discount?
- iii. How do substitute products affect this decision?

Case Study 4: Fuel Price Increase (Government and Business Perspective)

The government has increased the fuel price by 15% to reduce overuse and raise revenue. Transport unions complain that their costs have gone up and they may raise fares. Consumers are worried, but many still rely heavily on public transport. As a group representing both government and business:

How does elasticity of demand for fuel affect this situation?

Who will be affected most by the price increase?

Should the government expect fuel use to fall significantly?

Case Study 5: Fashion Boutique Sale (Business Perspective)

A boutique selling designer clothes notices that sales are slow. They plan a 30% discount on selected items. The manager hopes this will increase total revenue. As sales consultants:

- i. What role does elasticity play in this decision?
- ii. If demand is elastic, what will happen to revenue?
- iii. What does this tell you about pricing strategies in fashion retail?

Pedagogical Exemplars

Experiential Learning

Learners brainstorm the importance of elasticity of demand. Support learners during the brainstorming and lead the discussion.

Key Assessment: Group Project

Teachers should do the grouping of learners based on the environment and available resources as well as gender, ability and the school's rules and regulations.

QUESTION 1 (15 marks)

Ghana's Ministry of Health is considering implementing a tax policy on sugary drinks to reduce consumption and improve public health outcomes.

- Analyse FOUR factors that would determine the price elasticity of demand for sugary drinks in Ghana (**8 marks**)
- Evaluate how each of these factors might influence the effectiveness of the proposed tax policy (**7 marks**)

QUESTION 2 (18 marks)

Ghana's economy has experienced steady growth, with per capita income increasing from \$1,800 to \$2,500 over the past five years. This income growth has affected consumption patterns across different sectors.

- Analyse how the income elasticity of demand varies for the following product categories in Ghana:
 - Local food staples (cassava, yam, plantain) (**3 marks**)
 - Imported luxury goods (cars, electronics) (**3 marks**)
 - Educational services (**3 marks**)
- Evaluate the importance of understanding income elasticity for:
 - Government policy planning (**4 marks**)
 - Business investment decisions (**5 marks**)

Hint



Assign Group Project to learners and give them reasonable time to complete it. Use the SS App to generate the project as well as the rubric. Learners' projects should be marked immediately and scores entered into the SAP.

PLC Session 3

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous session, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to

- a. explain the week's concepts in a practical way that will make it easier for learners to understand.
 - b. identify three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
- a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q).
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Use your app to plan and administer the mode of assessment for the Student Assessment Portal (SAP)
- a. The key assessment for the week is **group project**. Chat with your app to plan this assessment by reviewing or developing the assessment items/tasks and marking schemes/rubrics for the mid-semester examination (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or topic/idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
- a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through the problem individually for 3–4 minutes
 - c. the group then works through it together the problem, step by step
 - d. highlight the most common errors made at each step (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

Section 1 Review

The lessons taught in section one are focused on the elasticity of demand, which was unpacked into an introduction to elasticity, factors that affect the elasticity of demand, the importance and how to calculate of elasticity of demand using all the methods. The learners, by the end of the lessons, will have acquired knowledge and understanding of how to interpret the result of the calculated elasticity of demand and how to relate it to real-world scenarios. The teacher applied varied pedagogical skills, specifically collaborative learning and experiential learning. A recap of lessons learnt in years one and two was done and assessment techniques, subject to the abilities of the learners, to achieve the learning indicators for the weeks were done.

Teaching and Learning Resources

Week 1 & 2: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 3: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Blanchard, O. (2024). *Microeconomics* (9th ed.). Pearson.

GyekeDako, A., Addae, A. Y., & Dzansi, J. (2023). *Managerial Economics and Business Strategy* (8th ed.). University of Ghana Business School.

Komlos, J. (2019). *Foundations of RealWorld Economics: What Every Economics Student Needs to Know*. Routledge.

Mankiw, N. G. (2020). *Principles of Economics* (10th ed.). Cengage Learning.

Sabry, F. (2024). Price Elasticity of Demand (also titled Elasticity Economics in other regions). One Billion Knowledgeable.

MARKING SCHEMES FOR THE KEY ASSESSMENTS**WEEK 1 & 2****Question 1**

a. Calculation (4 marks)

- % Change in Quantity: (1) $\%20 = 100 \times 200 / (200 - 160)$ (1 mark)
- % Change in Price: (1) $\%40 = 100 \times 5 / (5 - 7)$ (1 mark)
- $PED = -20\% \div 40\% = -0.5$ (1 mark)
- Correct formula application (1 mark)

b. Classification (2 marks)

- Inelastic demand (1 mark)
- Because $|PED| = 0.5 < 1$ (1 mark)

Question 2

a. Restaurant meals (4 marks)

- % Change in Quantity: (1) $\%50 = 100 \times 8 / (8 - 12)$ (1 mark)
- % Change in Income: (1) $\%25 = 100 \times 2000 / (2000 - 2500)$ (1 mark)
- $YED = 50\% \div 25\% = 2$ (1 mark)
- Correct calculation (1 mark)

b. Instant noodles (4 marks)

- % Change in Quantity: (1) $\%25 = 100 \times 20 / (20 - 15)$ (1 mark)
- % Change in Income: (1) $\%25 = 100 \times 2000 / (2000 - 2500)$ (1 mark)
- $YED = -25\% \div 25\% = -1$ (1 mark)
- Correct calculation (1 mark)

c. Classification (2 marks)

- Restaurant meals: Normal good ($YED > 0$) (1 mark)

- Instant noodles: Inferior good ($YED < 0$) (1 mark)

Question 3

a. Calculation (5 marks)

- % Change in Quantity of Pepsi: (1) $\%40 = 100 \times 150/(150-210)$ (1 mark)
- % Change in Price of Coca-Cola: (1) $\%40 = 100 \times 2.50/(2.50-3.50)$ (1 mark)
- $XED = 40\% \div 40\% = 1$ (2 marks)
- Correct formula application (1 mark)

b. Relationship explanation (3 marks)

- Substitute goods (1 mark)
- Positive XED indicates substitutes (1 mark)
- When Coca-Cola price rises, consumers switch to Pepsi (1 mark)

Question 4

a. Laptops and laptop bags (4 marks)

- % Change in Quantity of bags: (1) $\%60 = 100 \times 50/(50-80)$ (1 mark)
- % Change in Price of laptops: (1) $\%20 = 100 \times 3000/(3000-2400)$ (1 mark)
- $XED = 60\% \div (-20\%) = -3$ (2 marks)

b. Laptops and tablets (4 marks)

- % Change in Quantity of tablets: (1) $\%37.5 = 100 \times 40/(40-25)$ (1 mark)
- % Change in Price of laptops: (1) $\%20 = 100 \times 3000/(3000-2400)$ (1 mark)
- $XED = -37.5\% \div (-20\%) = 1.875$ (2 marks)

c. Analysis and strategy (4 marks)

- Laptops and bags: Complements ($XED < 0$) - when laptops are cheaper, bag demand increases (1 mark)
- Laptops and tablets: Substitutes ($XED > 0$) - cheaper laptops reduce tablet demand (1 mark)
- Marketing strategy: Bundle laptops with bags for discount packages (1 mark)
- Strategy justification: Strong complementary relationship ($XED = -3$) suggests successful bundling opportunity (1 mark)

Question 5

a. Income elasticity (4 marks)

- % Change in Quantity: (1) $\%75 = 100 \times 100/(100-175)$ (1 mark)
- % Change in Income: (1) $\%50 = 100 \times 3000/(3000-4500)$ (1 mark)
- $YED = 75\% \div 50\% = 1.5$ (2 marks)

b. Price elasticity (4 marks)

- % Change in Quantity: (1) $\%40 = 100 \times 100/(100-140)$ mark)
- % Change in Price: (1) $\%16.67 = 100 \times 1200/(1200-1000)$ mark)
- $PED = 40\% \div (-16.67\%) = -2.4$ (2 marks)

c. Cross elasticity - phone cases (3 marks)

- % Change in Quantity of cases: (1) $\%40 = 100 \times 80/(80-112)$ mark)
- % Change in Price of Brand X: (1) $\%16.67 = 100 \times 1200/(1200-1000)$ mark)
- $XED = 40\% \div (-16.67\%) = -2.4$ (1 mark)

d. Cross elasticity - Brand Y (3 marks):

- % Change in Quantity of Brand Y: (1) $\%30 = 100 \times 120/(120-84)$ mark)
- % Change in Price of Brand X: (1) $\%16.67 = 100 \times 1200/(1200-1000)$ mark)
- $XED = -30\% \div (-16.67\%) = 1.8$ (1 mark)

e. Comprehensive analysis (3 marks)

- Luxury good classification: $YED = 1.5 > 1$, indicating luxury good - demand increases more than proportionally with income (1 mark)
- Market positioning: Strong substitute relationship with Brand Y ($XED = 1.8$) indicates intense competition; elastic demand ($|PED| = 2.4$) suggests price-sensitive market (1 mark)
- Strategy recommendations:
 - Implement bundle pricing with phone cases (strong complement relationship, $XED = -2.4$)
 - Focus on differentiation rather than price competition due to elastic demand
 - Target higher-income segments given luxury classification (1 mark)

Question 6

Data Response Question on Petrol Consumption in Ghana

Question	Expected Response	Marks
a. Calculate the Price Elasticity of Demand (PED)		5 marks
Formula: $PED = \% \Delta Q / \% \Delta P$	1 mark	
% Change in Quantity: $(162 - 180) / 180 \times 100 = -10\%$	1 mark	
% Change in Price: $(12.00 - 10.50) / 10.50 \times 100 = 14.29\%$	1 mark	
Substitution and working	1 mark	
Final $PED = -10 / 14.29 = -0.70$	1 mark	
b. Calculate the Income Elasticity of Demand (YED)		5 marks
Formula: $YED = \% \Delta Q / \% \Delta \text{Income}$	1 mark	

% Change in Quantity: $(155-175)/175 \times 100 = -11.43\%$	1 mark
% Change in Income: $(2400-2350)/2350 \times 100 = 2.13\%$	1 mark
Substitution and working	1 mark
Final YED = $-11.43 / 2.13 = -5.37$	1 mark

c. Interpretation of Elasticities (4 marks)

Performance Level	Criteria	Marks
Excellent	Accurately explains: PED is inelastic (< 1), and YED is negative, so petrol is an inferior good.	4 marks
Very Good	Correct interpretation of both elasticities with minor errors or less clarity.	3 marks
Satisfactory	General explanation; one correct concept but with confusion or unclear reasoning.	2 marks
Needs Improvement	Poor or incorrect explanation of elasticity types or misclassification of the good.	1 mark
Overall neatness and clarity of work done	Demonstrates overall neatness and clarity of work, orderly presentation of calculation.	1 mark

WEEK 3

Question 1

a. Four factors affecting PED for sugary drinks (**8 marks - 2 marks each**)

1. Availability of Substitutes (2 marks):

- Natural fruit juices, water, and local beverages like sobolo exist as substitutes (**1 mark**)
- More substitutes make demand more elastic (**1 mark**)

2. Necessity vs Luxury (2 marks)

- Sugary drinks are luxury/discretionary items, not necessities (**1 mark**)
- Luxury goods tend to have more elastic demand (**1 mark**)

3. Proportion of Income (2 marks)

- Sugary drinks represent a small portion of consumer income (**1 mark**)
- A small income proportion typically makes demand less elastic (**1 mark**)

4. Time Period (2 marks)

- Short-run: consumers may not immediately change habits (**1 mark**)
- Long-run: consumers can develop new consumption patterns, making demand more elastic (**1 mark**)

b. Evaluation of tax policy effectiveness (**7 marks**)

- Substitutes availability: Policy likely effective as consumers can switch to healthier alternatives (**2 marks**)

- **Luxury nature:** Tax will reduce consumption as people can easily forgo non-essential items **(2 marks)**
- **Income proportion:** May limit effectiveness as price increase will not significantly impact budgets **(1.5 marks)**
- **Time consideration:** Policy effectiveness will increase over time as consumption habits change **(1.5 marks)**

Question 2

a. Income elasticity analysis (9 marks)

Local food staples (3 marks)

- Likely to have low positive or negative income elasticity **(1 mark)**
- As incomes rise, consumers may switch to more processed/imported foods **(1 mark)**
- Some staples may become inferior goods at higher income levels **(1 mark)**

Imported luxury goods (3 marks)

- High positive income elasticity ($YED > 1$) **(1 mark)**
- Demand increases more than proportionally with income growth **(1 mark)**
- Represents aspirational consumption for the growing middle class **(1 mark)**

Educational services (3 marks)

- High positive income elasticity **(1 mark)**
- Higher incomes lead to increased investment in quality education **(1 mark)**
- Private school enrollment and tertiary education demand increase significantly **(1 mark)**

b. Importance evaluation (9 marks):

Government policy planning (4 marks)

- **Tax policy design:** Understanding which goods have elastic demand helps optimise tax revenue **(1 mark)**
- **Social programs:** Identifying inferior goods helps target subsidies effectively **(1 mark)**
- **Economic forecasting:** Predicting sectoral growth based on income projections **(1 mark)**
- **Import/export strategy:** Planning for changing consumption patterns **(1 mark)**

Business investment decisions (5 marks)

- **Market expansion:** Companies can identify growth sectors (high YED products) **(1 mark)**
- **Product positioning:** Understanding luxury vs necessity classification guides pricing **(1 mark)**
- **Capacity planning:** Anticipating demand changes with economic growth **(1 mark)**
- **Risk management:** Diversifying portfolio between elastic and inelastic goods **(1 mark)**
- **Target market identification:** Focusing on income segments with favourable elasticity **(1 mark)**

SECTION 2: UTILITY

STRAND: **CONSUMERS' RATIONAL DECISION MAKING**

Sub-Strand: **Consumer behaviour**

Week 4

Content Standard: *Demonstrate knowledge and understanding of Substitution and Income Effects.*

Learning Outcome: Use information from the environment to explain income and substitution effects.

INTRODUCTION AND SECTION SUMMARY

Section two covers consumers' rational decision making focusing on consumer behaviour. The content focuses on income and substitution effect. The section starts by recapping lessons learnt on utility from year 1 and 2. After which the explanation of income and substitution effect is done. The section also looks at mathematical representation of the two concepts.

Teachers should note that the concept of utility is linked to Home Economics and the calculations use simple Mathematics tools.

The week and the indicators covered by the section are:

- Week 4: Explain Substitution and Income Effects in Utility and mathematically represent the substitution and income effects

Recap weeks

Year 1	Week 6: The concept of utility. Week 7: The Law of Diminishing Marginal Utility in Everyday Life.
Year 2	Week 5: Equilibrium in utility and calculation of Marginal Utility, Total Utility and Average Utility Week 6: Total, Marginal and Average utility curves

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents collaborative learning as the only pedagogy to the teacher. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to explain income and substitution effects.

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK level for the assessment in this section is level 4. Teachers should note that the sample assessments covers level two, three and four to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation. The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Explain Substitution and Income Effects in Utility	3	Strategy: Group Mode: Homework
Mathematically represent the substitution and income effects	4	Strategy: Group Mode: Homework

WEEK 4

Learning Indicator: Explain Substitution and Income Effects in Utility and mathematically represent the substitution and income effects

Focal Area 1: Explanation of Substitution and Income Effects in Utility

Introduction

The concept of substitution effect and income effect is essential in analysing how consumers in Ghana make choices when the prices of goods and services change. These two effects explain the change in quantity demanded of a good when its price changes, holding other factors constant.

Substitution Effect

The substitution effect occurs when a consumer replaces a more expensive good with a cheaper substitute because of a change in relative prices. This change increases the utility of the consumer without increasing spending. Suppose the price of imported rice increases while the price of local rice remains the same or decreases. Many consumers, particularly in urban areas, may switch from imported rice to locally produced rice. This shift from imported rice to local rice due to the price difference is known as the substitution effect.

When the price of FanMilk yoghurt goes up, some students switch to cheaper substitutes like local *brukina* or *sobolo* drinks.

If the price of petrol rises, commuters may switch from taxis to “*Trotros*” (cheaper public transport).

Income Effect

The income effect happens when a price change affects a consumer’s real income (purchasing power), causing them to buy more or less of a good even though their actual income has not changed. Imagine the price of electricity goes down due to government subsidies. Even though a household’s salary has not increased, they now feel richer because they have more money left to spend.

As a result, they may increase usage of electrical appliances, such as running fans longer or using a rice cooker more frequently. This increase in consumption due to increased real income is known as the income effect. When prices of staple foods like gari or maize fall, lower-income households can afford to buy more food or other items, leading to increased utility. If school fees are reduced or a family receives free textbooks under the Free SHS programme, they may use the leftover money to buy better meals or transport for their children.

Example

If the price of bread rises. A student from a modest-income family may:

- a. **Substitution effect:** stop buying bread and switch to alternatives like *koko* (porridge) with *koose* (beans cake).
- b. **Income effect:** individuals feel poorer because more money is now spent on food. As a result, the family might reduce spending on other goods like mobile data or clothing.

In this case, the change in consumption behaviour is influenced by both effects working together.

Application in Economic Decision-Making in Ghana

Understanding these effects helps:

- Businesses set prices to attract consumers (e.g., telecom firms offering cheaper night bundles to capture users).
- Government to assess the impact of subsidies or taxes (e.g., reducing VAT on local food items can increase the purchasing power of poorer households).
- Households to make informed choices on spending (e.g., prioritising needs when prices rise).

Importance in Ghana's Development Context

- Supports local industries: When consumers substitute imported goods with local ones due to price differences, it strengthens domestic production.
- Promotes equity: Understanding income effects helps the government target subsidies or cash transfers to vulnerable populations.
- Improves consumer welfare: When people can substitute without losing satisfaction, they maintain or improve their standard of living.

Learning Tasks for Practice

- Recap the concept of utility by stating the law of diminishing marginal utility, explaining the equilibrium in utility and calculating MU, TU and AU.
- Research and define the substitution and income effects in your own words
- Identify and describe real-life examples of how a consumer changes consumption when prices change
- Present the group work to the class

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed gender and ability groups discuss the concepts of substitution and income effects using their daily life experiences as students and present their group work using power point.

Focal Area 2: Mathematical Representation of Substitution and Income Effects

Definitions

Substitution Effect: Change in quantity demanded due to the change in relative prices, holding utility constant.

Income Effect: Change in quantity demanded due to the change in real income (purchasing power), holding prices constant.

Introduction

Mathematical Representation (Hicksian Decomposition)

Total Effect = Substitution Effect (Hicksian) + Income Effect

When the price of good X falls

1. Original Demand: X_0
2. New Demand after Price Change: X_2
3. Hypothetical Demand (same utility at new price): X_1

Then

- Substitution Effect = $X_1 - X_0$
- Income Effect = $X_2 - X_1$
- Total Effect = $X_2 - X_0$

Learning Tasks

1. A price change scenario: price of rice falls from GH¢10 to GH¢7. Income: GH¢100, Two goods: rice (X) and beans (Y).
 - a. Define the initial budget constraint (Note:)
 - b. Define a new budget constraint after the price change.
 - c. Using the mathematical Method:

Total Effect = Substitution Effect + Income Effect

Identify:

 - i. Substitution effect (keeping utility constant)
 - ii. Income effect
 - d. Use algebra to find the new quantity demanded
 - e. Use a compensated budget to isolate the substitution effect

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed gender and ability groups illustrate the concepts of substitution and income effects mathematically present their group work using PowerPoint. Move from group to group to support each group.

Key Assessment Level 3: Group Homework

Question 1 (5 marks)

- a. Define the substitution effect and income effect that occur when the price of a normal good decreases.
- b. Explain how each effect individually influences consumer behaviour.

Question 2 (6 marks)

A consumer's monthly income is GH¢800. Initially, the price of good X is GH¢10 and good Y is GH¢20. If the price of good X falls to GH¢8, calculate:

- The change in the consumer's real income
- How many additional units of good X the consumer can now afford with the same nominal income?

Question 3 (8 marks)

Analyse the case of an inferior good when its price decreases. Use economic reasoning to explain why the income and substitution effects work in opposite directions and predict the overall outcome for consumer demand.

Question 4 (8 marks)

When the price of bread decreases from ¢4 to ¢3 per loaf, while all other prices and the consumer's income remain constant, two effects occur that influence the consumer's purchasing decision.

- Explain what happens due to the substitution effect (4 marks)
- Explain what happens due to the income effect (4 marks)

Question 5 (10 marks)

Sarah has a monthly income of ¢600 and spends it on two goods: rice (R) and fish (F). Initially:

- Price of rice (PR) = ¢12 per kg
- Price of fish (PF) = ¢30 per kg
- Sarah's optimal consumption: 20 kg rice, 10 kg fish

The price of rice falls to ¢9 per kg. After the price change:

- At the substitution effect stage: 25 kg rice, 9 kg fish
 - At the final equilibrium: 30 kg rice, 12 kg fish
- Calculate the total effect on rice consumption (**2 marks**)
 - Calculate the substitution effect on rice consumption (**2 marks**)
 - Calculate the income effect on rice consumption (**2 marks**)
 - Verify your calculations by showing: Total Effect = Substitution Effect + Income Effect (**4 marks**)

Question 6

Ama spends her entire monthly budget of GH¢1,200 on two goods: clothing and food.

- If the price of clothing decreases from GH¢60 to GH¢40 per unit while the price of food remains constant at GH¢20 per unit, analyse Ama's original and new budget constraints and how this change affects her purchasing power. (**7 marks**)
- Distinguish between the substitution effect and the income effect that result from this price change. (**7 marks**)
- Analyse a scenario where clothing could be an inferior good for Ama. Explain how the substitution and income effects would interact in this case. (**6 marks**)

Question 7

Consider the market for petrol in Ghana.

- When the government removed fuel subsidies in recent years, petrol prices increased significantly. Analyse how both substitution and income effects contributed to the change in petrol consumption that followed. **(6 marks)**
- For a taxi driver in Accra, evaluate whether petrol would be considered a normal good, an inferior good, or Giffen good. Justify your answer by explaining how the income and substitution effects would operate when petrol prices increase. **(7 marks)**
- The government is considering two alternative policies: (i) providing direct cash transfers to low-income households or (ii) reintroducing petrol subsidies. Using your understanding of income and substitution effects, compare the economic efficiency of these two approaches in helping citizens cope with higher living costs. **(7 marks)**

PLC Session 4

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to
 - explain the week's concepts in a practical way that will make it easier for learners to understand
 - identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
- Use your subject specific app to plan your lesson. Ask the app to
 - suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

- Plan the week's key assessment with your app
 - The key assessment for the week is **group homework**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the essay (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
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30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
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5 minutes

Reflection

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8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

Section 2 Review

The lessons taught in section are limited to the concept of utility from learners' experiences, and the law of diminishing marginal utility. The lesson focused on the substitution and income effects. The lesson helped learners to explain the substitution and income effects. Learners were able to present both effects mathematically. The teacher employed collaborative learning as the pedagogy for the lesson.

Teaching and Learning Resources

Week 4: Textbooks, Exercise books, Internet, Computer Lab, Markers Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Teacher Assessment Manual and Toolkits for Curriculum Trial Handbook for Teachers

Economics PLC Handbook

Textbooks

Adu, G. (2022). *Residential Energy Demand in Ghana: Income and Price Effects via QUAIDS Model*. Cogent Economics & Finance, 10(1), 2082670.

GyekeDako, A., Addae, A. Y., & Dzansi, J. (2023). *Managerial Economics and Business Strategy* (8th ed.). University of Ghana Business School.

Lipsey, R. G., & Chrystal, K. A. (2020). *Economics* (14th ed.). Oxford University Press.

Nicholson, W., & Snyder, C. (2018). *Microeconomic Theory: Basic Principles and Extensions* (12th ed.). Cengage.

Pindyck, R. S., & Rubinfeld, D. L. (2012). *Microeconomics* (8th ed.). Pearson.

MARKING SCHEME FOR THE KEY ASSESSMENTS

WEEK 4

Question 1

- Substitution Effect Definition (2 marks): When the price decreases, the good becomes relatively cheaper compared to other goods, so consumers substitute away from other goods toward this good.
- Income Effect Definition (2 marks): When price decreases, consumers' real purchasing power (real income) increases, enabling them to buy more of all normal goods.
- Clear explanation of individual influence (1 mark): Both effects work in the same direction for normal goods, leading to increased consumption.

Question 2

- Part (a) - Real income calculation (3 marks)
 - Initial purchasing power: $800/10 = 80$ units of X (1 mark)
 - New purchasing power: $800/8 = 100$ units of X (1 mark)
 - Change in real income: $100 - 80 = 20$ additional units or 25% increase (1 mark)

- Part (b) - Additional units calculation (3 marks)
 - Money saved per unit: $10 - 8 = \text{GH¢}2$ (1 mark)
 - If buying same quantity as before (80 units): $80 \times 2 = \text{GH¢}160$ saved (1 mark)
 - Additional units affordable: $160/8 = 20$ units (1 mark)

Question 3

- Substitution Effect Analysis (2 marks): Price decrease makes the good relatively cheaper, substitution effect increases quantity demanded
- Income Effect Analysis (3 marks): Price decrease increases real income, but since it is an inferior good, higher real income decreases quantity demanded of this good
- Opposite Direction Reasoning (2 marks): Clear explanation that substitution effect is positive while income effect is negative for inferior goods
- Overall Outcome Prediction (1 mark): Net effect depends on which is stronger - usually substitution effect dominates, so demand increases but less than for normal goods

Question 4

a. Substitution Effect (4 marks)

- Definition: When price of bread falls, bread becomes relatively cheaper compared to other goods (1 mark)
- Consumer behaviour: Consumer substitutes bread for other relatively more expensive goods (1 mark)
- Direction: Consumer buys more bread because it is now cheaper relative to substitutes (1 mark)
- Isolation: This effect occurs even if real purchasing power remained unchanged (**1 mark**)

b. Income Effect (4 marks)

- Definition: When bread price falls, consumer's real purchasing power increases (1 mark)
- Explanation: Same money income can now buy more goods than before (1 mark)
- Normal good assumption: If bread is a normal good, increased real income leads to more bread consumption (1 mark)
- Overall impact: Consumer feels richer and can afford more of all goods including bread (**1 mark**)

Question 5

a. Total Effect (2 marks)

- Calculation: Final consumption - Initial consumption = $30 - 20 = 10$ kg (1 mark)
- Interpretation: Total increase in rice consumption is 10 kg (**1 mark**)

b. Substitution Effect (2 marks):

- Calculation: Consumption at substitution stage - Initial consumption = $25 - 20 = 5$ kg (1 mark)

- Interpretation: Pure substitution increases rice consumption by 5 kg (**1 mark**)

c. Income Effect (2 marks)

- Calculation: Final consumption - Consumption at substitution stage = $30 - 25 = 5$ kg (1 mark)
- Interpretation: Income effect increases rice consumption by 5 kg (**1 mark**)

d. Verification (4 marks)

- Substitution Effect: 5 kg (1 mark)
- Income Effect: 5 kg (1 mark)
- Sum: $5 + 5 = 10$ kg (1 mark)
- Verification: Total Effect (10 kg) = Substitution Effect (5 kg) + Income Effect (5 kg) (**1 mark**)

Question 6

Part a) (7 marks)

- Original Budget Constraint Analysis (**2 marks**): correctly identifying that the original budget constraint is represented by the equation $60C + 20F = 1,200$, where C represents units of clothing and F represents units of food. This means Ama could purchase a maximum of 20 units of clothing (if she spent her entire budget on clothing) or 60 units of food (if she spent everything on food).
- New Budget Constraint Analysis (**2 marks**): After the price decrease, the new budget constraint becomes $40C + 20F = 1,200$. This means Ama can now purchase a maximum of 30 units of clothing (if she spent her entire budget on clothing) or still 60 units of food (if she spent everything on food).
- Purchasing Power Analysis (**3 marks**): Ama's purchasing power has increased even though her nominal income remains the same. This represents an increase in real income. Before, she could afford any combination along the original budget line; now she can afford all those combinations plus additional ones. Any consumption bundle that was previously affordable remains affordable, and new combinations become available.

Part b) (7 marks)

- Definition of Substitution Effect (**0.5 mark**): The substitution effect is the change in consumption that results from a change in the relative prices of goods, holding real income (purchasing power) constant. It represents how the consumer substitutes toward the relatively cheaper good and away from the relatively more expensive good.
- Definition of Income Effect (**0.5 mark**): The income effect is the change in consumption that results from the change in purchasing power (real income) due to the price change, while keeping relative prices constant. It shows how consumption changes simply because the consumer can now afford different combinations of goods.
- Application to Ama's Scenario - Substitution Effect (**2 marks**): In Ama's case, the substitution effect leads her to consume more clothing and less food because clothing has become relatively cheaper.
- Application to Ama's Scenario - Income Effect (**2 marks**): The income effect for Ama means that since her purchasing power has increased (her real income has risen due to the

price decrease), she can afford more of both goods. If both clothing and food are normal goods, she will consume more of both.

- **Direction of Effects for Different Types of Goods (2 marks):** For normal goods like clothing (assuming it is normal), both the substitution and income effects work in the same direction to increase consumption. If clothing were an inferior good, the income effect would work in the opposite direction of the substitution effect, potentially leading to a smaller overall increase or even a decrease in clothing consumption.

Part c) (6 marks)

- **Definition of inferior good (1 mark):** An inferior good is one for which demand decreases as income rises
- **Explanation of positive substitution effect (2 mark):** Substitution effect remains positive (price decrease causes movement toward clothing)
- **Explanation of negative income effect for inferior goods (2 mark):** Income effect would be negative for an inferior good (increased purchasing power causes movement away from clothing)
- **Analysis of opposing directions of effects (1 mark):** These effects oppose each other

Question 7

Part a) (6 marks)

- **Direction of substitution effect with price increase (1 mark):** Price increase causes consumers to substitute away from petrol toward alternatives (public transport, carpooling, less travel)
- **Examples of substitution possibilities (1 mark):** Price increase reduces real purchasing power, leading to reduced consumption of all normal goods, including petrol
- **Direction of income effect with price increase (1 mark):** Income effect: Price increase reduces real purchasing power, leading to reduced consumption of all normal goods, including petrol
- **Analysis of combined effect (1 mark):** Price increase reduces real purchasing power, leading to reduced consumption of all normal goods, including petrol
- **Contextual analysis for Ghana (1 mark):** Price increase reduces real purchasing power, leading to reduced consumption of all normal goods, including petrol
- **Timing considerations of adjustment (1 mark):** Price increase reduces real purchasing power, leading to reduced consumption of all normal goods, including petrol

Part b) (7 marks)

- **Appropriate classification with justification (1 mark):** Petrol for taxi drivers is a production input, not simply a consumption good
- **Analysis of petrol as production input (1 mark):** A necessary normal good with inelastic demand
- **Substitution effect analysis (2 marks):** Substitution effect is limited in short term (cannot easily switch to electric vehicles)
- **Income effect analysis (2 marks):** Income effect is strongly negative (reduced purchasing power)

- Conclusion with justified classification (**1 mark**): Cannot be a Giffen good as taxis must consume petrol to generate income. Drivers may respond through other means (more efficient driving, selective customer acceptance) Conclusion: Normal good with highly inelastic demand due to occupational requirements

Part c) (7 marks)

- Analysis of direct cash transfers (**3 marks**): Affect only the income effect, not the substitution effect, preserve market price signals encouraging efficient resource allocation, allow consumers to optimise based on their preferences, and can be targeted to those most in need
- Analysis of petrol subsidies (**3 marks**): Distorts both income and substitution effects, creates deadweight loss by artificially lowering price below market level, benefits high-consumption (often wealthier) individuals more and discourages conservation and efficient usage
- Economic efficiency conclusion with justification (**1 mark**): Cash transfers are more economically efficient as they address income concerns without distorting market signals and substitution effects

SECTION 3: FIRM AND INDUSTRY

STRAND: **FIRMS' INNOVATIVE DECISION MAKING**

Sub-Strand: **Production of goods and services**

Week 5

Content Standard: *Demonstrate knowledge and understanding of Economies and Diseconomies of Scale*

Learning Outcome: Describe Economies of scale and Diseconomies of scale

Week 6, 7 & 8

Content Standard: *Demonstrate knowledge and understanding of Equilibrium of firms in an Industry and how prices are discriminated*

Learning Outcome: Describe the equilibrium of firms in an industry and how prices are discriminated

INTRODUCTION AND SECTION SUMMARY

Section three covers firms' innovation decision making, focusing on the production of goods and services. There are two learning outcomes for the section which are learners are to describe economies of scale and diseconomies of scale and to compare economies of scale to diseconomies of scale. Specifically, learners are expected to understand how to determine equilibrium in the firm and industry.

Teachers should note that the concept of production of goods and services is linked to Home Economics and Manufacturing.

The weeks and the indicators covered by the section are:

- *Week 5: Describe Economies of scale and Diseconomies of scale and Compare Economies of scale to Diseconomies of scale*
- *Week 6 & 7: Determine the equilibrium situation in a firm and in an industry*
- *Week 8: Explain the objectives of the firms in an industry and Identify price discrimination in the market*

Recap

Year 1	Week 10: Relating Production to Productivity
Year 2	Week 7: Time Periods and Method of Production Week 8: The Concept of Cost Week 9: The Concept of Revenue

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogies to the teacher. These are collaborative learning and talk for learning approaches. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to explain the meaning of economies of scales and diseconomies of scales as well as clearly identify the differences and similarities. In Talk for Learning, the teacher is expected to guide learners to develop activities that will lead to discussing equilibrium in the firm, equilibrium in the industry and the objectives of firms in industry.

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessment in this section are level 3 for week five and level 4 for the rest of the weeks. Teachers should note that only level two, three and four questions are provided under key assessments to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
1. Describe Economies of scale and Diseconomies of scale	3	Strategy: Group Mode: Homework
2. Compare Economies of scale to Diseconomies of scale	4	Mid-Semester Examination
3. Determine the equilibrium situation in a firm and in an industry	4	Strategy: Individual Mode: Class Work
4. Explain the objectives of the firms in an industry	4	Strategy: Group Mode: Homework
5. Identify price discrimination in the market		

WEEK 5

Learning Indicators

1. *Describe Economies of scale and Diseconomies of scale*
2. *Compare Economies of scale to Diseconomies of scale*

Focal Area 1: Economies of Scale

Introduction

Economies of scale refer to the cost advantages a firm enjoys as it increases its scale of production. When a business grows and produces more goods, the average cost per unit declines because certain costs are spread across more units.

In simple terms, the bigger the business, the cheaper it becomes to produce each item if the expansion is managed well.

Types of Economies of Scale

1. Internal Economies of Scale

These are cost savings generated within the firm. They are cost advantages or cost savings enjoyed by a firm as a result of an increase in its scale of production, arising from factors within the firm. As the firm expands, it becomes more efficient and reduces its average cost of production.

Examples

- a. **Technical Economies:** A large cement company like Ghacem can afford advanced machines that produce faster and more efficiently than small firms.
- b. **Managerial Economies:** Unilever Ghana can hire skilled experts for production, finance, and marketing, making operations more efficient.
- c. **Purchasing Economies:** Kasapreko can buy raw materials like bottles or labels in bulk at lower prices.
- d. **Marketing Economies:** A big company like MTN can advertise across the country at a lower cost per customer compared to a small local network.
- e. **Financial Economies:** Banks are more likely to offer lower interest rates to large, stable companies like GCB Bank than to small businesses.
- f. **Welfare economies:** A large firm can provide better working conditions for its workers, such as good salaries, health services, and safe workplaces. This improves worker motivation and productivity, which reduces the cost of production.
- g. **Research economies:** Big firms can afford to invest in research and development. This helps them discover new methods of production, improve product quality, and reduce waste, leading to lower costs.

2. External Economies of Scale

These are cost savings that come from outside the firm, usually because many firms are located in the same area or industry.

Examples

- Skilled Labour Pool:** In Suame Magazine, where many car mechanics work, firms can easily find skilled workers without high training costs.
- Shared Infrastructure:** In an agro-processing zone in the Eastern Region, firms can share roads, electricity, and water supplies.
- Support Services:** In areas like Spintex Road in Accra, nearby delivery companies, repair shops, and suppliers make it cheaper for large firms to operate.

Scenario

A rice milling business in the Volta Region starts small and buys 50 bags of rice monthly. As it grows, it starts buying 500 bags and negotiates discounts. It hires a skilled manager, installs a faster milling machine, and shares storage space with other nearby rice farmers. Now, its average cost per bag of milled rice drops. This is economies of scale in action.

Key Benefits of Economies of Scale

Type of Economy	Benefit
Technical	Nestlé Ghana uses automated machines to produce more milk tins at a lower cost.
Managerial	Voltic hires specialists to improve efficiency and reduce waste.
Purchasing	A large cocoa exporter buys sacks in bulk at lower prices.
Marketing	Vodafone runs a nationwide ad campaign, reducing cost per customer reached.
Financial	A large company gets cheaper loans than a small, unknown business.
External (Infrastructure)	Businesses at Tema Port benefit from shared transport networks.

Learning Tasks

- Recap the concept of production of goods and services by linking production to productivity, identifying methods of production, the concept of cost and revenue.
- Research and discuss the meaning of economies of scale. In your discussion, focus on types of:
 - Internal economies of scale
 - External economies of scale
- Find two real-world examples (local or global companies) that benefit from economies of scale. Briefly explain:
 - What type of economies of scale they benefit from.
 - How this affects their production costs and market competitiveness.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed gender and ability groupings, discuss the meaning of economies of scale. Give equal opportunity to all students.

Focal Area 2: Diseconomies of Scales

Introduction

Diseconomies of scale refer to the increase in average cost per unit as a firm becomes too large and expands its production beyond the optimal level. Instead of enjoying cost benefits, the firm starts encountering challenges that elevate its production costs.

In simple terms, as a company grows too large, it may experience issues such as poor communication, low employee motivation, or management challenges that make producing each product more expensive.

Types of Diseconomies of Scale

1. Internal Diseconomies of Scale

These are problems that occur within the firm as it expands. Internal diseconomies of scale are the increases in average cost of production that occur as a firm expands its scale of operation due to inefficiencies arising within the firm.

Examples

- a. **Managerial Diseconomies:** In large firms like a cocoa processing company in Tema, too many managers and departments may cause slow decision-making and poor coordination, increasing production costs.
- b. **Labour Diseconomies:** In a large garment factory in Accra, workers may feel less motivated or may go unnoticed, leading to low productivity and more errors.
- c. **Technical Diseconomies:** When a large cement factory uses complex machines, the breakdown of one major machine can stop the whole process, leading to higher repair and maintenance costs.
- d. **Communication Diseconomies:** In a growing mobile money service provider, communication between regional and head offices may slow down, leading to inefficiencies and delays.

2. External Diseconomies of Scale

These are cost increases that come from outside the firm, usually because too many firms are operating in the same industry or area.

Examples

- a. **Overcrowding:** In a busy industrial area like the North Industrial Area in Accra, heavy traffic and congestion can delay deliveries and increase transport costs.
- b. **Rising Input Costs:** If many poultry farms in Dormaa are buying the same feed, the price of feed may rise due to high demand, increasing costs for all farms.

- c. **Pollution and Regulation:** As more mining companies operate in Tarkwa, environmental pollution may increase. Government may introduce strict regulations or fines, which increase costs for each firm.

Scenario

Imagine a Bread production business in Madina that started with 3 workers. It was efficient and made profits. As demand increased, the owner hired 20 workers and moved into a larger kitchen. However, with more people:

1. It became harder to manage them,
2. Some workers waited around with no work,
3. Mistakes increased and quality dropped,
4. And the cost of buying flour in bulk went up.

As a result, average cost per loaf of bread increased instead of decreasing. This is **diseconomies of scale**.

Key Causes of Diseconomies of Scale

Cause	Explanation
Managerial Problems	More supervisors and longer reporting lines in large companies like GOIL can slow down decisions.
Poor Worker Motivation	Workers in supermarkets may feel they are not valued, leading to low effort.
High Maintenance Cost	Using large industrial machines at Aluworks can be costly to maintain.
Communication Breakdown	Difficult to share timely information in large banks like GCB across regions.
Increased Regulation	EPA regulations on large plastic producers may add extra compliance costs.
Traffic & Congestion	Delivery delays in places like Accra Central increase fuel costs for large distribution firms.

Learning Tasks

1. Search reliable sources to discuss and define different diseconomies of scale.
2. Identify at least three causes
3. Read a brief case study about a company that grew too large and began to experience diseconomies of scale.
 - i. What signs of diseconomies can you identify?
 - ii. What were the effects on productivity, costs, or employee morale?

Sample Case Studies

Case Study 1: MegaMart's Management Struggles

Background

MegaMart is a large retail chain that expanded rapidly across the country. Within five years, it opened over 200 branches and hired thousands of employees. However, profits began to fall despite increasing sales.

Problems Observed

- Local store managers complained about slow decision-making from head office.
- Employees became demotivated due to lack of recognition and communication breakdowns.
- There was duplication of roles, causing inefficiencies and rising administrative costs.

Discussion Questions

1. What types of diseconomies of scale is MegaMart facing?
2. How could the company restructure to reduce these issues?

Case Study 2: GiantTech's Communication Crisis

Background

GiantTech, a global technology firm, grew rapidly through mergers and acquisitions. Its workforce grew from 5,000 to 50,000 employees within three years. Though it had the best engineers, projects began to slow down.

Problems Observed

- Teams worked in silos with poor interdepartmental communication.
- Projects were delayed due to lack of coordination.
- Managers spent more time in meetings than making decisions, slowing down innovation.

Discussion Questions

1. Which type(s) of diseconomies of scale are evident here?
2. What could GiantTech do to improve internal communication?

Case Study 3: SuperBread Bakery Expansion Woes

Background

Super Bread was a small, successful local bakery. Encouraged by early profits, the owner opened 10 more branches in different cities. As operations expanded, quality and customer satisfaction declined.

Problems Observed

- Hiring many new, less-skilled workers led to inconsistent product quality.
- Transportation of ingredients to distant locations increased logistical costs.
- Local managers were poorly trained, causing delays and customer complaints.

Discussion Questions

1. Identify at least two diseconomies of scale in this case.
2. What advice would you give to the owner to manage the growing business better?

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed gender and ability groupings, discuss the meaning of diseconomies of scale. Support learners during their group discussion. Ensure all learners participate in the group work.

Focal Area 3: Comparison of Economies and Diseconomies of Scales

Feature	Economies of Scale	Diseconomies of Scale
Meaning	A situation where the average cost per unit falls as the firm increases production.	A situation where the average cost per unit rises as the firm becomes too large.
Effect on Average Cost	Reduces the average cost of production.	Increases the average cost of production.
Impact on Profit	Profit margins tend to increase due to lower costs.	Profit margins may decrease due to higher operating costs.
Business Size	Occurs when a firm expands efficiently.	Occurs when a firm becomes too large to manage effectively.
Causes	Specialisation, bulk buying, improved technology, access to cheaper finance.	Poor coordination, low staff morale, overcrowding, and weak supervision.
Managerial Efficiency	High—functions are clearly defined and tasks are well organised.	Low—confusion or duplication of roles due to complexity.
Workforce Productivity	High—staff become more skilled and efficient through repetition.	Low—workers may feel less motivated or underused.
Examples in Ghana	A growing sachet water company in Kumasi buys packaging in bulk and reduces costs.	A large transport company in Accra struggles with vehicle maintenance and driver delays.
Communication	Becomes more streamlined with better systems.	Slows down as more departments are added.
Customer Service	Often improves due to better facilities and training.	May decline if customer concerns are lost in bureaucracy.
Financial Effect	Leads to cost savings and improved competitiveness.	Leads to cost increases and potential inefficiency.

Example

1. A cassava flour factory in the Central Region reduces its unit cost by buying more cassava at wholesale prices and using faster machines, this is economy of scale.
2. As more cassava flour factories are added to the business, more employees need supervision, production mistakes are more likely to cause delays in delivery, this is a diseconomy of scale.

Learning Tasks

1. Use a Venn diagram or table to compare economies and diseconomies of scale. Include:
 - i. Definitions
 - ii. Causes
 - iii. Effects on average cost
2. Conduct case scenario analysis to evaluate the possible economies and diseconomies of scale the firm might face. Questions to consider are:
 - i. At what point might expansion stop being cost-effective?
 - ii. What indicators should the firm watch for?
 - iii. What strategies can they adopt to maximise economies and minimise diseconomies?

Sample Case Scenarios

Case Scenario 1: CocoaDelight Ghana Ltd.

Industry: Agro-processing (Cocoa-based products)

CocoaDelight started as a small family-owned cocoa processing business in Ghana. Due to rising demand locally and internationally, the company expanded its operations by buying new machines, hiring more workers, and building two new production centres in different regions.

Positive Outcomes

- Bulk purchase of cocoa beans reduced raw material costs.
- Modern machines increased productivity.
- Skilled technicians reduced wastage and errors.

Emerging Problems

- Managers complained of longer decision-making chains.
- Some workers reported feeling disconnected and demotivated.
- Transportation costs rose due to operations spread across regions.

Questions for Discussion

1. What economies of scale are CocoaDelight benefiting from?
2. What diseconomies of scale are starting to appear?

3. What advice would you give to maintain efficient growth?

Case Scenario 2: TechEdge Innovations

Industry: Software Development

TechEdge began with 10 developers in a small office, building mobile apps. After getting international contracts, they expanded to 300 employees across four countries.

Positive Outcomes

- Specialised teams improved efficiency and product quality.
- Shared services (e.g., HR, legal) reduced administrative costs.

Emerging Problems

- Communication between country offices became difficult.
- Cultural and time-zone differences delayed projects.
- Too many managers slowed down decision-making.

Questions for Discussion

1. What internal economies of scale has TechEdge achieved?
2. What internal diseconomies are emerging?
3. How can they retain the benefits of scale while reducing the drawbacks?

Case Scenario 3: Fresh Harvest Farms

Industry: Agribusiness

Fresh Harvest Farms began as a small vegetable farm. It later expanded to include poultry, grains, and dairy, buying land in different regions and employing over 500 workers.

Positive Outcomes

- Buying in bulk reduced fertiliser and feed costs.
- Vertical integration reduced reliance on external suppliers.

Emerging Problems

- Managing diverse farm operations became complex.
- Employee training and supervision became more difficult.
- Increased bureaucratic layers caused delays in decision-making.

Questions for Discussion

1. Identify the economies and diseconomies of scale in this scenario.
2. At what point should Fresh Harvest reconsider further expansion?
3. Suggest strategies to deal with complexity and maintain efficiency.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed gender and ability groups, compare Economies and Diseconomies of scale and outline clearly the differences and similarities and present their work using PowerPoint.

Key Assessment – Group Homework

Question 1 (6 marks)

- Define economies of scale and diseconomies of scale. **(4 marks)**
- List three specific examples of each that a manufacturing company might experience. **(2 marks)**

Question 2 (8 marks)

Analyse why a small bakery might initially experience economies of scale when expanding production but eventually face diseconomies of scale. **(8marks)**

Question 3 (10 marks)

A textile company is considering expanding from producing 1,000 units per month to 5,000 units per month. The current average cost is GH¢50 per unit, but with expansion, they expect the average cost to fall to GH¢35 per unit initially, then rise to GH¢45 per unit at maximum capacity.

Evaluate the economic implications of this expansion strategy and recommend the optimal production level. **(10 marks)**

Question 4 (12 marks)

Ghana's cocoa processing industry has both small-scale local processors and large multinational companies. The government is considering a policy to encourage small processors to merge and form larger cooperatives.

Critically evaluate this policy by:

- Comparing the economies of scale and diseconomies of scale of small vs. large cocoa processors **(4 marks)**
- Assessing potential benefits and risks of the merger policy **(4 marks)**
- Recommending alternative strategies with justification **(4 marks)**

Question 5

A manufacturing company in Ghana is considering expanding its production capacity from producing 1,000 units per month to 5,000 units per month.

- Distinguish between internal and external economies of scale, providing two specific examples of each that this manufacturing company might experience during expansion. **(8 marks)**
- Analyse whether the company should proceed with the expansion if the minimum efficient scale in this industry is estimated to be 3,000 units per month. Consider both economic and strategic factors in your answer. **(12 marks)**

Question 6

The telecommunications industry in Ghana has seen significant growth and consolidation in recent years.

- Explain three specific causes of diseconomies of scale that a large telecommunications company might experience after a period of rapid expansion. **(9 marks)**

- b. Analyse how diseconomies of scale might affect a telecommunications company's decisions regarding organisational structure and management practices. Support your answer with relevant examples. (11 marks)

PLC Session 5

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group homework**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the homework (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about ‘How do I teach this?’ but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
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WEEK 6

Learning Indicator: Determine the equilibrium situation in a firm and in an industry

Focal Area 1: Equilibrium Situation in the Firm

Definition

A firm: It is a business unit that organises resources such as land, labour, capital, and entrepreneurship to produce goods and services for sale, usually to make a profit.

Marginal Revenue (MR): The additional revenue gained from selling one more unit of a product.

Marginal Cost (MC): The additional cost incurred from producing one more unit of a product.

Introduction

The equilibrium situation of a firm refers to the point where the firm is maximising its profits or minimising its losses. At this point, the firm has no incentive to change its level of output or price. In the Ghanaian context, firms across various sectors, from manufacturing to services, aim to achieve this optimal position.

A firm is said to be in equilibrium when it has no incentive to change its level of output because it is maximising profit or minimising loss.

Conditions for equilibrium in a firm

A firm reaches equilibrium under the following conditions:

1. Marginal Cost (MC) = Marginal Revenue (MR)
2. And MC cuts MR from below.

This is the point where the firm earns the maximum possible profit or the minimum possible loss. When $MR > MC$, a firm should increase production as additional units add more to revenue than to costs. When $MR < MC$, a firm should reduce production as additional units add more to costs than to revenue. Only when $MR = MC$ is the firm maximising its profits.

It is important to produce at the equilibrium output because at the optimal output level, when a firm is making positive profit, it achieves the highest by producing at the equilibrium output. On the other hand, if a firm is making losses, it makes the least when it produces at the equilibrium output level.

Example

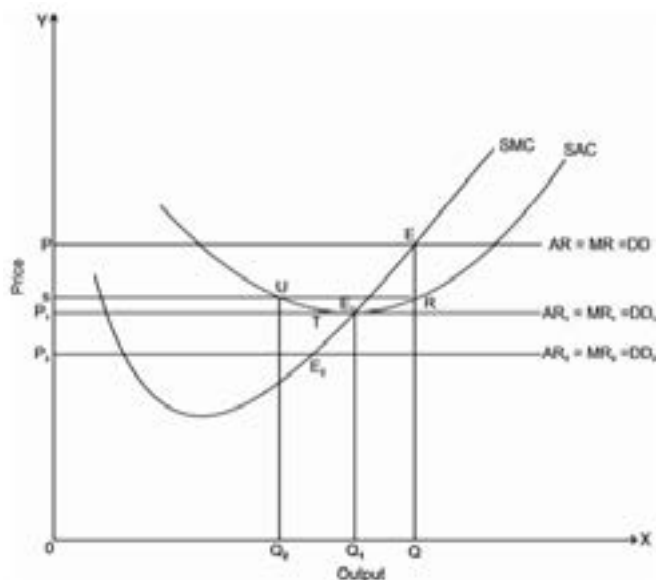
Consider Kasapreko Company Limited, a beverage-producing firm in Ghana. Kasapreko is in equilibrium when it produces a level of drinks where the cost of producing one more bottle (marginal cost) is exactly equal to the revenue it earns from selling that extra bottle (marginal revenue). At this point, the firm is not motivated to increase or reduce output.

If Kasapreko produces less than the equilibrium output, it misses profit. If it produces more than equilibrium, its cost rises higher than revenue, causing a loss.

Short-run Equilibrium Condition

In the short run, a firm may operate even if it is making losses, provided it covers its variable costs.

SHORT RUN EQUILIBRIUM OF THE FIRM UNDER PERFECT COMPETITION

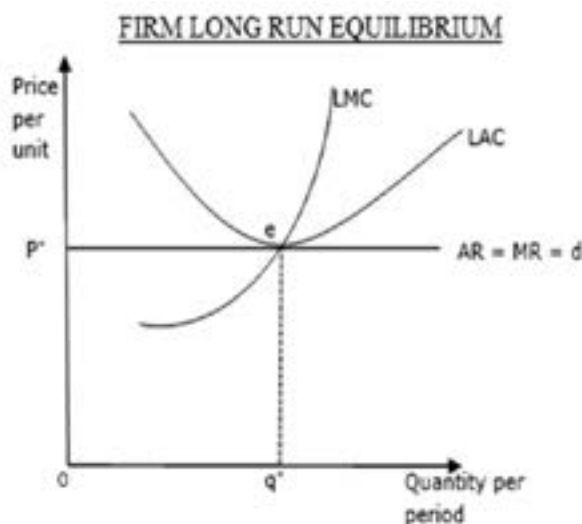


A Firm in the Short Run is in equilibrium at point where the Marginal Revenue (MR) is equal to Marginal Cost (MC), that is, $MR=MC$ and where MC is increasing at the point or MC is cutting MR from below.

Source: Author Generated, 2025

Long-run Equilibrium

In the long run, all costs become variable. A firm will only continue to operate if it makes at least a normal profit ($AR \geq ATC$). If it incurs losses in the long run, the firm will have no option but to shut down.



The diagram illustrates the **long-run equilibrium** of a perfectly competitive firm. In this state, the firm produces at the point where its **long-run marginal cost (LMC)** equals its **long-run average cost (LAC)** and the market price P^* . The horizontal line labeled $AR = MR = d$ represents the firm's perfectly elastic demand curve, showing that it is a price taker. At equilibrium point **e**, the firm produces quantity q^* and earns **zero economic profit**, as the price P^* is equal to the minimum point of the LAC curve. This means the firm covers all its costs, including normal profit, but does not earn any supernormal profit. The firm is operating efficiently, both **productively** (at the lowest average cost) and **allocatively** (since $P=MC$).

Source: Author Generated, 2025

Learning Tasks

1. Write down a definition of “firm equilibrium” in your own words. Then, turn to a partner and explain your definition out loud and listen to theirs.
2. Think-Pair-Explain this scenario: “A firm is producing 200 units at a cost of GH¢4 per unit and selling them at GH¢6 per unit. Focus on the following questions:
 - i. Should the firm increase or reduce output? Why?”
 - ii. Is the firm in equilibrium at 200 units?
 - iii. What information do you need to confirm equilibrium?
 - iv. How do marginal cost and marginal revenue relate here?
3. Think about the situation individually for 2 minutes.
4. Pair with a partner and take turns explaining your reasoning aloud.
5. Summarise what your partner said before sharing their view with the whole class when called upon.

Pedagogical Exemplars

Talk for learning approaches (TfL)

Learners develop activities leading to quality discussions on the equilibrium of the firm. Support learners to write down a correct definition of firm equilibrium in their own words. Encourage learners to participate fully in the class activity. Ensure learners show respect for each other during the activity.

Key Assessment: Mid-Semester Examination

Note: The same indicator is for week 6 and 7, hence assessment questions are the same for both weeks. Check week 7 for assessment questions.

Hint



Conduct **Mid-semester Examination**. It should cover contents taught from Week 1 to 5. Refer to the **Table of Specification and Structure of the Paper**. Learners' papers should be marked immediately and scores entered into the SAP.

Structure

Section A: 25 Multiple-choice questions

Section B: 2 Essay Questions

Table of specification for item construction for section A and B

Week	Learning Indicator	Types of questions	DoK Levels				Total
			1	2	3	4	
1	Calculate Elasticity of Demand for goods and services	MCQs	2	2	-		4
		ESSAY	-	-	-		-
2	Calculate Elasticity of Demand for goods and services	MCQs	2	2	2		6
		ESSAY	-	-	1		1
3	Evaluate factors affecting Elasticity of Demand	MCQs	-	2	1		3
		ESSAY	-	-	-		
4	Explain Substitution and Income Effects in Utility and mathematically represent the substitution and income effects	MCQs	3	2	1		6
		ESSAY					
5	Describe Economies of scale and Diseconomies of scale Compare Economies of scale to Diseconomies of scale	MCQs	1	3	2		6
		ESSAY			1		1
		Total	8	11	8		27

PLC Session 6

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous session, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand.
 - b. identify three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q).
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Use your app to plan and administer the mode of assessment for the Student Assessment Portal (SAP)
 - a. The key assessment for the week is ***mid-semester examination***. Chat with your app to plan this assessment by reviewing or developing the assessment items/tasks and marking schemes/rubrics for the mid-semester examination (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or topic/idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through the problem individually for 3–4 minutes
 - c. the group then works through it together the problem, step by step
 - d. highlight the most common errors made at each step (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
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5 minutes**Reflection**

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WEEK 7

Learning Indicator: Determine the equilibrium situation in a firm and in an industry

Focal Area 1: Equilibrium situation in an Industry

Introduction

An industry is in equilibrium when the forces of supply and demand are balanced, resulting in a stable market price and quantity that show no tendency to change. At equilibrium, quantity demanded is exactly equal to quantity supplied, so there is no pressure for price to rise or fall.

Conditions for industry equilibrium

1. All firms in the industry are in equilibrium ($MC = MR$).
2. No abnormal profit or abnormal loss is being made; only normal profit is earned.
3. Market demand equals market supply; the price remains stable.

The conditions for industry equilibrium vary depending on the market structure.

Perfect Competition

In a perfectly competitive industry, equilibrium is characterised by:

1. Free entry and exit of firms
2. Zero economic profit (normal profit) for all firms
3. Price equals marginal cost ($P = MC$)

Example: The vegetable market at Makola Market in Accra approximates perfect competition. When tomato selling becomes profitable, more sellers enter the market. When profits fall below normal, some sellers exit or switch to other products. Eventually, the price settles where sellers make just enough to stay in business.

Short-run Industry Equilibrium

In the short run, firms in an industry may make supernormal profits or losses because:

1. Entry barriers prevent immediate adjustment
2. Fixed costs cannot be avoided

Example: When cocoa prices rise internationally, Ghanaian cocoa farmers might enjoy supernormal profits in the short run. However, new farmers cannot immediately enter due to the time it takes for cocoa trees to mature.

Long-run Industry Equilibrium

In the long run, an industry reaches equilibrium when:

1. All firms make normal profits
2. No incentive exists for firms to enter or exit the industry
3. Industry supply and demand are balanced

Example: Ghana's mobile phone retail industry has seen periods of entry and exit. After rapid expansion in the 2000s, the industry eventually reached a more stable state where the number of retailers matches consumer demand, with most shops making normal profits.

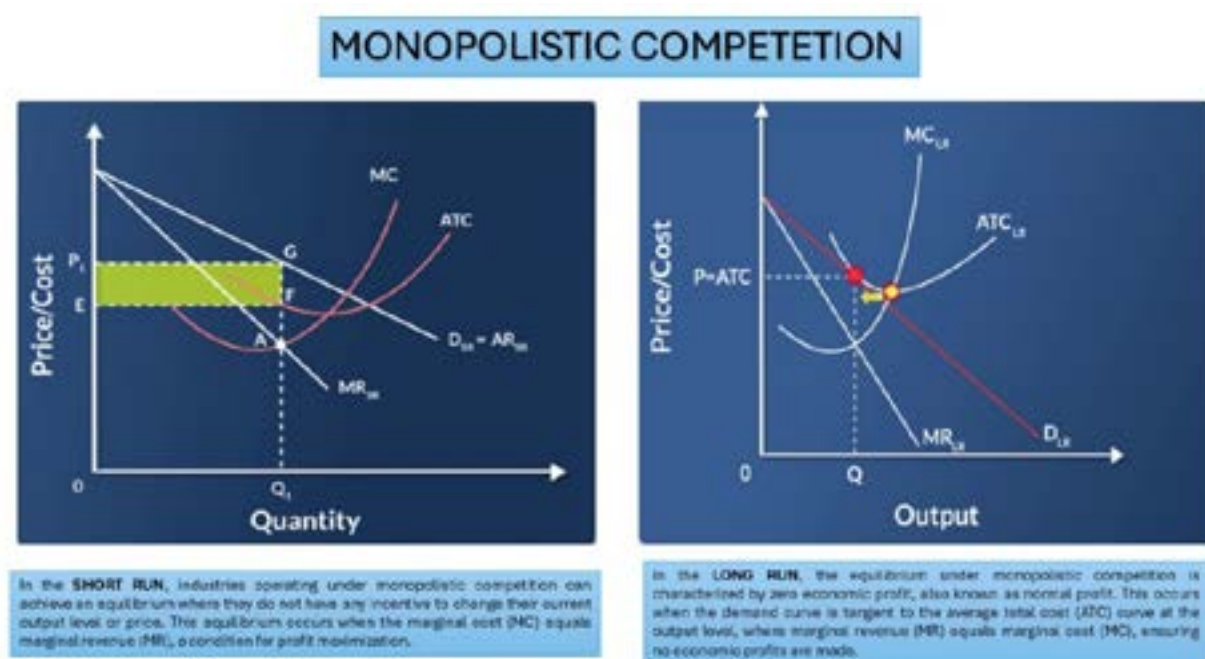
Equilibrium in Different Market Structures

Monopolistic Competition

In monopolistic competition, the long-run equilibrium results in:

1. Zero economic profit (normal profit)
2. Excess capacity (firms produce less than the minimum efficient scale)

Example: Local restaurants in Osu, Accra differentiate their offerings but face competition. In the long run, they earn normal profits and typically operate below full capacity.



Source: Author Generated, 2025

Oligopoly

An **oligopoly** is a market structure where a few large firms dominate the industry. Each firm is aware that its decisions on price, output, and advertising will affect other firms, and those firms may react. This makes decision-making in an oligopoly different from other market structures.

An oligopoly has the following key characteristics. There are only a small number of dominant firms controlling most of the market. The products sold may be similar or differentiated. Firms are interdependent, meaning each firm must consider the possible reactions of rivals before making decisions. There are also barriers to entry, such as high capital requirements, strong brand loyalty, and control over key resources.

Because firms are interdependent, their behaviour follows certain patterns. Firms often avoid price wars because such actions can reduce profits for all. Instead, they compete through advertising, branding, and product improvement.

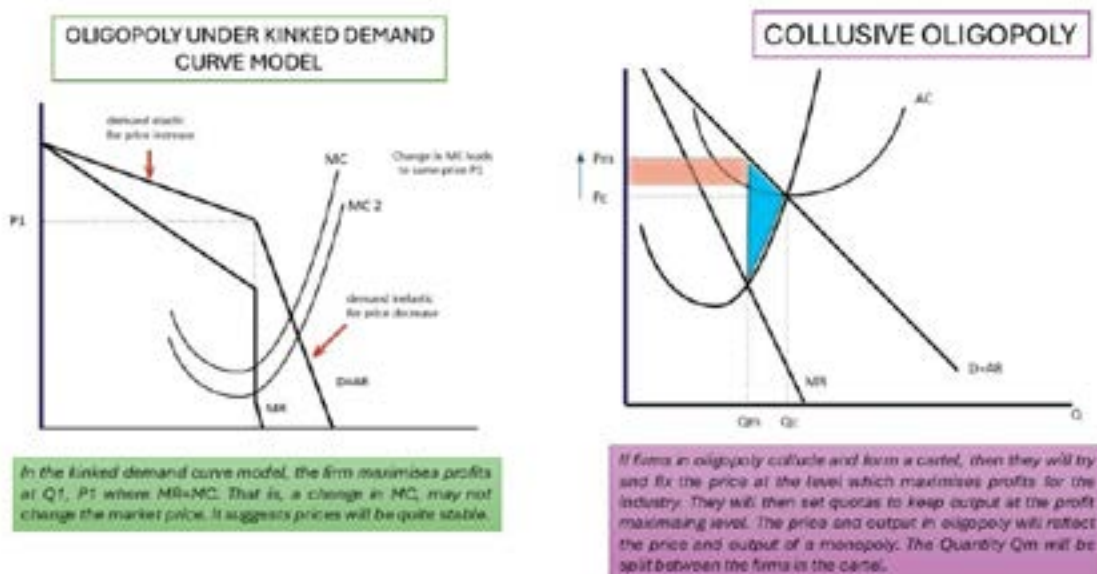
Oligopolistic industries may reach equilibrium through:

1. Collusion (formal or tacit)

2. Price leadership
3. Non-price competition

Example: Ghana's cement industry, dominated by GHACEM, Dangote Cement, and a few others, may reach equilibrium through price leadership, where one firm sets prices and others follow.

OLIGOPOLY



Source: Author Generated, 2025

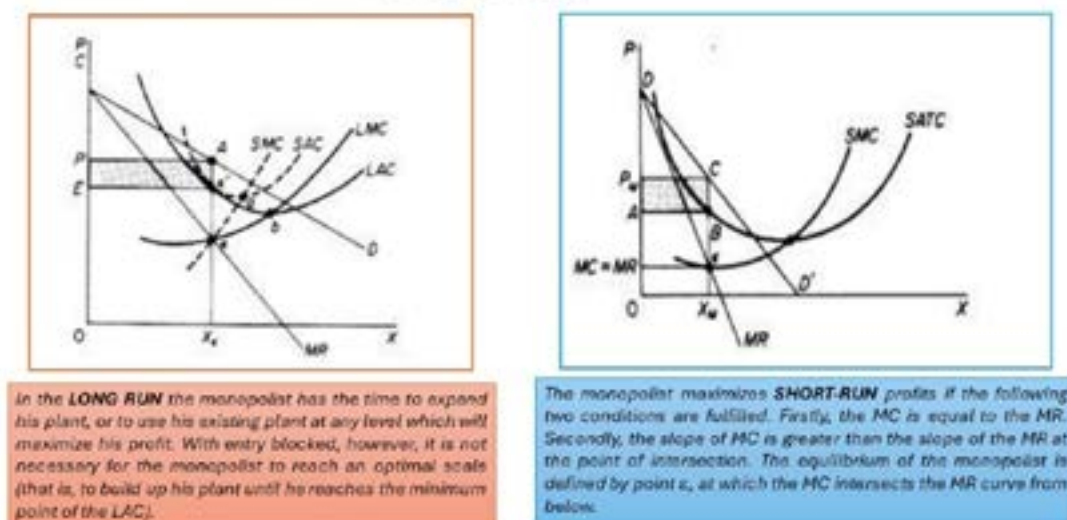
Monopoly

A monopolistic industry is in equilibrium when:

1. The monopolist maximises profit ($MR = MC$)
2. Barriers prevent new entrants

Example: The Electricity Company of Ghana (ECG), as the primary distributor of electricity, operates in a market with significant entry barriers and sets prices to cover costs while meeting regulatory requirements.

MONOPOLY



Source: Author Generated, 2025

Industry Equilibrium Adjustment Process

When an industry is not in equilibrium:

1. Supernormal profits attract new firms, increasing industry supply and driving prices down until only normal profits remain.
2. Losses cause firms to exit, reducing industry supply and driving prices up until remaining firms earn normal profits.

Example: Following the boom in private schools in urban areas of Ghana, increased competition eventually led to a situation where many schools earn just enough to remain viable, with unsustainable schools closing down.

Key Assessment Level 3: Group Class Work

Question 1 (6 marks)

- a. Define equilibrium for a firm and an industry. (4 marks)
- b. Explain the key condition that must be met for each type of equilibrium. (2 marks)

Question 2 (8 marks)

A perfectly competitive firm has the following cost structure:

Fixed Cost = GH¢100

Variable Cost per unit = GH¢20

Market price = GH¢35

- a. Calculate the firm's equilibrium output (6 marks)
- b. Analyse whether the firm should continue production in the short run. (2 marks)

Question 3 (10 marks)

- a. Analyse how a perfectly competitive industry moves from short-run equilibrium to long-run equilibrium when firms are initially making supernormal profits.
- b. Explain the adjustment process and final outcome.

Question 4 (12 marks)

The Ghanaian mobile telecommunications industry initially had only one provider (Ghana Telecom) but was later liberalised to allow multiple competitors, including MTN, Vodafone, and AirtelTigo.

Critically evaluate:

- a. How the equilibrium situation changed from monopoly to a competitive market (4 marks)
- b. The impact on consumer welfare and firm profits (4 marks)
- c. Predict what might happen if the government imposes price controls (4 marks)

Question 5 (14 marks)

The Ghanaian cocoa industry has many small farmers (price takers) selling to COCOBOD, which acts as the only buyer (monopsony). The government is considering allowing private buyers to compete with COCOBOD.

Using economic theory, analyse:

- The current equilibrium situation under monopsony **(3 marks)**
- How equilibrium would change with competitive buyers **(4 marks)**
- Evaluate the potential impacts on farmers, consumers, and the economy **(4 marks)**
- Recommend policy measures to optimize outcomes **(3 marks)**

Question 6: Data Response

The table below shows the cost and revenue data for a firm operating in a perfectly competitive market where the prevailing price is GH¢50 per unit:

Output	Total Cost (GH¢)	Marginal Cost (GH¢)	Average Total Cost (GH¢)
0	100	-	-
1	140	40	140
2	170	30	85
3	210	40	70
4	260	50	65
5	325	65	65
6	405	80	67.5
7	500	95	71.4

- Determine the profit-maximising output level for this firm and calculate its total profit or loss at this output level. Explain your reasoning using the equilibrium condition. **(6 marks)**
- Analyse whether the firm should continue production or shut down in the short run. Support your answer with appropriate calculations and economic reasoning. **(7 marks)**
- Assuming this industry is in long-run equilibrium, explain what would happen to the number of firms, market price, and this firm's output if market demand increased by 20%. **(7 marks)**

Question 7

A monopolist faces the following demand and cost conditions:

Market demand: $P = 200 - 2Q$

Marginal Revenue: $MR = 200 - 4Q$

Marginal Cost: $MC = 40 + 2Q$

Fixed Cost: $FC = 400$

- Calculate the profit-maximising price and output level for this monopolist. Show all working and explain the equilibrium condition being applied. **(6 marks)**
- Determine the monopolist's total profit at this equilibrium and compare this outcome with what would occur if this industry were perfectly competitive. **(7 marks)**
- Evaluate the welfare implications of this monopoly equilibrium, discussing the concepts of consumer surplus, producer surplus, and deadweight loss. **(7 marks)**

PLC Session 7

45 minutes

Planning & Reviewing the Learning Plan

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Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
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WEEK 8

Learning Indicators

1. *Explain the objectives of the firms in an industry*
2. *Identify price discrimination in the market*

Focal Area 1: Objective of the Firms in an Industry

Introduction

Firms in an industry aim to achieve several goals depending on their size, structure, market environment, and ownership. In Ghana, as in many economies, firms operate within various sectors such as agriculture, manufacturing, and services. Their objectives are shaped by economic conditions, government policies, availability of resources, and customer needs.

Below are the major objectives of firms in an Industry:

1. Profit Maximisation

Most private firms in Ghana, especially in competitive sectors like retail trading or mobile money services, seek to earn the highest possible profit. Profit maximisation helps the firm survive, grow, and reward its owners or shareholders. For example, a cocoa processing company in Tema may aim to reduce costs and increase revenue in order to maximise its profits.

2. Growth and Expansion

Firms often aim to grow in size, market share, or product range. Growth can be internal (by increasing production) or external (through mergers or partnerships). In Ghana, a local microfinance firm may open more branches across regions or partner with fintech companies to reach more customers. Expansion helps improve competitiveness and long-term survival.

3. Market Dominance or Market Share

Some firms aim to dominate their industry by capturing a large share of the market. For instance, a cement company in Ghana may offer competitive prices and advertise heavily to become the preferred brand in the construction sector. Achieving market dominance can increase a firm's influence over prices and customer loyalty.

4. Customer Satisfaction

Especially in the service sector (e.g., banking, telecoms, health services), firms in Ghana aim to satisfy customers to retain their loyalty and attract new ones. For example, a private hospital may invest in quality medical equipment and trained staff to ensure that patients are well cared for. Satisfied customers can lead to repeat business and positive word-of-mouth advertising.

5. Social and Community Goals

Some firms, particularly state-owned enterprises or socially responsible businesses, focus on contributing to community development. A Ghanaian utility company like the Electricity Company of Ghana (ECG) may invest in rural electrification to improve the lives of people, even if the immediate profits are low. Similarly, companies may offer scholarships, sponsor education or health projects as part of their corporate social responsibility.

6. Employment Creation

In a country like Ghana where youth unemployment is a major issue, many firms aim to create jobs. A cassava processing factory in a rural area, for example, may hire locals and train them in various roles, reducing rural-urban migration and improving local livelihoods. This objective may also be supported by government incentives.

7. Survival

In difficult economic times, such as periods of high inflation or currency depreciation, some firms focus mainly on survival. For example, during exchange rate fluctuations, an importer of spare parts may reduce imports and focus on essential goods to remain in business. Survival may mean minimising losses or cutting costs until conditions improve.

8. Innovation and Efficiency

To stay competitive, some Ghanaian firms aim to improve their processes, adopt new technologies, or create unique products. For instance, agro-processing companies may invest in modern equipment to process shea butter or palm oil more efficiently. Innovation leads to better productivity, lower costs, and improved product quality.

Learning Tasks

1. List at least three different objectives a firm might have
2. Explain how the firm's objective influences its pricing, marketing, or services
3. Discuss how industry type, competition, and size affect a firm's goals
4. Explain how objectives differ between small and large firms
5. Discuss how objectives might change as a firm grows or faces competition?

Pedagogical Exemplars

Talk for learning approaches (TfL)

Learners discuss the objectives of firms in an industry. Support learners to hold a quality discussion and encourage all learners to participate in the discussion.

Focal Area 2: Price Discrimination in the market

Introduction

Price discrimination refers to a situation where a seller or producer charges different prices for the same product or service to different consumers, not based on differences in production cost, but based on factors such as income level, age, gender, geographical location, or willingness to pay.

It is most common in imperfect markets, especially under monopoly or monopolistic competition, where producers have some degree of price-setting power.

Types of Price Discrimination

1. First-Degree Price Discrimination (Perfect Price Discrimination)

The seller charges each consumer the maximum price they are willing to pay.

This type is rare in practice because it requires detailed knowledge of each consumer's willingness to pay.

Example: A tailor in a rural Ghanaian town may charge different prices to different customers based on how wealthy they appear or how much bargaining they do.

2. Second-Degree Price Discrimination (Quantity-Based Discrimination):

Prices vary according to the quantity purchased or the version of the product.

Buyers who purchase in larger quantities often receive discounts.

Example: Ghana Water Company giving lower rates per unit to consumers who use fewer litres of water, but higher rates to those who consume more.

3. Third-Degree Price Discrimination (Group-Based Discrimination):

Consumers are grouped based on observable characteristics such as age, location, or occupation.

Each group is charged a different price.

Example: Public transport operators in Ghana offering discounted fares to students and pensioners.

Conditions Necessary for Price Discrimination to Occur

1. **Market Power:** The seller must have some control over the price (i.e., not in perfect competition).
2. **Market Segmentation:** The seller must be able to divide the market into distinct groups with different price elasticities of demand.
3. **Prevention of Resale:** Consumers must not be able to resell the product or service to others at a lower price.
4. **Differences in Elasticity of Demand:** The seller charges higher prices to groups with inelastic demand and lower prices to those with elastic demand.

Reasons for Price Discrimination

1. To maximise profits by capturing consumer surplus.
2. To increase market coverage by making goods affordable to lower-income groups.
3. To clear excess stock by offering discounts to price-sensitive customers.
4. To reward loyalty or promote specific social groups (e.g., discounts for students).

Advantages of Price Discrimination

1. Producers can earn more revenue and profit, which may be used to improve services.
2. Lower-income consumers may access goods they could not otherwise afford.
3. Encourages efficient use of resources, especially when off-peak pricing is applied (e.g., electricity or transport).
4. It may cross-subsidise services, allowing firms to offer services in less profitable areas.

Disadvantages of Price Discrimination

1. It may be seen as unfair or exploitative, especially when wealthier groups pay less in certain cases.
2. It can lead to reduced consumer surplus and inequality.
3. Difficult to implement without full information about the market.
4. Can discourage competition, especially in monopolistic environments.

Practical Examples

1. Electricity Company of Ghana (ECG) charging different rates for domestic and commercial users.
2. Transport fares differ between students and regular adults.
3. Promotional mobile data bundles for specific customer groups (e.g., night-time users, students).
4. Hospitals offering lower consultation fees to NHIS cardholders compared to private patients.

Learning Tasks

1. Explain price discrimination in a market.
2. Identify the types of price discrimination in a market.
3. What conditions necessitate the occurrence of price discrimination?
4. What are the advantages and disadvantages of price discrimination in a market?

Pedagogical Exemplars

Talk for learning approaches (TfL)

Learners develop activities leading to quality discussions on price discrimination. Give equal opportunity to all learners.

Key Assessment – Individual Class Work

QUESTION 1

- a. What is the primary difference between first-degree and third-degree price discrimination?
- b. State three key objectives that firms in Ghana may pursue apart from profit maximisation.
- c. Define price discrimination and explain why it is more likely in imperfect markets.
- d. How might a telecommunications company in Ghana use price discrimination to increase revenue among urban and rural customers?
- e. Explain how a firm's goal of market dominance could affect its pricing and advertising strategies.
- f. Why must a seller prevent resale for price discrimination to be effective? Use a practical example.

- g. Discuss how price discrimination can both reduce and worsen inequality in a developing economy like Ghana.
- h. Evaluate how a firm's objective may shift from survival to innovation as economic conditions improve, using a local industry example.

Question 2

“The primary objective of any firm is profit maximization, but modern firms pursue multiple objectives that may sometimes conflict with each other.”

Critically analyze this statement by:

- a. Explaining the various objectives that firms in an industry may pursue (*8 marks*)
- b. Evaluating the conflicts that may arise between these objectives using specific industry examples (*8 marks*)
- c. Assessing how market structure influences the choice of objectives and strategic decision-making of firms (*9 marks*)

Question 3

Price discrimination is a common pricing strategy used by firms to maximise profits, but it raises questions about market efficiency and consumer welfare.

With reference to real-world examples:

- a. Analyse the different types of price discrimination and the conditions necessary for successful implementation [*10 marks*]
- b. Evaluate the advantages of price discrimination to the firm [*8 marks*]

PLC Session 8

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app

- The key assessment for the week is **individual classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then

- use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
- all teachers in the group work through a similar problem individually for 3–4 minutes
- the group then works through the problem together step by step
- highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).

- Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
- After the enactment, ask for structured feedback from the group
 - was the concept explained in a way that a learner with no prior knowledge could follow?
 - were the examples grounded in contexts familiar to Ghanaian learners?
 - did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

SECTION 3 REVIEW

The lessons taught in section three focused on the concepts of production. It covered economies of scale, diseconomies of scale, equilibrium in the firm and industry the objectives of the firms in an industry and price discrimination in the market. The teacher applied collaborative learning and talk for learning pedagogical skills and assessment techniques subject to the abilities of the learners to achieve the learning indicators for each week. The assessment questions for each indicator covered DoK levels 2, 3 and 4.

Teaching and Learning Resources

Week Five : Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google, Microsoft Excel

Week Six & Seven: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week Eight: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Acquah-Sam, E. (2022). *Critical economic issues for national development* (2nd ed.). Samico Mega Printing Press.

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2017). *Economics of strategy* (7th ed.). John Wiley & Sons.

Lipsey, R. G., & Chrystal, K. A. (2020). *Economics* (14th ed.). Oxford University Press.

McConnell, C. R., Brue, S. L., & Flynn, S. M. (2021). *Economics: Principles, problems, and policies* (22nd ed.). McGraw-Hill Education.

Ohene-Asare, K., Asare, J. K. A., & Turkson, C. (2019). *Dynamic cost productivity and economies of scale of Ghanaian insurers*. In *The Geneva Papers on Risk and Insurance: Issues and Practice*, 44(1), 148–177.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 5

Question 1

- Economies of Scale Definition (2 marks): Reduction in average cost per unit as the scale of production increases
- Diseconomies of Scale Definition (2 marks): An Increase in average cost per unit as the scale of production becomes too large
- Examples of Economies (1 mark): Any 3: bulk purchasing, specialisation of labour, spreading fixed costs, technical economies, financial economies
- Examples of Diseconomies (1 mark): Any 3: communication problems, coordination difficulties, management inefficiencies, bureaucracy, loss of control

Question 2

Initial Economies Analysis (4 marks)

- Spreading fixed costs (rent, equipment) over more units (1 mark)
- Bulk purchasing of ingredients reduces unit costs (1 mark)
- Labour specialization improves efficiency (1 mark)

Eventual Diseconomies Analysis (4 marks)

- Management becomes overwhelmed, coordination issues (1 mark)
- Quality control becomes difficult with rapid expansion (1 mark)
- Communication problems between staff/locations (1 mark)

Question 3

Current Situation Analysis (2 marks): Total cost = $1,000 \times \text{GH}\text{¢}50 = \text{GH}\text{¢}50,000$

Economies of Scale Phase (total 3 marks)

- At optimal scale: average cost falls to GH¢35 (1 mark)
- This represents 30% cost reduction showing strong economies (1 mark)
- Competitive advantage through lower unit costs (1 mark)

Diseconomies Recognition (2 marks): Average cost rising to GH¢45 indicates diseconomies setting in at maximum capacity

Economic Implications (2 marks): Expansion is beneficial up to point where $AC = \text{GH}\text{¢}35$, but not beyond

Recommendation (1 mark): Expand to a level where the average cost is GH¢35, avoid maximum capacity production

Question 4

- Part (a) - Comparative Analysis (4 marks)
 - Small processors: limited economies, high unit costs, but flexibility and local knowledge (2 marks)

- Large processors: significant economies (bulk purchasing, advanced technology, export capabilities) but potential diseconomies (bureaucracy, less responsive to local conditions) (2 marks)
- **Part (b) - Policy Assessment (4 marks)**
 - Benefits: cost reduction, increased competitiveness, better access to international markets (2 marks)
 - Risks: loss of local character, potential coordination problems, unemployment if consolidation occurs (2 marks)
- **Part (c) - Alternative Strategies (4 marks)**
 - Graduated approach: voluntary partnerships before full mergers (1 mark)
 - Technology sharing schemes without full consolidation (1 mark)
 - Government support for small processors to achieve economies without losing identity (1 mark)
 - Clear justification linking to economic theory and Ghana's context (1 mark)

Question 5

Part a) (8 marks)

- Explanation of internal economies of scale: Cost advantages that accrue to an individual firm as it increases its scale of production. (2 marks)
- Explanation of external economies of scale: Cost advantages that benefit an entire industry as the industry grows. (2 marks)
- Examples of internal economies of scale (any two, 1 mark each)
 - Technical economies: Using specialised machinery that increases efficiency
 - Managerial economies: Specialised management roles leading to improved efficiency
 - Financial economies: Better access to cheaper capital/financing
 - Marketing economies: Spreading advertising costs over larger output
 - Purchasing economies: Bulk buying discounts on raw materials
- Examples of external economies of scale (any two, 1 mark each)
- Skilled labour pool: Concentration of trained workers in the area
- Infrastructure development: Better roads/utilities benefiting all firms
- Knowledge spill overs: Sharing of innovation across industry firms
- Supplier networks: Development of specialised input suppliers
- Complementary services: Growth of supporting businesses

Part b) (12 marks)

- Identification that expansion to 5,000 units is beyond the MES of 3,000 (3 marks)
- Analysis that costs may rise due to diseconomies of scale beyond 3,000 units (3 marks)

Economic factors to consider (any two, 1 mark each)

- Exact shape of LRAC curve and magnitude of diseconomies

- Market demand at different price points
- Competitor reactions and market share implications
- Potential to achieve market power

Strategic factors to consider (any two, 1 mark each)

- Long-term industry growth prospects
- Potential for technological change
- First-mover advantages of securing market share

Reasoned conclusion with justification (2 marks)

Question 6

Mark Scheme

Part a) (9 marks)

Three specific causes of diseconomies of scale in telecommunications (**3 marks each**):

Management diseconomies

- Explanation: As the company grows, communication between management layers becomes more complex (**2 marks**)
- Example: Delayed decision-making, coordination problems between departments, increased bureaucracy (**1 mark**)

Technical diseconomies

- Explanation: Limitations in efficiently coordinating large-scale technical systems (**2 marks**)
- Example: Integration problems with different network technologies, maintenance complexities (**1 mark**)

Financial diseconomies

- Explanation: Increased financial complexity and risk (**2 marks**)
- Example: Higher costs of managing diverse financial operations, currency risks in different regions (**1 mark**)

(Other valid causes include worker diseconomies, marketing diseconomies, and risk/innovation diseconomies)

Part b) (11 marks)

- Analysis of decentralisation as a response to managerial diseconomies (**3 marks**)
 - Division into strategic business units
 - Autonomous regional operations
 - Delegated decision-making authority
- Analysis of information systems to combat communication problems (**3 marks**)
 - Investment in integrated management information systems
 - Digital transformation initiatives
 - Streamlining reporting procedures

- Analysis of specialised management roles (**3 marks**)
 - Creation of specialised departments
 - Professional management training
 - Clear accountability structures
- Reasoned conclusion about optimal organisational structure (**2 mark**)

WEEK 7

Question 1

Firm Equilibrium Definition (2 marks): A firm is in equilibrium when it maximises profit and has no incentive to change its output level

Industry Equilibrium Definition (2 marks): An industry is in equilibrium when quantity supplied equals quantity demanded at the market price

Firm Equilibrium Condition (1 mark): Marginal Cost (MC) = Marginal Revenue (MR)

Industry Equilibrium Condition (1 mark): Market Supply = Market Demand ($Q_s = Q_d$)

Question 2

Marking Scheme:

Equilibrium Condition Application (2 marks): In perfect competition, $P = MC$, so the equilibrium where price = marginal cost

Marginal Cost Calculation (2 marks): $MC = \text{Variable Cost per unit} = \text{GH¢}20$

Equilibrium Analysis (2 marks): Since $P (\text{GH¢}35) > MC (\text{GH¢}20)$, the firm should produce where $P = MC$, but given constant MC, the firm maximises profit by producing as much as possible

Short-run Decision (2 marks): Continue production because $P (\text{GH¢}35) > AVC (\text{GH¢}20)$, covering variable costs and contributing GH¢15 per unit toward fixed costs

Question 3

Marking Scheme:

Short-run Situation Analysis (3 marks)

- Firms earning supernormal profits with $P > AC$ (**1 mark**)
- Individual firms in equilibrium where $MC = MR = P$ (**1 mark**)
- Industry equilibrium where $Q_s = Q_d$ at current price (**1 mark**)

Adjustment Process (4 marks)

- Supernormal profits attract new firms to enter the industry (**1 mark**)
- Industry supply curve shifts right as more firms enter (**1 mark**)
- Market price falls as supply increases (**1 mark**)
- Process continues until profits are eliminated (**1 mark**)

Long-run Equilibrium Outcome (3 marks):

- $P = MC = AC$ (minimum point) for each firm (**1 mark**)

- Normal profits only (zero economic profit) **(1 mark)**
- No incentive for firms to enter or exit **(1 mark)**

Question 4

Part (a) - Equilibrium Change Analysis **(4 marks)**

- Monopoly equilibrium: $MR = MC$, $P > MC$, restricted output **(2 marks)**
- Competitive equilibrium: $P = MC$, increased output, lower prices **(2 marks)**

Part (b) - Welfare and Profit Impact **(4 marks):**

- Consumer surplus increased due to lower prices and better services **(2 marks)**
- Firm profits reduced from supernormal to normal profits through competition **(2 marks)**

Part (c) - Price Control Prediction (4 marks):

- If price ceiling below equilibrium: shortage, quality reduction, potential exit **(2 marks)**
- If price floor above equilibrium: surplus, inefficiency, potential for monopolistic behaviour **(2 marks)**

Question 5

Part (a) - Monopsony Equilibrium Analysis **(3 marks)**

- COCOBOD equates Marginal Cost of Labour (MCL) with Marginal Revenue Product (MRP) **(1 mark)**
- Price paid to farmers below competitive level **(1 mark)**
- Quantity purchased below competitive level **(1 mark)**

Part (b) - Competitive Equilibrium Change **(4 marks)**

- Multiple buyers compete, driving up price toward competitive level **(2 marks)**
- Increased quantity purchased as price rises **(1 mark)**
- Market equilibrium where supply equals demand **(1 mark)**

Part (c) - Impact Evaluation **(4 marks)**

- Farmers benefit from higher prices and increased sales **(1 mark)**
- Consumers may face higher chocolate prices but benefit from increased production **(1 mark)**
- Economy benefits from increased agricultural income and efficiency **(1 mark)**
- Export earnings may increase with better incentives **(1 mark)**

Part (d) - Policy Recommendations **(3 marks):**

- Gradual liberalization to avoid market disruption **(1 mark)**
- Maintain quality standards and export coordination **(1 mark)**
- Support for small farmers to benefit from competition (e.g., cooperatives, market information) **(1 mark)**

Question 6**Part a) (6 marks)**

- Identification that profit maximisation occurs where $MR = MC$ (1 mark)
- In perfect competition, $P = MR = \text{GH}¢50$ (1 mark)
- Calculation showing $MR = MC$ at output of 4 units (where $MC = \text{GH}¢50$) (1 mark)
- Total Revenue = $P \times Q = \text{GH}¢50 \times 4 = \text{GH}¢200$ (1 mark)
- Total Cost at 4 units = $\text{GH}¢260$ (from table) (1 mark)
- Total Profit = $TR - TC = \text{GH}¢200 - \text{GH}¢260 = -\text{GH}¢60$ (loss) (1 mark)

Part b) (7 marks)

- Explanation of shutdown rule: shut down if $P < AVC$ (1 mark)
- Calculation of Fixed Cost = $\text{GH}¢100$ (from output = 0) (1 mark)
- Calculation of Total Variable Cost at 4 units = $\text{GH}¢260 - \text{GH}¢100 = \text{GH}¢160$ (1 mark)
- Calculation of Average Variable Cost at 4 units = $\text{GH}¢160 \div 4 = \text{GH}¢40$ (1 mark)
- Comparison: $P = \text{GH}¢50 > AVC = \text{GH}¢40$ (1 mark)
- Decision: Firm should continue production in short run (1 mark)
- Explanation: By producing, the firm covers all variable costs plus $\text{GH}¢10$ per unit toward fixed costs, reducing losses from $\text{GH}¢100$ (if shut down) to $\text{GH}¢60$ (1 mark)

Part c) (7 marks)

- Correct diagram showing initial industry equilibrium with $P = MC = \text{minimum ATC}$ (2 marks)
- Shift of the market demand curve to the right (1 mark)
- Short-run effect: Price rises, existing firms increase output and earn economic profits (1 mark)
- Long-run effect: New firms enter the industry (1 mark)
- New long-run equilibrium: Number of firms increases, price returns to original level where $P = \text{minimum ATC}$ (1 mark)
- Individual firm output returns to the original profit-maximising level (1 mark)

Question 7**Part a) (6 marks)**

- Monopoly profit maximisation occurs where $MR = MC$ (1 mark)
- Set up equation: $200 - 4Q = 40 + 2Q$ (1 mark)
- Solve for Q: $160 = 6Q$, therefore $Q = 26.67$ or $26\frac{2}{3}$ units (1 mark)
- Substitute into demand equation: $P = 200 - 2(26.67) = 200 - 53.34 = 146.66$ or $\text{GH}¢146.67$ (1 mark)
- Verification that second-order condition is satisfied (MC curve is rising) (1 mark)
- Clear statement of equilibrium output ($26\frac{2}{3}$ units) and price ($\text{GH}¢146.67$) (1 mark)

Part b) (7 marks)

- Total Revenue = $P \times Q = \text{GH¢}146.67 \times 26.67 = \text{GH¢}3,910.40$ (1 mark)
- $TC = FC + VC = 400 + \int MC \, dQ = 400 + \int (40 + 2Q) dQ$ (1 mark)
- $TC = 400 + 40Q + Q^2$ evaluated at $Q = 26.67$ (1 mark)
- $TC = 400 + 40(26.67) + (26.67)^2 = 400 + 1,066.8 + 711.29 = \text{GH¢}2,178.09$ (1 mark)
- Total Profit = $TR - TC = \text{GH¢}3,910.40 - \text{GH¢}2,178.09 = \text{GH¢}1,732.31$ (1 mark)
- Perfect competition comparison: Price would equal MC, so $P = 40 + 2Q$ (1 mark)
- At this price, firms would produce where $P = MC = \text{minimum ATC}$, earning zero economic profit in long-run (1 mark)

Part c) (7 marks)

- Definition and calculation of consumer surplus under monopoly (2 marks)

Area below the demand curve and above price

$$CS = \frac{1}{2}(200 - 146.67) \times 26.67 = \frac{1}{2} \times 53.33 \times 26.67 = \text{GH¢}711.15$$

- Definition and calculation of producer surplus under monopoly (2 marks)

Area above MC curve and below price

$$PS = TR - TVC = \text{GH¢}3,910.40 - \text{GH¢}1,778.09 = \text{GH¢}2,132.31$$

- Definition and explanation of deadweight loss (1 mark)

Loss of total surplus due to monopoly pricing

- Comparison with perfect competition (1 mark)

Higher price and lower output under monopoly

Lower consumer surplus, higher producer surplus

- Conclusion about welfare implications (1 mark)

Total welfare is reduced under monopoly

Redistribution from consumers to producer

WEEK 8**Question 1 (Total: 27 marks)****DoK2 Conceptual Understanding (3 questions $\times$ 2 marks each = 6 marks)****1. Difference between first-degree and third-degree price discrimination**

- 1 mark: Defines first-degree (charges each consumer max willing to pay)
- 1 mark: Defines third-degree (price varies by identifiable group)

2. Three objectives of firms other than profit maximisation

- 1 mark: Lists any valid objective (e.g. growth, customer satisfaction, survival)
- 1 mark: Lists two additional valid objectives

3. Definition of price discrimination + link to market type

- 1 mark: Accurate definition (charging different prices to different consumers for the same good)
- 1 mark: Explains it is more likely in imperfect markets (e.g. monopolies)

DoK 3 Strategic Reasoning (3 questions × 3 marks each = 9 marks)**4. Use of price discrimination by telecoms in Ghana**

- 1 mark: Identifies different consumer segments (urban vs rural)
- 1 mark: Explains differing pricing strategies (e.g. bundles, data promos)
- 1 mark: Links to increased revenue or market reach

5. Impact of market dominance objective on firm behaviour

- 1 mark: Mentions pricing strategies (e.g. discounts to win customers)
- 1 mark: Explains aggressive marketing or innovation
- 1 mark: Connects strategy to larger market share

6. Why resale prevention is crucial in price discrimination

- 1 mark: States that reselling undermines segmented pricing
- 1 mark: Gives a practical example (e.g. student discount tickets being resold)
- 1 mark: Explains that maintaining price control requires preventing leakage

DoK 4 Critical Thinking and Extended Reasoning (2 questions × 6 marks each = 12 marks)**7. Price discrimination's mixed impact on inequality**

- 2 marks: Explains how it helps low-income groups (e.g. affordability)
- 2 marks: Explains potential downsides (e.g. unfair pricing or targeting)
- 2 marks: Evaluates net effects or provides a reasoned judgment (with example)
- Firm's shifting objectives from survival to innovation
- 2 marks: Describes how survival leads to cost-cutting/minimal focus
- 2 marks: Explains shift to innovation when conditions improve
- 2 marks: Applies and justifies a local example (e.g., agribusiness or any SME startup)

Question 2

Part (a): Various objectives of firms **(8 marks)**

Knowledge and Understanding **(3 marks)**

- Profit Maximization: Earning maximum difference between revenue and costs (1 mark)
- Sales/Revenue Maximization: Maximizing total revenue rather than profit (1 mark)
- Market Share Maximization: Gaining dominant position in the market (1 mark)

Additional Objectives (3 marks)

- Growth Maximization: Expanding firm size, operations, or market presence (1 mark)
- Survival: Maintaining operations during difficult economic periods (1 mark)
- Social Responsibility: Considering environmental and social impact (1 mark)

Understanding of Modern Objectives (2 marks)

- Recognition of stakeholder capitalism and multiple objectives (1 mark)
- Understanding of long-term vs. short-term objectives (1 mark)

Part (b): Conflicts between objectives with examples (8 marks)**Identification of Conflicts (4 marks)**

- Profit vs. Market Share: Higher prices for profit may reduce market share (1 mark)
- Short-term vs. Long-term: Immediate profits may conflict with long-term growth (1 mark)
- Profit vs. Social Responsibility: Environmental compliance increases costs (1 mark)
- Growth vs. Profit: Expansion may reduce short-term profitability (1 mark)

Specific Industry Examples (4 marks)

- Technology Industry: Apple's premium pricing vs. market share (1 mark)
- Pharmaceutical Industry: R&D investment vs. immediate profits (1 mark)
- Retail Industry: Walmart's low prices vs. profit margins (1 mark)
- Manufacturing: Tesla's growth investment vs. profitability (1 mark)

Part (c): Market structure influence (9 marks)**Perfect Competition (2 marks)**

- Firms are price takers, focus on cost minimization (1 mark)
- Survival is primary objective due to competition (1 mark)

Monopolistic Competition (2 marks)

- Brand differentiation and market share objectives (1 mark)
- Balance between profit and maintaining competitive position (1 mark)

Oligopoly (2 marks)

- Strategic interdependence affects objective setting (1 mark)
- Focus on market share and competitive positioning (1 mark)

Monopoly (2 marks)

- Greater freedom to pursue multiple objectives (1 mark)
- May prioritize long-term sustainability over short-term profit (1 mark)

Strategic Analysis (1 mark)

- Integration of market structure impact on strategic decision-making (1 mark)

Question 3

Part (a): Types and conditions for price discrimination (**10 marks**)

Types of Price Discrimination (6 marks)

- First-degree (Perfect): Charging each consumer maximum willingness to pay (2 marks)
- Second-degree: Charging different prices based on quantity consumed (2 marks)
- Third-degree: Charging different prices to different consumer groups (2 marks)

Conditions for Success (**4 marks**)

- Market Power: Firm must have some control over price (1 mark)
- Market Segmentation: Ability to separate markets effectively (1 mark)
- Different Elasticities: Consumers must have different price sensitivities (1 mark)
- Prevent Resale: Must prevent arbitrage between markets (1 mark)

Part (b): Advantages (**8 marks**)

Advantage 1: Increased Revenue and Profit (**2 marks**)

Level 1 Response (**1 mark**)

- Identifies that price discrimination increases a firm's revenue/profit
- Basic statement: "Firms make more money"

Level 2 Response (**2 marks**)

- Explains how price discrimination captures more consumer surplus (1 mark)
- Shows understanding that different prices extract maximum willingness to pay (1 mark)
- Example: Airlines charging different prices for the same flight based on booking time

Advantage 2: Better Capacity Utilisation/Market Expansion (**2 marks**)

Level 1 Response (**1 mark**)

- States that price discrimination helps serve more customers
- Basic recognition of market expansion

Level 2 Response (**2 marks**)

- Explains how lower prices for some segments increase demand (1 mark)
- Shows understanding of utilising excess capacity or reaching new markets (1 mark)
- Example: Cinema offering student discounts to fill empty seats during off-peak times

Advantage 3: Enhanced Competitive Position (**2 marks**)

Level 1 Response (**1 mark**)

- Identifies competitive advantage as a benefit
- Basic mention of market power

Level 2 Response (**2 marks**)

- Explains how price discrimination creates barriers to entry (1 mark)
- Shows understanding of how it strengthens market position against competitors (1 mark)

- Example: Software companies offering different versions at different prices to prevent competition

Advantage 4: Cost Recovery and Cross-Subsidisation (2 marks)

Level 1 Response (1 mark)

- Mentions ability to cover fixed costs
- Basic understanding of cost recovery

Level 2 Response (2 marks)

- Explains how high prices from less elastic segments subsidize low prices for elastic segments (1 mark)
- Shows understanding of how this enables firms to serve markets that would not otherwise be profitable (1 mark)
- Example: Pharmaceutical companies charging high prices in developed countries to subsidise lower prices in developing countries

SECTION 4: ELASTICITY OF SUPPLY

STRAND: **FIRMS' INNOVATIVE DECISION MAKING**

Sub-Strand: **Supply of goods and services**

Week 9 & 10

Content Standard: *Demonstrate knowledge of Elasticity of Supply*

Learning Outcome: Explain elasticity and its importance.

INTRODUCTION AND SECTION SUMMARY

Section four covers firms' innovation decision making focusing on the supply of goods and service. The learning outcome of the section is to enable learners to understand, calculate and interpret elasticity of supply. Specifically, it is expected that learners use their everyday life experiences to interpret the results after calculating the elasticity of supply.

Teachers should note that the concept of elasticity of supply is linked Business Studies and Manufacturing.

The weeks and the indicators covered by the section are:

- Week 9: Calculate Elasticity of Supply
- Week 10: Explain the importance of elasticity of supply

Recap weeks

Year 1	Week 13: Supply and Types of Supply Week 14: The Law of Supply
Year 2	Week 11: Factors that affect the supply of a commodity Week 12: Change in supply vs. change in quantity supplied

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents collaborative learning as the only pedagogy to the teacher. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to discuss the meaning of and the calculation of elasticity of supply

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK level for the assessment in this section is level 4. Teachers should note that only level two, three and four questions are provided under key assessments to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Calculate Elasticity of Supply	2/3/4	Strategy: Group Mode: Presentation
Explain the importance of elasticity of supply	3	Strategy: Group Mode: Class Exercise

WEEK 9

Learning Indicator: Calculate Elasticity of Supply

Focal Area 1: Introduction to Elasticity of Supply Introduction

Elasticity of supply refers to the responsiveness of the quantity supplied of a good or service to a change in its price, assuming all other factors remain constant (*ceteris paribus*). In simple terms, it measures how quickly and easily producers can increase or decrease the amount they are willing to sell when the market price changes.

In the market context, elasticity of supply helps explain why some local industries can quickly respond to price increases while others take much longer to adjust their output.

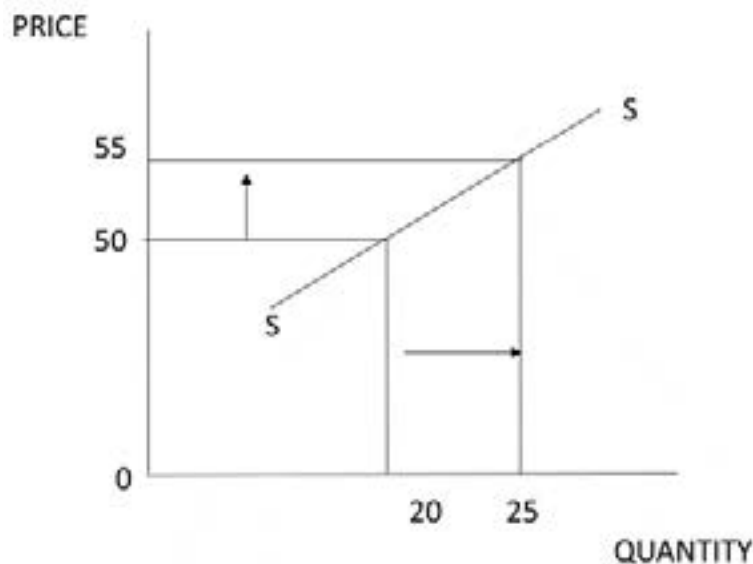
Types of Elasticity of Supply

There are five main types of price elasticity of supply:

1. Relatively Elastic Supply ($PES > 1$)

When the percentage change in quantity supplied is greater than the percentage change in price, supply is elastic. This means producers are highly responsive to price changes. The coefficient of elasticity must be greater than 1 but less than infinity.

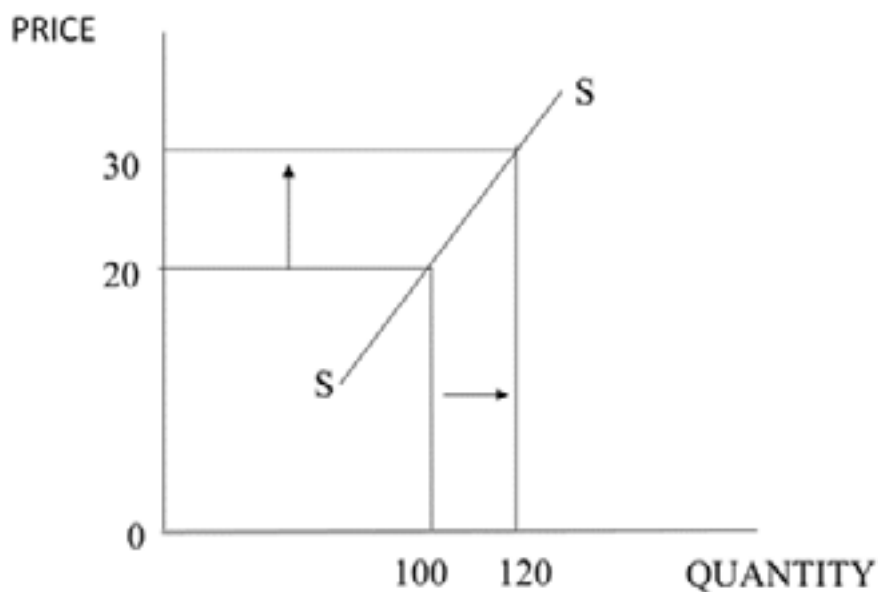
Example: The supply of vegetables like tomatoes and peppers in local markets tends to be elastic in the medium term. When prices rise by %10, farmers might increase their planted area by more than %10 for the next growing season.



2. Relatively Inelastic Supply ($PES < 1$)

When the percentage change in quantity supplied is less than the percentage change in price, supply is inelastic. This means producers have limited ability to respond to price changes.

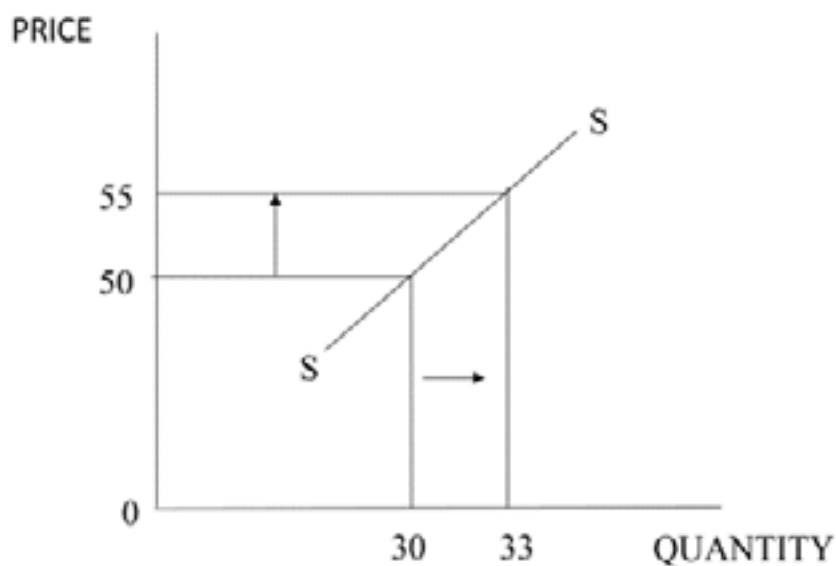
Example: The supply of cocoa is relatively inelastic in the short term. Even if cocoa prices increase by 50%, Ghana Cocoa Board and farmers cannot immediately increase output significantly because cocoa trees take years to mature and yield.



3. Unitary Elastic Supply ($PES = 1$)

When the percentage change in quantity supplied equals the percentage change in price, supply has unitary elasticity.

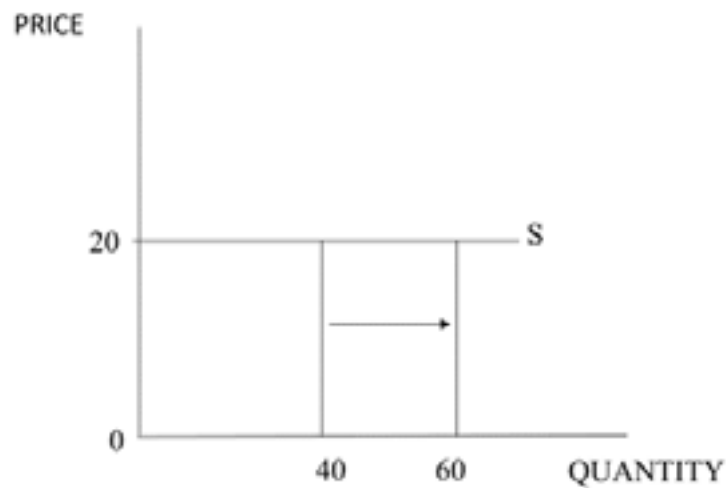
Example: Some manufacturing industries in Ghana, such as simple textile production, might demonstrate roughly unitary elasticity, where a %5 increase in price leads to approximately a %5 increase in quantity supplied.



4. Perfectly Elastic Supply ($PES = \infty$)

When suppliers can supply any amount at a given price but nothing at all at a lower price, supply is perfectly elastic.

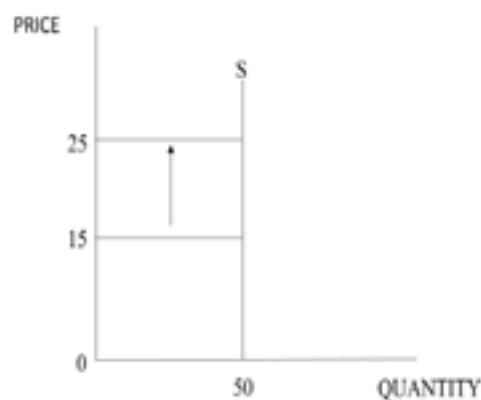
Example: This is mostly theoretical, but some labour markets for unskilled workers in urban areas like Accra might approximate this, where workers will supply labour at or above a certain wage but none below it.



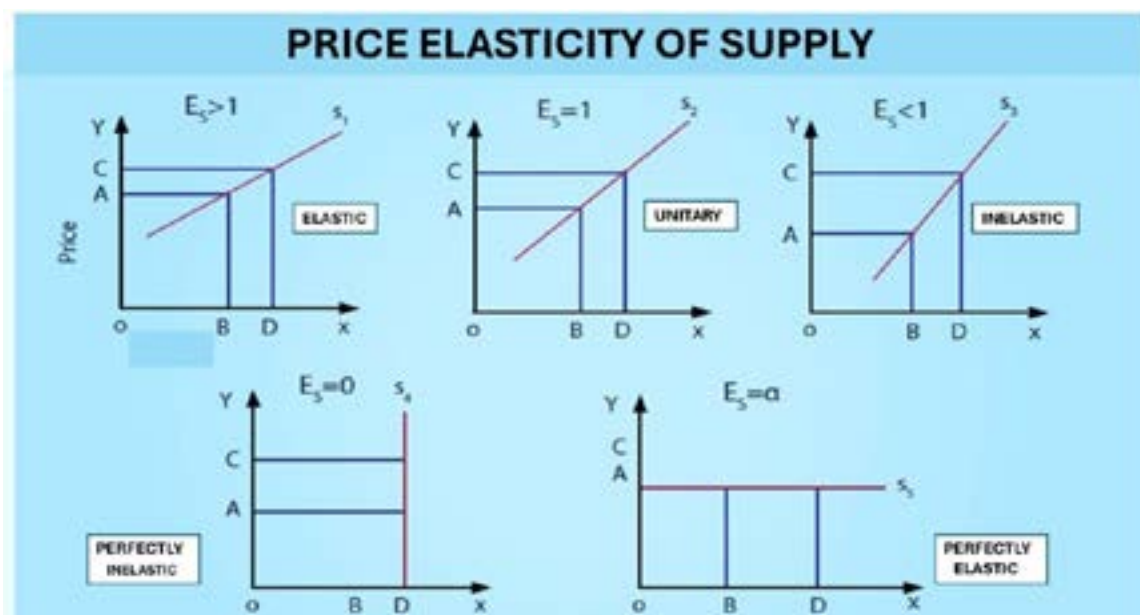
5. Perfectly Inelastic Supply ($PES = 0$)

When the quantity supplied does not change regardless of price, supply is perfectly inelastic.

Example: The supply of land in prime areas of Accra or Kumasi is nearly perfectly inelastic. No matter how high property prices rise, the physical amount of land in these locations cannot increase.



Graphical Representation of all the Types of Elasticity of Supply



Source: Author Generated, 2025

Learning Tasks

1. Recap the concept of supply by defining supply, stating the law of supply and discussing the factors that affect the supply of goods and services. Include change in supply and change in quantity supplied in your recap.
2. Discuss the term “elasticity of supply”
3. Explain how elasticity of supply might differ from elasticity of demand.
4. Identify the types of elasticity of supply.

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners work in mixed ability groups to discuss the meaning of elasticity of supply and present their work using PowerPoint or any other appropriate medium.

Focal Area 2: Calculation of Price Elasticity of Supply

Price Elasticity of Supply (PES) measures how responsive the quantity supplied of a good or service is to a change in its price, assuming all other factors remain constant (*ceteris paribus*).

Formula for Price Elasticity of Supply (PES)

$$PES = \frac{\text{Percentage change in Quantity Supplied}}{\text{Percentage change in Price}}$$

This can also be written as:

$$PES = \frac{\left(\frac{\text{New Quantity Supplied} - \text{Old Quantity Supplied}}{\text{Old Quantity Supplied}} \right) \times 100}{\left(\frac{\text{New Price} - \text{Old Price}}{\text{Old Price}} \right) \times 100}$$

$$\text{Simplified version: } PES = \frac{\Delta Q/Q}{\Delta P/P}$$

Where

ΔQ = Change in quantity supplied

Q = Original quantity supplied

ΔP = Change in price

P = Original price

Example

Consider the Scenario below

A rice farmer in the Volta Region used to supply 200 bags of rice when the price was GH¢100 per bag. After the price increased to GH¢120, he increased the supply to 260 bags.

Solution

Step 1: Identify the figures

Old Quantity (Q_1) = 200

New Quantity (Q_2) = 260

Old Price (P_1) = GH¢100

New Price (P_2) = GH¢120

Step 2: Calculate the percentage change in quantity supplied

$$\left(\frac{260 - 200}{200} \right) \times 100 = 30\%$$

Step 3: Calculate the percentage change in price

$$\left(\frac{120 - 100}{100} \right) \times 100 = 20\%$$

Step 4: Apply the formula

$$PES = 30\% \div 20\% = 1.5$$

Interpretation of PES Value

$PES > 1 \rightarrow$ Supply is elastic (producers respond quickly to price changes)

$PES = 1 \rightarrow$ Supply is unitary elastic (balanced response)

$PES < 1 \rightarrow$ Supply is inelastic (producers respond slowly)

$PES = 0 \rightarrow$ perfectly inelastic supply (no response at all)

$PES = \infty \rightarrow$ perfectly elastic supply (unrealistic but used for theory)

In our example, $PES = 1.5$, which means supply is relatively elastic; the rice farmer was quite responsive to the price increase.

Learning Tasks

1. Identify the correct formula for price elasticity of supply
2. Use the formula to calculate the price elasticity of supply if price increases from GH¢10 to GH¢12, quantity supplied increases from 100 to 140 units.
 - i. Classify and explain the elasticity type
 - ii. Justify your answer
3. Use the formula to calculate PES for the following:
 - i. A poultry farmer increases egg supply from 500 to 600 crates. When the price increases from GH¢20 to GH¢25 per crate
 - ii. Sachet water producer supplies 1,000 bags at GH¢3. When the price rises to GH¢3.30, supply increases to 1,100 bags

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners work in mixed ability groups to calculate elasticity of supply and present their work to the class in the form of a set of digital slides or on a presentation board or flip chart. Support learners in doing the calculation.

Key Assessment Level 4: Group Presentation

SHORT ANSWER QUESTIONS

Question 1 (6 marks)

The price of rice increases from GH¢15 per bag to GH¢18 per bag. As a result, the quantity supplied increases from 200 bags to 260 bags per week.

- Calculate the price elasticity of supply (PES)
- State whether supply is elastic, inelastic, or unit elastic.

Question 2 (8 marks)

A furniture manufacturer's supply schedule is shown below:

Price (GH¢)	Quantity Supplied (units per month)
500	100
600	120
700	140
800	160

Calculate the price elasticity of supply when price increases from GH¢600 to GH¢700, using the midpoint method, interpret your result.

Question 3 (10 marks)

A tomato farmer can adjust production in different time periods. The data shows:

Immediate Period (1 week): Price rises from GH¢2 to GH¢3 per kg, quantity supplied remains at 1,000 kg.

Short Run (3 months): At GH¢3 per kg, quantity supplied increases to 1,200 kg

Long Run (2 years): At GH¢3 per kg, quantity supplied increases to 1,800 kg

- Calculate PES for each time period (4 marks)
- Analyse why elasticity differs across time periods (3 marks)
- Explain the economic reasoning behind these differences (3 marks)

Question 4 (12 marks)

The COVID-19 pandemic led to a sudden surge in demand for hand sanitisers in Ghana. Local manufacturers faced the following situation:

- Week 1: Price jumped from GH¢5 to GH¢15 per bottle, but production remained at 10,000 bottles
- Month 2: Production increased to 25,000 bottles at GH¢15 per bottle

- Month 6: New entrants joined, total industry production reached 60,000 bottles at GH¢12 per bottle
 - a. Calculate the elasticity of supply for existing manufacturers in Month 2 **(2 marks)**
 - b. Calculate the industry elasticity of supply by Month 6 **(2 marks)**
 - c. Critically evaluate the factors that influenced these elasticity values **(4 marks)**
 - d. Assess the implications for government policy during health emergencies **(4 marks)**

ESSAY QUESTIONS

Question 5

Table 1 below shows the supply schedule for wheat in a local market:

Table 1

Price (GH¢ per kg)	Quantity Supplied (kg per week)
5	200
10	500
15	900
20	1400

- a. Calculate the price elasticity of supply between each consecutive price level. **(6 marks)**
- b. Classify each result as elastic, inelastic, **(1.5 marks)**
- c. Explain what the elasticity values tell us about the wheat producers' ability to respond to price changes. **(6 marks)**

Note: Group presentation skills (1.5 marks)

Question 6

A furniture manufacturer has a supply function given by $Q = 50P - 200$, where Q is the quantity of furniture sets supplied per month and P is the price in GH¢ hundreds.

- a. Calculate the elasticity of supply when the price is GH¢800 and when the price is GH¢1,600. **(8 marks)**
- b. Analyse why the elasticity of supply differs at these two price points, **(6 marks)**
- c. The manufacturer is considering expanding production capacity. Evaluate how this might affect the elasticity of supply in both the short run and long run. **(3 marks)**

Note: Group Presentation skills: 3 marks: (Maintains eye contact with class, shares tasks during the presentation, uses polite language, uses illustrations to explain concepts,)

Question 7

Ghana's cocoa industry and mobile phone industry represent two different sectors with varying supply characteristics.

- a. Using appropriate economic models and calculations determine how the elasticity of supply might differ between these two industries. Provide hypothetical data to support your calculations. **(10 marks)**

- b. Critically evaluate how factors such as time period, production technology, resource mobility, and storage capabilities influence the elasticity of supply in these two industries. **(10 marks)**
- c. In the context of recent global supply chain disruptions, analyse how policymakers should consider elasticity of supply when designing economic policies to support these industries. Recommend specific policy interventions for each industry based on your analysis. **(10 marks)**

PLC Session 9

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group presentation**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the presentation (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)

- b. all teachers in the group work through a similar problem individually for 3–4 minutes
- c. the group then works through the problem together step by step
- d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about ‘How do I teach this?’ but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 10

Learning Indicator: Explain the importance of elasticity of supply

Focal Area 1: Factors that affect the Elasticity of Supply

1. Time Period

The longer the time period, the more elastic the supply, as producers have more time to adjust their production.

Example: In the immediate term, the supply of electricity from the Akosombo Dam is fixed. In the short run, some adjustments can be made to water flow. In the long run, additional turbines can be installed or new power plants built, making supply more elastic.

2. Availability of Spare Capacity

Firms with spare production capacity can respond more quickly to price increases.

Example: A cement manufacturer like GHACEM with unused production capacity can quickly increase output when cement prices rise, showing relatively elastic supply.

3. Availability of Stocks

Industries that can maintain inventories can respond more quickly to price changes.

Example: Gold mining companies in Ghana might stockpile processed gold, allowing them to respond quickly to price increases by releasing these stocks to the market.

4. Ease of Factor Substitution

The easier it is to substitute factors of production, the more elastic the supply is.

Example: Manufacturing firms in Tema Industrial Area that can easily switch between labour-intensive and capital-intensive production methods can adjust output more readily when prices change.

5. Mobility of Factors

The more mobile the factors of production, the more elastic the supply is.

Example: The supply of services like mobile money agents is relatively elastic because people can be trained quickly and little fixed capital is required.

6. Time Needed for Production

Products that take longer to produce tend to have more inelastic supply.

Example: Timber from sustainable forestry operations has inelastic supply because trees take many years to mature, whereas vegetables from farms around Accra can be produced within weeks.

Learning Tasks

1. Identify and explain the main factors that affect the elasticity of supply
2. Apply these factors to real-life examples of goods and services
3. Draw a diagram or flowchart showing how changes in one factor (e.g., improvement in technology or time availability) can lead to changes in the elasticity of supply

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed ability groups, discuss the factors that affect the elasticity of supply and present their responses to the class.

Focal Area 2: Importance of Elasticity of Supply

1. Price Stability

Markets with elastic supply tend to have more stable prices because producers can quickly respond to demand changes.

Example: The relatively elastic supply of imported consumer goods helps maintain price stability in urban markets, whereas the inelastic supply of locally grown seasonal fruits leads to significant price fluctuations.

2. Producer Revenue

Understanding elasticity helps producers predict how price changes will affect their total revenue.

Example: Cocoa farmers benefit from the inelastic supply of cocoa when global prices rise, as this leads to higher total revenue without requiring significant output increases.

3. Government Policy

Policymakers use elasticity concepts to design effective interventions in markets.

Example: The government's efforts to increase the elasticity of supply in the food sector through irrigation projects aim to reduce seasonal price fluctuations and improve food security.

4. Business Planning

Firms use elasticity concepts to anticipate market conditions and plan production.

Example: Manufacturing companies in Ghana's Export Processing Zones plan their capacity based on understanding how quickly they can respond to changes in export demand.

Learning Tasks for Practice

1. Brainstorm and record at least three reasons why the elasticity of supply is important in an economy
2. Identify which economic agents (producers, consumers, or governments) are most affected.

- 3.** Design a poster titled “Why Elasticity of Supply Matters”, including:
- i.** Definition of elasticity of supply
 - ii.** Three main reasons it is important
 - iii.** Short example or visual for each point

Pedagogical Exemplars

Group work/ Collaborative Learning

Learners in mixed ability groups discuss the importance of elasticity of supply and present their work to the class using a set of digital slides, presentation board or flip chart.

Key Assessment Level 3: Group Presentation

SHORT ANSWER QUESTIONS

Question 1 (6 marks)

- a. Explain why understanding the price elasticity of supply is important for business managers when making production decisions. **(4 marks)**
- b. Give two specific examples. **(2 marks)**

Question 2 (8 marks)

Identify and explain four factors that affect the price elasticity of supply of goods and services. For each factor, provide a brief example to illustrate how it influences supply responsiveness.

Question 3 (12 marks)

During the COVID-19 pandemic, Ghana experienced increased demand for locally produced goods due to import restrictions.

Critically evaluate the importance of understanding the elasticity of supply for:

- a. Local manufacturers responding to increased demand **(3 marks)**
- b. Government planners promoting import substitution **(3 marks)**
- c. Consumers adapting to market changes **(3 marks)**
- d. Economic recovery planning **(3 marks)**

ESSAY QUESTIONS

Question 4

The government of Ghana is considering implementing price support policies in two different agricultural sectors: the cocoa industry and the vegetable farming industry. Economic analysis indicates that the elasticity of supply for cocoa is 0.4, while for vegetables it is 1.7.

Evaluate the likely effectiveness of price support policies in each sector and explain why understanding elasticity of supply is crucial for government policymakers when designing intervention strategies. **(20 marks)**

Question 5

Analyse how differences in supply elasticity between the housing market and the mobile phone market in Ghana influence price stability, producer behaviour, and consumer welfare during demand fluctuations. Using specific examples, explain why understanding these elasticity differences is important for business planning and investment decisions in these sectors. (20 marks)

PLC Session 10

45 minutes
Planning & Reviewing the Learning Plan

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10 minutes
Content Exploration

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 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - vi. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

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 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

SECTION 4 REVIEW

The lessons taught in section four are focused on the elasticity of supply. It brought to the fore how the calculation of the elasticity of supply is done and how the result is interpreted. The session ends with the factors that affect the elasticity of supply and the importance of elasticity of supply. The teacher applied only one pedagogical skill, specifically collaborative learning and assessment techniques subject to the abilities of the learners to achieve the learning indicators for each week. The key assessment questions were all at DoK level 2, 3 and 4.

Teaching and Learning Resources

Week 9: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 10: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Ackah, C., & Aryeetey, E. (2012). *Globalization, trade and poverty in Ghana: Essays on manufacturing and industry*. Sub-Saharan Publishers.

Acquah-Sam, E. (2022). *Critical economic issues for national development* (2nd ed.). Samico Mega Printing Press.

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2017). *Economics of strategy* (7th ed.). John Wiley & Sons.

Lipsey, R. G., & Chrystal, K. A. (2020). *Economics* (14th ed.). Oxford University Press.

McConnell, C. R., Brue, S. L., & Flynn, S. M. (2021). *Economics: Principles, problems, and policies* (22nd ed.). McGraw-Hill Education.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 9

Question 1

- Formula Setup (1 mark): $PES = (\% \text{ Change in Quantity Supplied}) / (\% \text{ Change in Price})$
- Quantity Change Calculation (2 marks)
 - $\% \text{ Change in } Q_s = [(260-200)/200] \times 100 = 30\%$ (1 mark)
 - Correct calculation shown (1 mark)
- Price Change Calculation (2 marks)
 - $\% \text{ Change in } P = [(18-15)/15] \times 100 = 20\%$ (1 mark)
 - Correct calculation shown (1 mark)
- Final PES Calculation and Classification (1 mark): $PES = 1.5 = \%20/\%30$ (elastic supply)

Question 2

- Midpoint Formula Application (2 marks): $PES = [(Q_2 - Q_1) / (Q_2 + Q_1) / 2] / [(P_2 - P_1) / (P_2 + P_1) / 2]$
- Quantity Calculation (2 marks)

- $(Q_2 - Q_1)/(Q_2 + Q_1)/2 = (140 - 120)/(140 + 120)/2 = 20/130 = 0.154$ (2 marks)
- Price Calculation (**2 marks**)
 - $(P_2 - P_1)/(P_2 + P_1)/2 = (700 - 600)/(700 + 600)/2 = 100/650 = 0.154$ (2 marks)
- Final Calculation and Interpretation (**2 marks**)
 - $PES = 0.154/0.154 = 1.0$ (unit elastic) (1 mark)
 - Interpretation: Supply responds proportionally to price changes (1 mark)

Question 3

- Part (a) - Calculations (4 marks):
 - Immediate: $PES = 0\% / 50\% = 0$ (perfectly inelastic) (1 mark)
 - Short run: $PES = 20\% / 50\% = 0.4$ (inelastic) (2 marks)
 - Long run: $PES = 80\% / 50\% = 1.6$ (elastic) (1 mark)
- Part (b) - Time Period Analysis (3 marks)
 - Supply becomes more elastic over time (1 mark)
 - Immediate period allows no adjustment (1 mark)
 - Long run allows full resource reallocation (1 mark)
- Part (c) - Economic Reasoning (3 marks)
 - Short run: some input adjustments possible (labour, fertiliser) (1 mark)
 - Long run: can plant more crops, acquire more land, invest in technology (1 mark)
 - Fixed factors become variable over time (1 mark)

Question 4

- Part (a) - Individual Manufacturer PES (**2 marks**)
 - % Change in $Q_s = [(25,000 - 10,000)/10,000] \times 100 = 150\%$ (1 mark)
 - % Change in $P = [(15 - 5)/5] \times 100 = 200\%$
 - $PES = 150\%/200\% = 0.75$ (1 mark)
- Part (b) - Industry PES (**2 marks**)
 - % Change in $Q_s = [(60,000 - 10,000)/10,000] \times 100 = 500\%$ (1 mark)
 - % Change in $P = [(12 - 5)/5] \times 100 = 140\%$
 - Industry $PES = 500\%/140\% = 3.57$ (1 mark)
- Part (c) - Factor Evaluation (**4 marks**)
 - Initially inelastic due to capacity constraints and specialised equipment (1 mark)
 - Medium-term elasticity improved through overtime, shift adjustments (1 mark)
 - Long-term high elasticity due to new firm entry and investment (1 mark)
 - Emergency nature created temporary supply bottlenecks (1 mark)

- Part (d) - Policy Implications (**4 marks**)
 - Government should expect price volatility during emergencies due to initial supply inelasticity (1 mark)
 - Strategic reserves needed for essential goods with low short-run elasticity (1 mark)
 - Incentives for quick capacity expansion during crises (1 mark)
 - Long-term industrial policy to maintain domestic production capacity (1 mark)

Question 5

Part a) - 6 marks

- Correct formula: $E_s = (\% \text{ change in quantity supplied}) \div (\% \text{ change in price})$ (1 mark)
- Between 5 and 10 GH¢: $E_s = [(500-200)/((500+200)/2)] \div [(10-5)/((10+5)/2)] = 1.71$ (1.5 marks)
- Between 10 and 15 GH¢: $E_s = [(900-500)/((900+500)/2)] \div [(15-10)/((15+10)/2)] = 1.43$ (1.5 marks)
- Between 15 and 20 GH¢: $E_s = [(1400-900)/((1400+900)/2)] \div [(20-15)/((20+15)/2)] = 1.30$ (1.5 marks)
- Using arc elasticity method OR correct calculations using point elasticity (0.5 marks)

Part b) - 3 marks

- For $E_s = 1.71$: Elastic (0.5 mark)
- For $E_s = 1.43$: Elastic (0.5 mark)
- For $E_s = 1.30$: Elastic (0.5 mark)

Part c) - 6 marks

- Definition of elasticity of supply in context (1 mark)
- All elasticity values are greater than 1, meaning supply is elastic throughout the price range (1 mark)
- Explanation that producers are responsive to price changes (1 mark)
- Percentage increase in quantity supplied is greater than the percentage increase in price (1 mark)
- Explanation of trend: elasticity decreases as price increases, showing diminishing responsiveness (1 mark)
- Economic reasoning for why responsiveness might decrease (e.g., capacity constraints) (1 mark)

Note: Group presentation skills: 1.5 marks (Maintains eye contact with class, shares tasks during the presentation, uses polite language, uses illustrations to explain concepts,)

Question 6

Part a) - 8 marks

- Correct formula for point elasticity of supply: $E_s = (dQ/dP) \times (P/Q)$ (2 marks)
- For this linear function, $dQ/dP = 50$ (1 mark)
- At $P = 8$ (GH¢800)

- $Q = 50(8) - 200 = 200$ (1 mark)
- $Es = 50 \times (8/200) = 2$ (1 mark)
- At $P = 16$ (GH¢1,600):
 - $Q = 50(16) - 200 = 600$ (1 mark)
 - $Es = 50 \times (16/600) = 1.33$ (1 mark)
- Correct rounding and units (1 mark)

Part b) - 6 marks

- Formula shows that as Q increases, P/Q decreases, leading to lower elasticity (2 mark)
- At lower prices/quantities, the firm has more excess capacity to respond to price changes (1 mark)
- At higher prices/quantities, the firm approaches capacity constraints (1 mark)
- Specific reference to the formula $Q = 50P - 200$ showing that when $P = 4$, $Q = 0$, explaining the non-zero intercept (2mark)

Part c) - 3 marks

- Short-run impact: Likely minimal effect as existing constraints remain (0.5 mark)
- Capacity expansion shifts the supply curve rightward (0.5 mark)
- Long-run impact: Increased elasticity at all price points (0.5 mark)
- New supply function would change (e.g., $Q = 70P - 200$ or $Q = 50P - 100$) (0.5 mark)
- Explanation of how the new function changes the elasticity calculations (0.5 mark)
- Economic reasoning: Greater ability to respond to price changes due to reduced constraints (0.5 mark)

Group Presentation skills: 3 marks: (Maintains eye contact with class, shares tasks during the presentation, uses polite language, uses illustrations to explain concepts,)

Question 7**Part a) - 10 marks**

- Appropriate hypothetical data for cocoa industry (e.g., inelastic in short run) (2 marks)
- Appropriate hypothetical data for mobile phone industry (e.g., elastic in most periods) (2 marks)
- Correct calculation of elasticity values for cocoa (using appropriate formula) (2 marks)
- Correct calculation of elasticity values for mobile phones (using appropriate formula) (2 marks)
- Comparative analysis of results showing cocoa supply is generally less elastic than mobile phone supply (2 marks)

Example of acceptable calculations

- Cocoa: Price increases 10%, quantity increases 5% $\rightarrow Es = 0.5$ (inelastic)
- Mobile phones: Price increases 10%, quantity increases 15% $\rightarrow Es = 1.5$ (elastic)

Part b) - 7 marks

- Time period: Correctly explains that cocoa supply is highly inelastic in immediate/short run due to growing cycle (2 marks)
- Production technology: Contrasts labor-intensive agricultural methods with automated manufacturing processes (2 marks)
- Resource mobility: Analyses difficulty in shifting land use versus flexibility in manufacturing inputs (1 mark)
- Storage capabilities: Explains perishability constraints for cocoa versus durability of electronics (1 mark)
- Overall evaluation: Synthesises factors to explain why mobile phone supply is generally more elastic (1 mark)

Part c) - 10 marks

- For cocoa industry
 - Identifies appropriate policies considering inelastic supply (e.g., buffer stocks, price floors) (2 marks)
 - Explains how policies address supply chain vulnerabilities (1 mark)
 - Evaluates potential effectiveness of policies (1 mark)
- For mobile phone industry
 - Identifies appropriate policies considering elastic supply (e.g., investment incentives, skills development) (2 marks)
 - Explains how policies address supply chain vulnerabilities (1 mark)
 - Evaluates potential effectiveness of policies (1 mark)
- Cross-industry comparison: Explains why different approaches are needed (1 mark)
- Overall policy framework: Presents coherent approach that recognises different elasticities require different interventions (1 mark)

Part d) Group Presentation skills: 3 marks

Maintains eye contact with class, shares tasks during the presentation, uses polite language, uses illustrations to explain concepts.

WEEK 10**Question 1**

- Production Planning Importance (**2 marks**): PES helps managers predict how much they can increase/decrease production in response to price changes
- Revenue Forecasting (**2 marks**): Understanding PES allows managers to estimate potential revenue changes when market prices fluctuate
- Specific Examples (**2 marks**):
 - Example 1: Agricultural products with low PES require long-term planning (1 mark)
 - Example 2: Manufacturing with high PES can quickly adjust to market demands (1 mark)

Question 2

- Factor 1: **Time Period (2 marks)**
 - Explanation: Supply becomes more elastic over longer time periods as producers can adjust all inputs (1 mark)
 - Example: Agricultural products - farmers can only adjust labor/fertilizer in short run, but can plant more crops in long run (1 mark)
- Factor 2: Availability of Spare Capacity **(2 marks)**
 - Explanation: Firms with unused capacity can increase supply easily, making supply more elastic (1 mark)
 - Example: Manufacturing plants operating at 60% capacity can quickly increase output vs. plants at 100% capacity (1 mark)
- Factor 3: Ease of Storage **(2 marks)**
 - Explanation: Goods that can be stored easily have a more elastic supply as producers can release stocks when prices rise (1 mark)
 - Example: Non-perishable goods like canned foods vs. fresh fish that must be sold immediately (1 mark)
- Factor 4: Mobility of Factors of Production **(2 marks)**
 - Explanation: When labour and capital can easily move between industries, supply becomes more elastic (1 mark)
 - Example: General-purpose machinery can switch between products vs. specialised equipment for specific goods only (1 mark)

Question 3

- Part (a) - Manufacturer Perspective **(3 marks)**
 - PES knowledge helps manufacturers determine optimal production expansion (1 mark)
 - Understanding capacity constraints prevents overcommitment (1 mark)
 - Guides investment decisions for long-term supply elasticity improvement (1 mark)
- Part (b) - Government Planning Importance **(3 marks)**
 - PES analysis identifies which industries can quickly substitute imports (1 mark)
 - Helps target support to sectors with potential for elastic supply response (1 mark)
 - Informs realistic timelines for import substitution goals (1 mark)
- Part (c) - Consumer Adaptation **(3 marks)**
 - Understanding PES helps consumers predict price stability of local alternatives (1 mark)
 - Elastic supply of substitutes means stable prices during transition (1 mark)
 - Inelastic supply warns consumers of potential price increases (1 mark)
- Part (d) - Economic Recovery Planning **(3 marks)**
 - High PES sectors can drive rapid employment creation (1 mark)
 - PES analysis guides infrastructure investment priorities (1 mark)
 - Understanding supply constraints helps set realistic recovery targets and timelines (1 mark)

Question 4

Definition of elasticity of supply and price support policies (2 marks)

Explanation of the meaning of the elasticity values

- Cocoa ($E_s = 0.4$) being inelastic (1 mark)
- Vegetables ($E_s = 1.7$) being elastic (1 mark)

Analysis of cocoa industry and price supports

- Limited production response due to inelasticity (2 marks)
- Effect on producer incomes and market stability (2 marks)
- Long-term vs. short-term implications (2 marks)

Analysis of vegetable industry and price supports

- Significant production response due to elasticity (2 marks)
- Effect on producer incomes and market surpluses (2 marks)
- Fiscal implications for government (2 marks)

Importance for policy design

- Resource allocation efficiency (1 mark)
- Budget implications (1 mark)
- Alternative policy approaches based on elasticity (2 marks)

Question 5

Characterisation of elasticity in each market

- Housing market typically having low elasticity (reasons) (2 marks)
- Mobile phone market typically having high elasticity (reasons) (2 marks)

Analysis of price stability

- Effect of inelastic housing supply on price volatility (2 marks)
- Effect of elastic mobile phone supply on price stability (2 marks)

Analysis of producer behaviour

- Housing developers' response to market signals (2 marks)
- Mobile phone manufacturers' production strategies (2 marks)

Analysis of consumer welfare

- Housing affordability and availability issues (2 marks)
- Mobile phone pricing and product availability (2 marks)

Importance for business planning and investment

- Risk assessment and mitigation strategies (1 mark)
- Investment timing considerations (1 mark)
- Capital allocation decisions (1 mark)
- Specific examples from Ghanaian context (1 mark)

SECTION 5: CHANNELS OF DISTRIBUTION

STRAND: **FIRMS' INNOVATIVE DECISION MAKING**

Sub-Strand: **Market analysis**

Week 11 & 12

Content Standard: *Demonstrate understanding in distribution in the market system*

Learning Outcome: Explain the methods, agencies, problems and solutions of distribution.

INTRODUCTION AND SECTION SUMMARY

Section five covers firms' innovation decision making focusing on market analysis. The learning outcome of the section is to enable learners to understand the methods, agencies and channels of distribution as well as examine the problems and solutions of distribution.

Teachers should note that the concept of market analysis is linked Business Studies, Manufacturing and Home Economics.

The weeks and the indicators covered by the section are:

- Week 11: Identify the methods, agencies and channels of distribution
- Week 12: Examine the problems and solutions of distribution

Recap weeks

Year 1	Week 15: Concept of Market and its types
Year 2	Week 13: Definition and types of market structures Week 14: Types of profits in each market structure

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogies to the teacher. These are Experiential learning and Project-based Learning. In Experiential Learning, the teacher is expected to assist learners to role play methods, agencies and channels of distribution. In the Project-based Learning, the teacher is expected to support learners to do field visit to a nearby distribution firm to understand the problems and solutions of distribution.

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessment in this section are level 2 & 3 for first and level 4 for the second learning indicators, respectively. Teachers should note that only level two, three and four questions are provided under key assessments to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Identify the methods, agencies and channels of distribution	2/3	Strategy: Group Mode: Presentation
Examine the problems and solutions of distribution	4	Strategy: Group Mode: Project

WEEK 11

Learning Indicator: Identify the methods, agencies and channels of distribution

Focal Area 1: Channels of Distribution; Methods and Agencies

Definition

Channels of distribution refer to the paths through which goods flow from the producer to the final consumer.

Introduction

In Ghana, when goods such as gari from Akatsi, cocoa beans from Tafo, or mobile phones imported through the Tema Port are produced or brought into the country, they do not reach the final consumers directly. These goods pass through distribution channels, which involve different people and organisations called agents, who help in moving the goods from producers to consumers.

For example, when Nestlé Ghana produces Milo, it is first sent to distributors, then to wholesalers, then to retailers, before it finally reaches the consumer in a shop at Madina, Ho, or Tamale. The whole process of moving goods and making them available to consumers is what we call the channel of distribution.

Channels of Distribution

1. Direct Channel

This is when producers sell directly to consumers without using any intermediaries.

Example: A shea butter producer in Tamale sells directly at local markets or through social media. A rice farmer in the Volta Region sells directly to households.

2. Indirect Channel

This involves intermediaries such as wholesalers, retailers, or agents before goods reach the consumer.

Example: Unilever Ghana Limited sells its products through regional distributors, who then sell to wholesalers and retailers across Ghana.

We can also talk about an indirect distribution channel to include;

Three-Level Channel: Involves three intermediaries: an agent, a wholesaler, and a retailer.
 Producer → Agent → Wholesaler → Retailer → Consumer

Two-Level Channel (Vertical Marketing System (VMS) Involves **two intermediaries**: wholesaler and retailer.

Producer → Wholesaler → Retailer → Consumer

Methods of Distribution

1. Wholesale Distribution

Wholesalers buy goods in large quantities from producers or importers and sell in smaller quantities to retailers.

2. Retail Distribution

Retailers sell goods in small units directly to the final consumers.

3. E-commerce and Digital Platforms

Businesses use online platforms like Jumia Ghana, Instagram, and WhatsApp to sell products. Payment is often through mobile money, and goods are delivered by dispatch riders.

4. Mobile Distribution

Mobile sellers carry goods to consumers using vans, bicycles, or on foot. Examples include FanIce sellers, bread and plantain chip vendors in Accra traffic.

Agencies of Distribution and Their Functions

1. Producers

Producers are the originators of goods.

In Ghana, examples include Nestlé Ghana (food products), GIHOC Distilleries (alcoholic beverages),

Functions of Producers

- a. Production of goods – They manufacture or create goods and services.
- b. Packaging and branding – They package goods to attract buyers and provide product information.
- c. Setting prices – Producers usually decide the base price for their goods.
- d. Initial promotion – Producers run adverts to inform consumers about their products (e.g., TV adverts by Indomie or Cowbell).

2. Wholesalers

Wholesalers buy in bulk and sell in smaller quantities to retailers.

Examples include distributors in Makola or Kejetia selling cartons of cooking oil or rice to provision shops.

Functions of Wholesalers

- a. Bulk breaking – They buy large quantities and break them into smaller lots for retailers.
- b. Storage of goods – They keep goods in warehouses until retailers need them.
- c. Financing retailers – Some offer credit to trusted retailers.
- d. Reducing the burden on producers – They take over the distribution role so producers can focus on production.
- e. Passing on feedback about the product to producers.

3. Retailers

Retailers sell goods in small quantities directly to the final consumer.

Examples include Kiosk operators, supermarkets like Melcom, and tabletop sellers.

Functions of Retailers

- a. Selling in small units – They break down goods into portions consumers can afford (e.g., GH¢2 airtime or sachet water).
- b. Providing convenience – They bring goods closer to consumers in neighbourhoods and towns.
- c. Gathering market feedback – They inform wholesalers of customer preferences.
- d. Promoting goods – Retailers help popularise new products through personal selling.

4. Distributors

Distributors function as official suppliers of goods from producers to wholesalers and sometimes retailers.

For example, MTN Ghana uses regional distributors to supply scratch cards and SIM cards.

Functions of Distributors

- a. Supplying goods regularly – They ensure constant availability of products in their region.
- b. Monitoring sales territories – They manage a specific area or region on behalf of the producer.
- c. Marketing support – They promote the producer's brand in their area through banners or promotions.
- d. After-sales service – They may help with customer complaints or product replacement.

5. Agents and Brokers

Agents and brokers link buyers and sellers and earn a commission for every successful transaction.

For example, a timber agent in Kumasi links forest owners with timber companies.

Functions of Agents and Brokers

- a. Facilitating sales – They help negotiate between producers and buyers.
- b. Providing market information – They share data about market demand and prices.
- c. Earning commission – They get paid a percentage of the sales made.
- d. Reducing producer's marketing cost – Producers do not have to maintain their own sales force.

6. Transport and Logistics Companies

These are firms that help in the physical movement of goods.

Examples include OA Travel and Tours, Glovo and Bolt Food, Ghana Post,

Functions of Transport and Logistics Companies:

- a. Moving goods – They transport goods from one location to another across Ghana.
- b. Timely delivery – They ensure goods reach the market or customers on time.
- c. Warehousing and handling – Some companies offer storage and loading services.
- d. Enhancing national trade – They make it easier to move goods from rural to urban centres and even for export.

Types of Distribution Strategies

1. Intensive Distribution

The product is made available in as many outlets as possible. Suitable for frequently purchased goods like water, soap, or biscuits. Example: Bel-Aqua sachet water is sold in kiosks, markets, shops, and by street hawkers.

2. Selective Distribution

The product is sold through a few selected outlets. Suitable for items that need some level of customer service or explanation. Example: GTP cloth may only be sold in selected fabric shops or boutiques.

3. Exclusive Distribution

The product is sold through only one or very few authorised dealers in a location. Often used for expensive or luxury items. Example: Samsung phones may be sold only through certified Samsung shops or distributors in Accra.

4. Direct Distribution

The producer sells directly to the consumer without using intermediaries. Common in local markets or online platforms. Example: A kente weaver in Bonwire sells cloth directly to tourists or online customers.

Learning Tasks

1. Recap the concept of market by explaining types of market, market structures and profits.
2. Role play
 - i. Producer/Manufacturer
 - ii. Agent/Broker
 - iii. Wholesaler
 - iv. Retailer
 - v. Transporter
 - vi. Consumer
3. Act out the distribution process for their product, showing how it moves from the manufacturer to the consumer.
4. Discuss and demonstrate which method is used (e.g., direct, indirect), who the agencies are, and what channel the product follows.
5. After the role play, create a concept map that includes:
 - i. Types of distribution methods used
 - ii. Key agencies involved
 - iii. Different channels (e.g., direct to consumer, through wholesaler, via agent)

Pedagogical Exemplars

Experiential Learning

Learners role-play the methods, agencies and channel of distribution. Give equal opportunity to all learners. Conduct research on roles. Through Experiential learning, specifically, role-play, learners demonstrate gender-responsive behaviour and develop the ability to tackle injustice and respect, appreciate and tolerate each other.

Key Assessment Level 2: Group Presentation

SHORT ANSWER QUESTIONS

Question 1 (6 marks)

- Explain three different methods of distribution that businesses use to get their products to consumers.
- Give one example of each method.

Question 2 (8 marks)

- State four agencies involved in the distribution process.
- Explain the specific role each agency plays in getting goods from producers to final consumers.

Question 3 (10 marks)

- Analyse the advantages and disadvantages of using direct versus indirect distribution channels.
- Under what circumstances should a company choose each method?

Question 4 (12 marks)

A Ghanaian cocoa processing company produces chocolate bars and wants to expand from selling only to local supermarkets to reaching consumers nationwide and potentially exporting to neighbouring countries.

Evaluate different distribution channel strategies and recommend the most appropriate approach for: a) Domestic market expansion b) Export market entry c) Long-term sustainability

QUESTION FOR GROUP PRESENTATION

Question 5 (20 marks)

Awala Trading Company is a medium-sized manufacturer of household cleaning products. The company's management is reviewing its distribution strategy.

- Identify and explain TWO direct and TWO indirect channels of distribution available to Awala Trading Company. **(8 marks)**
- Compare and contrast the effectiveness of these channels for distributing household cleaning products in urban versus rural markets. **(6 marks)**
- Recommend and justify the most appropriate distribution strategy for Awala Trading Company, considering current economic conditions in Ghana. **(6 marks)**

Question 6 (20 marks)

The distribution of agricultural products in Ghana involves various intermediaries.

- Identify and describe FOUR major distribution agencies involved in the distribution of agricultural products. **(8 marks)**
- Explain how these agencies function within the distribution chain, using specific examples from Ghana's agricultural sector. **(6 marks)**
- Critically analyse how these distribution agencies affect the final price of agricultural products and suggest ways to improve efficiency in the distribution system. **(6 marks)**

Question 7 (20 marks)

During economic downturns, distribution methods often need to be adjusted to remain competitive.

- Describe FOUR methods of distribution used by businesses in Ghana, giving one advantage and one disadvantage of each method. **(8 marks)**
- Explain how the choice of distribution channel affects a business's market penetration and profitability. **(6 marks)**
- Using a case study of any Ghanaian company you are familiar with, evaluate how they have adapted their distribution channels to overcome economic challenges in recent years. **(6 marks)**

PLC Session 11**45 minutes****Planning & Reviewing the Learning Plan**

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to
 - explain the week's concepts in a practical way that will make it easier for learners to understand
 - identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
- Use your subject specific app to plan your lesson. Ask the app to
 - suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app

- The key assessment for the week is **group presentation**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the essay (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then

- use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
- all teachers in the group work through a similar problem individually for 3–4 minutes
- the group then works through the problem together step by step
- highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).

- Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
- After the enactment, ask for structured feedback from the group
 - was the concept explained in a way that a learner with no prior knowledge could follow?
 - were the examples grounded in contexts familiar to Ghanaian learners?
 - did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 12

Learning Indicator: Examine the problems and solutions of distribution

Focal Area 1: Problems and Solutions of Distribution

Distribution is the process of making goods and services available to consumers at the right place, in the right quantity, and at the right time. In Ghana, the distribution system faces several challenges, but there are also practical solutions to improve its efficiency.

Problems of Distribution

1. Poor Road Network

Many rural areas in Ghana have poor or unpaved roads, making it difficult for goods to be transported from farms and factories to markets.

2. Inadequate Storage Facilities

Lack of proper storage facilities like warehouses and cold stores causes perishable goods (e.g., tomatoes, fish, fruits) to spoil before reaching the consumer.

3. High Transportation Costs

Rising fuel prices and poor road conditions increase transport costs, which raises the final price of goods for consumers.

4. Middlemen Exploitation

Too many intermediaries in the distribution chain can lead to higher prices and reduced profits for producers.

5. Inconsistent Power Supply

Unreliable electricity supply affects refrigeration and storage, especially for perishable items in markets and stores.

6. Lack of Modern Distribution Systems

Inadequate use of digital and logistics systems like online platforms, barcode scanning, and inventory management slows down distribution efficiency.

7. Insecurity and Theft

Goods in transit may be stolen or damaged due to armed robbery or a lack of secure transport.

Solutions to the Problems of Distribution

1. Improvement of Road Infrastructure

The government should invest in constructing and maintaining feeder roads, especially in agricultural areas, to ensure easy access to markets.

2. Provision of Adequate Storage Facilities

Building modern storage centres and cold rooms in key farming areas will help reduce post-harvest losses and preserve goods longer.

3. Subsidising Fuel and Transport Services

Reducing fuel taxes or supporting transport cooperatives can help bring down transportation costs.

4. Promoting Direct Marketing

Encouraging farmers and producers to sell directly to consumers or retailers can reduce the number of intermediaries and increase producer profits.

5. Investment in Energy Infrastructure

Improving the electricity supply, especially in rural areas, will support the operation of cold stores and reduce the spoilage of goods.

6. Adoption of Technology

Training distributors to use GPS, inventory tracking systems, and online sales platforms can make distribution faster and more efficient.

7. Security Measures

Enhancing police presence on highways and using secure packaging can reduce the risk of theft and damage during distribution.

Learning Tasks

1. Visit a local market, shop, warehouse, or small business involved in distributing goods (e.g., a supermarket, delivery company, wholesale depot, or farm outlet). Investigate the distribution process, the challenges encountered and explore or suggest possible solutions.
2. Summarise the field findings
3. Identify at least three key distribution problems
4. Describe causes and impacts of those problems
5. Suggest two or more realistic solutions
6. Design a poster or digital slideshow to present their findings

Pedagogical Exemplars

Group work/ Collaborative Learning

With knowledge and understanding of distribution, learners visit a nearby distribution firm or wholesale shop or retail shop to collect data about the problems they face in the distribution process and suggest solutions to the problems. Learners organise the data using tables in Microsoft Word or Excel. Support learners to go for a field trip to collect the information. Encourage all learners to participate in the activity.

Key Assessment Practice Paper 1

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

- Identify four major problems commonly faced in the distribution of goods and services. (4 marks)
- For each problem, suggest one practical solution. (4 marks)

Question 2 (10 marks)

- Analyse the distribution problems faced by small-scale farmers in Ghana when trying to get their produce to urban markets. (4 marks)
- Suggest solutions to the distribution problems and evaluate the effectiveness of each. (6 marks)

Question 3 (12 marks)

A pharmaceutical company faces challenges distributing medicines to rural health centers in Ghana. The problems include:

- Poor road networks causing delays
- Lack of refrigeration for temperature-sensitive drugs
- Difficulty tracking inventory levels

Critically evaluate potential solutions.

Question 4 (15 marks)

Ghana's e-commerce sector is growing rapidly, but faces significant distribution challenges including unreliable addressing systems, limited last-mile delivery infrastructure, and consumer reluctance to pay delivery fees. The government is considering various policy interventions.

Examine these distribution problems comprehensively and:

- Analyse the interconnected nature of these challenges (4 marks)
- Evaluate potential solutions from multiple stakeholder perspectives (4 marks)
- Design an integrated approach that addresses systemic issues (4 marks)
- Assess the long-term implications for Ghana's digital economy (3 marks)

Group Presentations

Question 5

As a group of economic consultants, prepare and deliver a 15-minute presentation analysing how the COVID-19 pandemic exposed weaknesses in Ghana's distribution systems across different sectors. Your presentation should:

- Identify three major distribution problems that emerged during the pandemic
- Analyse the economic impact of these distribution challenges on producers, consumers, and the national economy
- Propose innovative solutions that incorporate digital technology and public-private partnerships

- iv. Evaluate the potential effectiveness and limitations of your proposed solutions
- v. Create visual aids (charts, graphs, maps) to illustrate distribution networks and bottlenecks

Question 6

Your group represents the Economic Planning Division for a regional authority in Ghana. Prepare and deliver a 15-minute presentation that critically examines how climate change is affecting distribution networks in your region. Your presentation should:

- i. Analyse how extreme weather events have disrupted at least three specific distribution channels
- ii. Evaluate the economic consequences of these disruptions for different stakeholders
- iii. Develop sustainable and resilient distribution solutions that address both immediate and long-term challenges
- iv. Assess the potential trade-offs and implementation barriers for your proposed solutions
- v. Include a cost-benefit analysis of at least one major proposed intervention

Hint



Conduct **Practice Paper 1**. It should cover the contents taught from Year 1 to 3. Refer to the **Table of Specification and Structure of the Paper** at the end of this section. Learners' papers should be marked immediately and scores entered into the SAP.

TABLE OF TEST SPECIFICATION FOR PAPER 1

Learning Indicator (LI)	DoK 1	DoK 2	DoK 3	TOTAL (per LI)
1.1.1.LI.1 — Define Economics through learners' experiences	☒			1
1.1.1.LI.2 — Career prospects in Economics		☒		1
1.1.1.LI.3 — Tools used in Economic analysis	☒			1
1.1.2.LI.1 — Demand concepts to everyday life		☒		1
1.1.2.LI.2 — Describe demand for goods/ services	☒	☒		2
1.1.2.LI.3 — Law of demand and types of demand	☒			1
1.1.3.LI.1 — Utility concepts in everyday life		☒		1
1.1.3.LI.2 — Diminishing marginal utility	☒			1
1.2.1.LI.1 — Meaning of factors of production	☒			1
1.2.1.LI.2 — Rewards to factors	☒			1
1.2.2.LI.1 — Supply and types of supply	☒			1
1.2.2.LI.2 — Law of supply	☒			1
1.2.3.LI.1 — Concept of market	☒			1

1.3.1.LI.1 — Price in the economy	☒	☒		2
1.4.1.LI.2 — Macroeconomic variables	☒			1
1.4.2.LI.1 — Concept of money	☒			1
1.4.2.LI.2 — Financial institutions	☒			1
1.4.3.LI.1 — Features of domestic trade	☒			1
1.4.3.LI.2 — Examples of domestic trade		☒		1
2.1.2.LI.1 — Factors affecting demand		☒		1
2.1.2.LI.2 — Change in quantity demanded vs. change in demand		☒	☒	2
2.1.3.LI.1 — Utility and equilibrium		☒		1
2.1.3.LI.2 — Sketching utility curves		☒		1
2.2.1.LI.1 — Periods of production		☒		1
2.2.1.LI.2 — Calculate TP, MP, AP			☒	1
2.2.1.LI.3 — Labour vs capital-intensive		☒		1
2.2.1.LI.4 — Calculate costs			☒	1
2.2.3.LI.1 — Market structures		☒		1
2.2.3.LI.2 — Types of profits		☒		1
2.4.1.LI.1 — Effects of macro variables		☒		1
2.4.1.LI.2 — Control policies		☒		1
2.4.2.LI.1 — Reasons for holding money		☒		1
2.4.2.LI.2 — Role of financial institutions		☒		1
2.4.2.LI.3 — Principles/types of taxation		☒		1
3.1.2.LI.1 — Calculate elasticity of demand		☒		1
3.1.2.LI.2 — Factors affecting elasticity of demand			☒	1
3.1.3.LI.1 — Substitution/income effects			☒	1
3.1.3.LI.2 — Mathematical - substitution/income effects			☒	1
3.2.1.LI.1 — Economies of scale	☒			1
3.2.1.LI.3 — Price discrimination			☒	1
3.2.2.LI.1 — Calculate elasticity of supply		☒		1
3.2.2.LI.2 — Importance of elasticity of supply		☒		1
3.2.3.LI.1 — Distribution agencies			☒	1
3.2.3.LI.2 — Problems/solutions in distribution			☒	1
3.3.1.LI.1 — Min/max price controls			☒	1

3.3.1.LI.2 — Effects of price controls			☒	1
3.4.1.LI.2 — Multiplier			☒	1
TOTAL (per DOK)	15	20	15	50

TABLE OF SPECIFICATION FOR PAPER 2

Q. No.	Learning Indicator (LI)	Question Parts	Marks	DOK Level
Q1	2.4.1.LI.1 – National Income (Expenditure Approach)	(a) State the formula	2	DOK 1 – Recall
		(b) Discuss 3 usefulness	6	DOK 2 – Conceptual
		(c) Calculate National Income	6	DOK 2 – Skill/Concept
		(d) Explain 3 implications of trade deficit	6	DOK 2 – Skill/Concept
Q2	2.1.2.LI.1 – Price Elasticity of Demand (PED)	(a) Calculate PED	6	DOK 2 – Skill/Concept
		(b) Interpret result	4	DOK 2 – Conceptual
		(c) Analyse why elasticity result makes sense	6	DOK 3 – Strategic Thinking
		(d) Evaluate pricing strategy impact	4	DOK 3 – Strategic Thinking
Q3	3.3.2.LI.1 – International Trade	(a) Distinguish BoT vs BoP	4	DOK 1 – Recall
		(b) 4 benefits of international trade	16	DOK 2 – Conceptual
Q4	2.4.2.LI.3 – Taxation	(a) Define & differentiate taxes	4	DOK 1 – Recall
		(b) Explain 4 principles of good tax	16	DOK 2 – Conceptual
Q5	2.2.1.LI.1 – Location & Localisation of Industry	(a) Define location & localisation	4	DOK 1 – Recall
		(b) 4 factors influencing location	16	DOK 2 – Conceptual
Q6	2.2.3.LI.1 – Market Structures	(a) Compare Perfect Competition & Monopoly	16	DOK 2 – Conceptual
		(b) Identify market structure & justify	4	DOK 2 – Conceptual

Q7	2.1.1.LI.1 – Importance/Challenges of Agriculture	(a) State 4 contributions	4	DOK 1 – Recall
		(b) Discuss 4 challenges & solutions	16	DOK 2 – Conceptual
Q8	2.4.2.LI.1 – Concept of Money	(a) State 4 qualities of good money	4	DOK 1 – Recall
		(b) Evaluate e-money vs qualities of good money	16	DOK 3 – Strategic Thinking

PLC Session 12

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous session, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand.
 - b. identify three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q).
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Use your app to plan and administer the mode of assessment for the Student Assessment Portal (SAP)
 - a. The key assessment for the week is ***practice paper 1***. Chat with your app to plan this assessment by reviewing or developing the assessment items/tasks and marking schemes/rubrics for the practice paper (NTS 3k-3q).

10 minutes**Content Exploration**

5. As a subject group, select one problem or topic/idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through the problem individually for 3–4 minutes
 - c. the group then works through it together the problem, step by step
 - d. highlight the most common errors made at each step (NTS 1c, 1e, 2c, 2e, 3e-3j).

**Note**

- This part is not 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

SECTION 5 REVIEW

The lessons taught in section are focused on the distribution in the market system. It brought to fore the methods, agencies and channels of distribution. The session ends by examining the problems and solutions of distribution. The teacher applied varied pedagogical skills, specifically experiential learning and project-based learning and assessment techniques subject to the abilities of the learners to achieve the learning indicators for each week.

Teaching and Learning Resources

Week 11: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 12: Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Teacher Assessment Manual and Toolkits for Curriculum Trial Handbook for Teachers

Economics PLC Handbook

Textbooks

BoakyeYiadom, L., BaahBoateng, W., & Oduro, A. D. (2014). *The study and practice of economics in Ghana*. In *Changing Perspectives on the Social Sciences in Ghana* (pp. 135–158). Springer.

Lipsey, R. G., & Chrystal, K. A. (2020). *Economics* (14th ed.). Oxford University Press.

Mankiw, N. G. (2020). *Principles of Economics* (10th ed.). Cengage Learning.

McConnell, C. R., Brue, S. L., & Flynn, S. M. (2021). *Economics: Principles, Problems, and Policies* (22nd ed.). McGrawHill Education.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 11

Question 1

- Direct Distribution Method (**2 marks**)
 - Explanation: Producer sells directly to consumer without intermediaries (1 mark)
 - Example: Farmer selling at local market, online sales, door-to-door sales (1 mark)
- Indirect Distribution Method (**2 marks**)
 - Explanation: Producer uses intermediaries like wholesalers/retailers to reach consumers (1 mark)
 - Example: Manufacturer → Wholesaler → Retailer → Consumer (1 mark)
- Selective Distribution Method (**2 marks**)
 - Explanation: Producer chooses specific outlets/retailers to distribute products (1 mark)
 - Example: Luxury brands using authorized dealers, pharmaceuticals through licensed pharmacies (1 mark)

Question 2

- **Wholesaler (2 marks)**
 - Role: Buys in bulk from manufacturers and sells to retailers (1 mark)
 - Function: Provides storage, breaking bulk, credit facilities (1 mark)
- **Retailer (2 marks)**
 - Role: Sells directly to final consumers in small quantities (1 mark)
 - Function: Provides convenience, customer service, product information (1 mark)
- **Agent/Broker (2 marks)**
 - Role: Acts as intermediary facilitating transactions between parties (1 mark)
 - Function: Negotiates deals, does not take ownership, earns commission (1 mark)
- **Distributor (2 marks)**
 - Role: Exclusive representative of manufacturer in specific geographic area (1 mark)
 - Function: Manages marketing, sales, after-sales service for the manufacturer (1 mark)

Question 3

- **Direct Distribution Analysis (4 marks)**
 - Advantages: Higher profit margins, direct customer contact, better control over brand image (2 marks)
 - Disadvantages: Higher costs, limited reach, requires more resources (1 mark)
 - Circumstances: High-value products, limited target market, strong brand loyalty (1 mark)
- **Indirect Distribution Analysis (4 marks)**
 - Advantages: Wider market coverage, lower distribution costs, expertise of intermediaries (2 marks)
 - Disadvantages: Lower profit margins, less control, dependency on intermediaries (1 mark)
 - Circumstances: Mass market products, limited resources, need for wide geographical coverage (1 mark)
- **Strategic Considerations (2 marks)**
 - Company size and resources affect choice (1 mark)
 - Product characteristics and target market influence decision (1 mark)

Question 4

- **Part (a) - Domestic Market Expansion (4 marks)**
 - Multi-channel approach: Use existing supermarket chains plus independent retailers (1 mark)
 - Regional distributors for efficient coverage across Ghana's regions (1 mark)
 - Direct sales to institutions (schools, hotels) for bulk orders (1 mark)
 - Online platform for urban consumers and convenience (1 mark)

- Part (b) - Export Market Entry (**4 marks**)
 - Export agents with knowledge of regional markets and regulations (1 mark)
 - Partnership with established distributors in target countries (1 mark)
 - Trade shows and export promotion agencies for market entry (1 mark)
 - Gradual expansion through selective distribution to assess markets (1 mark)
- Part (c) - Long-term Sustainability (**4 marks**)
 - Build strong relationships with key distribution partners (1 mark)
 - Develop multiple channels to reduce dependency risk (1 mark)
 - Invest in supply chain technology for efficiency (1 mark)
 - Regular evaluation and adaptation of distribution strategy based on market feedback (1 mark)

Question 5

Part a) - (8 marks)

- Identification of two direct channels (1 mark each) = 2 marks
- Explanation of two direct channels (1 mark each) = 2 marks
- Identification of two indirect channels (1 mark each) = 2 marks
- Explanation of two indirect channels (1 mark each) = 2 marks

Model Answer for Part (a)

Direct channels

1. Manufacturer to consumer: Awala Trading Company sells directly to final consumers through company-owned stores or e-commerce platforms.
2. Manufacturer to industrial user: Awala sells directly to businesses like hotels or cleaning companies that use their products in bulk.

Indirect channels

1. Manufacturer to retailer to consumer: Awala supplies to supermarkets and small retail shops who then sell to final consumers.
2. Manufacturer to wholesaler to retailer to consumer: Awala sells in bulk to wholesalers who distribute to retailers before reaching consumers.

Part b) - (6 marks)

- Comparison of effectiveness in urban markets (1.5 marks)
- Comparison of effectiveness in rural markets (1.5 marks)
- Analysis of differences between urban and rural distribution challenges (3 marks)

Model Answer for Part (b): In urban markets, direct channels like company-owned stores and e-commerce are highly effective due to higher literacy rates, internet access, and proximity to manufacturing sites. Indirect channels with retailers are also effective as supermarkets and shops are densely located in urban areas.

In rural markets, indirect channels particularly using wholesalers and retailers are more effective because they leverage existing market structures. Direct distribution is challenging due to poor infrastructure, limited internet connectivity, and dispersed population.

The key differences include transportation costs (higher for rural areas), consumer purchasing power (generally lower in rural areas), and brand awareness (typically higher in urban areas). In urban areas, distribution can focus on convenience and product variety, while rural distribution must emphasise affordability and product durability. Additionally, urban areas benefit from multiple channel options while rural areas often depend on established traditional channels.

Part c) - (6 marks)

- Recommendation with clear reasoning (2 marks)
- Economic justification with specific references to Ghanaian context (2 marks)
- Consideration of potential challenges and solutions (2 marks)

Question 6

Part a) - (8 marks)

- Identification of four distribution agencies (1 mark each) = 4 marks
- Description of each agency's role (1 mark each) = 4 marks

Part b) - (6 marks)

- Explanation of function in distribution chain (3 marks)
- Specific examples from Ghana's agricultural sector (3 marks)

Part c) - (6 marks)

- Analysis of price impact (2 marks)
- Critical evaluation of current efficiency issues (2 marks)
- Logical suggestions for improvement (2 marks)

Question 7

Part a) - (8 marks)

- Description of four distribution methods (1 mark each) = 4 marks
- One advantage for each method (0.5 marks each) = 2 marks
- One disadvantage for each method (0.5 marks each) = 2 marks

Part b) - (6 marks)

- Explanation of impact on market penetration (3 marks)
- Explanation of impact on profitability (3 marks)

Part c) - (6 marks)

- Identification of appropriate case study (1 mark)
- Description of distribution challenges faced (1 mark)
- Analysis of adaptation strategies (2 marks)
- Evaluation of effectiveness of changes (2 marks)

WEEK 12**Question 1**

- **Problem 1: High Transportation Costs (2 marks)**
 - Problem: Expensive fuel, poor road infrastructure increases distribution costs (1 mark)
 - Solution: Bulk transportation, route optimization, shared logistics services (1 mark)
- **Problem 2: Storage and Warehousing Issues (2 marks)**
 - Problem: Inadequate storage facilities leading to spoilage and losses (1 mark)
 - Solution: Investment in modern warehousing, cold storage facilities, inventory management systems (1 mark)
- **Problem 3: Lack of Market Information (2 marks)**
 - Problem: Producers do not know where demand exists, leading to oversupply in some areas (1 mark)
 - Solution: Market research, information systems, communication networks between producers and retailers (1 mark)
- **Problem 4: Credit and Finance Issues (2 marks)**
 - Problem: Distributors lack working capital to purchase and stock goods (1 mark)
 - Solution: Trade credit from manufacturers, microfinance schemes, supplier financing arrangements (1 mark)

Question 2

- **Problem Analysis (4 marks)**
 - Long distances from farms to urban centers increase transportation costs (1 mark)
 - Lack of proper storage leads to post-harvest losses (1 mark)
 - Exploitation by intermediaries who offer low prices (1 mark)
 - Poor market information leading to oversupply and price crashes (1 mark)
- **Solution Evaluation (6 marks)**
 - Farmer cooperatives: Effective for bulk transportation and better bargaining power (2 marks)
 - Market information systems (SMS platforms): Moderately effective but requires literacy and phone access (2 marks)
 - Direct market access initiatives: Effective but limited by scale and organization challenges (2 marks)

Question 3

- **Problem-Specific Solutions (12 marks)**
 - Road network: Use 4WD vehicles, partner with local transport companies, establish regional hubs (4 marks)

- Refrigeration: Mobile cold storage units, solar-powered refrigeration, training on proper storage (4 marks)
- Inventory tracking: Digital inventory management systems, regular communication protocols, automated reorder systems (4 marks)

Question 4

- Part (a) - Interconnected Analysis (**4 marks**)
 - Addressing system problems make delivery locations difficult to find, increasing costs (1 mark)
 - High delivery costs passed to consumers create resistance and reduce e-commerce adoption (1 mark)
 - Poor infrastructure limits delivery options, forcing expensive alternatives (1 mark)
 - Low adoption reduces economies of scale, keeping costs high - creating a vicious cycle (1 mark)
- Part (b) - Multi-stakeholder Evaluation (**4 marks**)
 - Government perspective: Need for infrastructure investment and regulatory frameworks (1 mark)
 - E-commerce companies: Require cost-effective delivery solutions and customer acceptance (1 mark)
 - Consumers: Want affordable, reliable delivery with clear addressing (1 mark)
 - Logistics companies: Need profitable business models and supportive infrastructure (1 mark)
- Part (c) - Integrated Approach Design (**4 marks**)
 - National addressing system implementation with GPS integration (1 mark)
 - Public-private partnerships for delivery hub development (1 mark)
 - Graduated subsidy system for delivery fees during market development phase (1 mark)
 - Standardization of delivery processes and customer education programs (1 mark)
- Part (d) - Long-term Implications Assessment (**3 marks**)
 - Successful solutions could position Ghana as regional e-commerce hub (1 mark)
 - Improved distribution systems benefit overall logistics and supply chain efficiency (1 mark)
 - Digital economy growth contributes to GDP, employment, and financial inclusion (1 mark)

Question 5 & 6**Group Presentations**

Assessment Criteria (Total: 20 marks per presentation)

Criteria	Marks	Performance Indicators
Content Knowledge and Analysis	6	• Demonstrates comprehensive understanding of distribution problems • Critically analyses root causes rather than just symptoms • Makes sophisticated connections between distribution issues and broader economic concepts • Shows original insight into complex distribution challenges
Solution Development and Evaluation	6	• Proposes innovative and feasible solutions • Critically evaluates solutions against multiple criteria • Considers unintended consequences and limitations • Demonstrates systems thinking in solution design • Shows awareness of implementation challenges
Evidence and Examples	3	• Uses specific, relevant, and current examples • Incorporates appropriate data and statistics • Cites credible sources • Effectively uses visual evidence (charts, maps,)
Presentation Skills and Organisation	3	• Clear structure with logical flow • Effective use of visual aids • Equal contribution from all group members • Professional delivery and time management • Manages questions with depth and insight
Critical Thinking and Creativity	2	• Challenges conventional thinking • Makes insightful connections between concepts • Shows original approaches to distribution problems • Demonstrates awareness of multiple perspectives

Grading Guidelines**Excellent (16-20 marks)**

- Comprehensive analysis that demonstrates extended critical thinking
- Innovative and well-evaluated solutions
- Strong evidence and examples
- Professional presentation with excellent organisation

Good (11-15 marks)

- Solid analysis with good critical thinking
- Practical solutions with some evaluation
- Adequate evidence and examples
- Clear presentation with good organisation

Satisfactory (6-10 marks)

- Basic analysis with limited critical thinking
- Simple solutions with minimal evaluation
- Limited evidence and examples
- Uneven presentation with some organisational issues

Needs Improvement (1-5 marks)

- Superficial analysis lacking critical thinking
- Vague or impractical solutions without evaluation
- Few relevant examples or evidence
- Poor presentation skills and organisation

SECTION 6: PRICE CONTROL

STRAND: PRICE ANALYSIS AND PREDICTION IN THE MODERN ECONOMY

Sub-Strand: Price and equilibrium analysis

Week 13 & 14

Content Standard: *Demonstrate understanding in price control*

Learning Outcome: Distinguish between minimum (Price Floor) and maximum (Price Ceiling) price controls

INTRODUCTION AND SECTION SUMMARY

Section six covers Price analysis and prediction in the modern economy focusing on Price and equilibrium analysis. The content focuses on price floor and price ceiling. The section starts by introducing price floor and ceiling after recapping lessons learnt on price in the modern economy from year 1 and 2. After which the problems of both price floor and ceiling were identified as well as their positive and negative impacts.

Teachers should note that the concept of Price and equilibrium analysis is linked to Physics, Accounting, Home Economics and Engineering.

The weeks and the indicators covered by the section are:

- *Week 13: Explain Minimum (Price Floor) and Maximum (Price Ceiling) price controls*
- *Week 14: Examine the problems and effects of Minimum (Price Floor) and Maximum (Price Ceiling) price controls*

Recap weeks

Year 1	Week 16: Describe price in the economy. Week 17: Discuss the factors that affect pricing in the economy.
Year 2	Week 15 • Explain the equilibrium situation in the market • Determine the equilibrium quantity and price in the market

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogies to the teacher. These are Talk for learning approaches (TfL) and Building on What Others say. In Talk for learning approaches (TfL), the teacher is expected to assist learners develop demonstrative activities leading to quality discussion on the maximum price control. In Building on What Others say, the teacher is

expected to assist learners to brainstorm on the problems and effects of Minimum (Price Floor) and Maximum (Price Ceiling) price controls.

It must be indicated that teachers apply these pedagogies based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessments in this section are level 4 for the first indicator and level 3 for the second indicator. Teachers should note that only level two, three and four questions are provided under key assessment for the two indicators so as to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategies to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Explain Minimum (Price Floor) and Maximum (Price Ceiling) price controls	4	Strategy: Reflective Individual exercise Mode: Class Work
Examine the problems and effects of Minimum (Price Floor) and Maximum (Price Ceiling) price controls	3	Strategy: Individual Mode: Class work

WEEK 13

Learning Indicator: Explain Minimum (Price Floor) and Maximum (Price Ceiling) price controls

Focal Area 1: Price Floor

Introduction:

Price control refers to government action to regulate the price of goods and services in order to achieve certain economic and social goals. It involves setting limits on how high or how low prices can go in the market.

The main objectives of price control include protecting consumers from exploitation, especially during shortages, and ensuring that essential goods remain affordable. It is also used to stabilise prices in times of inflation and to protect producers by guaranteeing minimum prices for their goods. Price control can take two main forms; Price floor, and Price ceiling.

A **price floor** is the minimum legal price that can be charged for a good or service. It is set above the equilibrium price to ensure producers receive a minimum income or to protect an industry. A price floor supports producers by preventing prices from falling too low, but it can create excess supply if not carefully managed.

Key Features of a Price Floor

- Set by the government
- Cannot sell below this price
- Helps producers (e.g., farmers, workers)
- Often leads to surpluses if the floor is too high

Examples of Price Floors

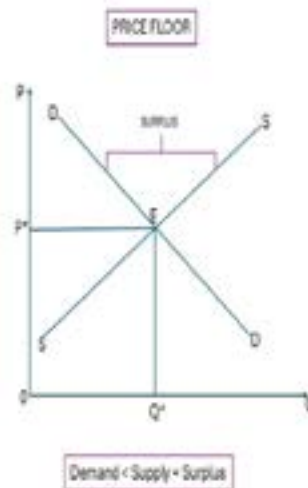
- Minimum wage – the lowest legal wage a worker can be paid.
- Government-set minimum price for cocoa in Ghana – to protect cocoa farmers

Illustration

Imagine the equilibrium price of maize is GHS 10 per bag. The government sets a price floor of GHS 15 to help farmers earn more. But at GHS 15:

- Farmers want to sell more (higher price motivates production).
- Buyers buy less (too expensive).
- Result: Surplus – too much maize, not enough buyers.

Price Floor Graph



Source: Author Generated, 2025

Reasons for the introduction of Price Floor

A price floor is set above the equilibrium price to protect producers and stabilise their income.

1. Governments introduce a price floor to **protect producers' income**. When market prices fall too low, producers may not cover their cost of production. A minimum price ensures they earn enough to remain in business.
2. It is used to **encourage production**, especially in agriculture. Farmers are more willing to produce crops like cocoa, maize, or rice when they are assured of a stable and fair price.
3. A price floor helps to **prevent exploitation of producers** by middlemen or large buyers. Without regulation, powerful buyers may force prices down, reducing farmers' earnings.
4. It promotes **stability in key industries**. Fluctuating prices can discourage investment, so a guaranteed minimum price helps maintain steady output in important sectors.
5. Governments use it to **support strategic or essential goods**. For example, food production may be supported to ensure food security in the country.
6. It can help to **reduce rural poverty**. By guaranteeing better prices for farm produce, incomes of rural households improve, leading to better living standards.

Learning Tasks

1. Recap Price and equilibrium analysis by describing price in the economy including the factors that affect pricing in the economy and explaining the equilibrium situation in the market by highlighting the equilibrium price and quantity.
2. Think Pair Share this prompt question "Have you or someone you know ever complained about prices being too high in Ghana?"
3. Volunteers share key ideas with the class
4. Research and explain *Price Floor*

Pedagogical Exemplars

Talk for learning approaches (TfL)

Develop demonstrative activities leading to quality discussion on price floor. Activities must be inclusive to capture all the different needs of learners. Each learner must participate effectively in the learning activities and the views of each other must be respected. Equal opportunities should be given to all volunteers and good points should be noted.

Focal Area 2: Price Ceiling

A price ceiling is the maximum legal price that can be charged for a good or service. It is usually set below the equilibrium price to make essential goods more affordable for consumers.

Key Features of a Price Ceiling

- Set by the government
- Cannot charge above this price
- Protects consumers, especially in times of crisis
- Often leads to shortages if the ceiling is too low

Examples of Price Ceilings

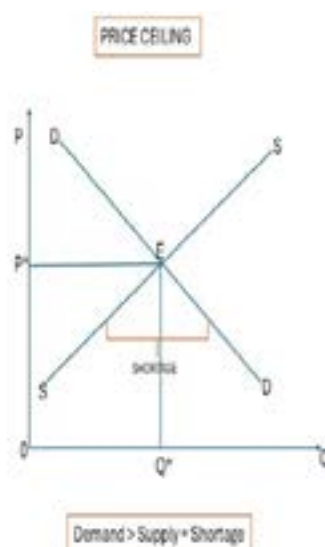
- Rent control in cities to make housing affordable
- Fuel price limits in Ghana to reduce transport costs
- Price control on essential drugs or food items

Illustration

Suppose the equilibrium price of petrol is GHS 20 per gallon, but the government sets a price ceiling of GHS 15:

- Consumers want to buy more (cheaper price).
- Sellers supply less (not profitable).
- Result: Shortage – too many buyers, not enough supply

Price Ceiling Graph



Source: Author Generated, 2025.

Reasons for the introduction of Price Ceiling

A price ceiling is set below the equilibrium price to protect consumers and make goods affordable.

1. Governments introduce a price ceiling to **protect consumers from high prices**. This is important for essential goods such as food, water, and housing.
2. It is used to **control inflation**. When prices rise rapidly, setting a maximum price helps to limit the increase and maintain purchasing power.
3. A price ceiling ensures **fair access to basic goods and services**. Low-income households can still afford necessities when prices are controlled.
4. It helps to **prevent exploitation during shortages**. In times of crisis, such as drought or fuel shortages, sellers may charge very high prices. A ceiling prevents this.
5. Governments use it to **promote social welfare and equity**. By keeping prices low, more people can meet their basic needs.
6. It can be used to **maintain political and social stability**. Sharp increases in prices of essential goods can lead to public dissatisfaction, so controlling prices helps reduce tension.

Learning Tasks

1. Think Pair Share this prompt question “Have you or someone you know ever complained about prices being too low in Ghana?”
2. Volunteers share key ideas with the class
3. Research and explain *Price ceiling*

Pedagogical Exemplars

Talk for learning approaches (TfL)

Develop demonstrative activities leading to quality discussion on price ceiling. Activities must be inclusive to capture all the different needs of learners. Each learner must participate effectively in the learning activities and the views of each other must be respected. Equal opportunities should be given to all volunteers and good points should be noted.

Key Assessment Level 4: Reflective Individual Class Exercise

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

- a. Define price floor and price ceiling. (4 marks)
- b. Explain the conditions under which each type of price control becomes effective and give one example of each. (4 marks)

Question 2 (10 marks)

Analyse the market effects when the government imposes a price floor on cocoa at GH¢800 per bag when the equilibrium price is GH¢600 per bag. Explain the consequences for producers, consumers, and the overall market.

Question 3 (12 marks)

A government imposes a price ceiling on rental apartments at GH¢500 per month when the market rent is GH¢800 per month.

Evaluate the short-term and long-term effects of this policy on:

- Housing supply and demand **(4 marks)**
- Quality of rental accommodation **(4 marks)**
- Alternative market developments **(4 marks)**

Essay Questions

Question 4

The government of Ghana is considering implementing a minimum price for cocoa to protect farmers.

- Explain the theoretical framework of a price floor, using appropriate diagrams to illustrate the market before and after implementation. **(8 marks)**
- Analyse three potential unintended consequences of this price floor policy for the Ghanaian cocoa sector, providing economic reasoning for each. **(6 marks)**
- Recommend any two complementary policies that could enhance the effectiveness of the cocoa price floor while minimising its negative impacts. **(6 marks)**

Question 5

Compare and contrast price floors and price ceilings in Ghana's economic context.

- Analyse how the structure of a market (competitive, monopolistic, oligopolistic) affects the outcomes of price floors and price ceilings, using examples from Ghana's economy. **(6 marks)**
- Explain three specific conditions under which price controls might be more effective than alternative policy instruments in achieving social welfare objectives. **(9 marks)**
- Drawing from Ghana's economic history, evaluate one successful and one unsuccessful implementation of price controls, explaining the factors that contributed to these different outcomes. **(5 marks)**

Question 6

A small agricultural community in northern Ghana faces volatile prices for their main crop.

- Analyse three reasons why traditional price floors or ceilings might be problematic when applied to agricultural markets in rural northern Ghana. **(6 marks)**
- Design an alternative economic intervention that addresses price volatility while avoiding the typical pitfalls of traditional price controls. **(8 marks)**
- Evaluate potential unintended consequences of your proposed intervention and explain how these might be mitigated. **(6 marks)**

PLC Session 13

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **reflective individual class exercise**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the class exercise (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?

- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 14

Learning Indicator: Examine the problems and effects of Minimum (Price Floor) and Maximum (Price Ceiling) price controls

Focal Area 1: The Impact of Price Floor and Ceiling

Problems of Price Controls

Shortages (under Price Ceilings): When prices are set below market equilibrium, demand increases but supply decreases which results in not enough goods available (e.g., fuel shortages, empty supermarket shelves).

Surpluses (under Price Floors): When prices are set above market equilibrium, supply increases but demand falls. Resulting in extra goods pile up unsold (e.g., surplus food crops or labour).

Black Markets: Illegal markets often emerge where goods are sold at higher prices due to shortages or restrictions. This results in undermining government policy and increases inequality.

Reduced Product Quality: Producers may cut corners to reduce costs if they can't charge higher prices. Example: Poor housing conditions under rent control.

Distorted Resource Allocation: Resources are not used efficiently because prices are not allowed to signal scarcity or abundance. Example: Farmers may overproduce a crop due to guaranteed prices.

Unemployment: If minimum wages are too high, employers may reduce hiring, leading to job losses—especially among low-skilled workers.

Corruption and Favouritism: When there is scarcity, goods may be allocated unfairly through bribery, connections, or favouritism.

Positive Impacts of Price Floor

- Protects producers (e.g., farmers or workers) from very low prices/income.
- Encourages production, especially in strategic sectors like agriculture.
- Improves standard of living for some workers or producers.

Negative Impacts of Price Floor

- Surplus (excess supply): Quantity supplied exceeds quantity demanded.
- Unemployment: If minimum wage is too high, employers may reduce hiring.
- Government burden: The state may have to buy excess supply, increasing public spending.
- Market inefficiencies: Leads to misallocation of resources—producers keep supplying products that consumers do not want at that price.

Positive Impacts of Price Ceiling

- Protects consumers by making essential goods affordable.
- Improves access to critical items like housing, fuel, or healthcare.

- Controls inflation in times of crisis.

Negative Impacts of Price Ceiling

- Shortages: Demand exceeds supply because the price is too low.
- Black markets: Illegal selling at higher prices due to scarcity.
- Decline in quality: Producers may cut costs to stay profitable.
- Disincentive to produce: Suppliers may leave the market due to low profits

Learning Tasks

1. Brainstorm the following quotes;
 - a. A farmer: "The government price for maize is high, but now I can't sell much."
 - b. A consumer: "I cannot find cooking oil anymore. The price is low, but it is always out of stock."
 - c. A fuel seller: "Since the price is fixed, I sell secretly to make a profit."
2. Discuss
 - a. What is the person's concern?
 - b. What problem or effect of price control is shown?
3. Add your own opinions and experiences.
4. Encourage classmates to respond and build on each idea, using respectful discussion
5. Write down the main points you agree or disagree with and why.

Pedagogical Exemplars

Building on What Others say

Brainstorm on the problems and effects of Minimum (Price Floor) and Maximum (Price Ceiling) price controls. Gather few quotes based on everyday life experiences that will help in brainstorming. Assist learners to discuss the major problems that price control pose in the market using Ghanaian examples. Each learner's learning needs must be met, and all views must be respected.

Key Assessment Level 3: Individual Classwork

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

- a. State four major problems that arise when governments implement price ceiling controls. (4 marks)
- b. For each problem, explain how it affects market functioning. (4 marks)

Question 2 (12 marks)

Consider the effects of implementing a minimum wage (price floor) of GH¢15 per day when the market wage is GH¢10 per day. Analyse the impacts on:

- Employment levels in different sectors **(4 marks)**
- Small businesses versus large corporations **(4 marks)**
- Income distribution and poverty levels **(4 marks)**

Question 3 (14 marks)

The Ghana government implemented rent controls (price ceiling) on residential apartments in Accra, setting maximum rent at 60% of market rates to address housing affordability.

Examine the problems and effects of this policy by analysing:

- Short-term and long-term housing market effects **(4 marks)**
- Effects on different stakeholder groups **(4 marks)**
- Unintended consequences that emerged **(3 marks)**
- Overall assessment of policy effectiveness **(3 marks)**

Extension Question 4 (16 marks)

During the global food crisis, the Ghanaian government is considering implementing price controls on essential food items. Economists argue for price ceilings to make food affordable, while farmers' associations advocate for price floors to protect producers.

Critically examine both approaches by:

- Analysing the economic rationale behind each proposal **(4 marks)**
- Evaluating the potential unintended consequences of each policy **(4 marks)**
- Assessing the distributional effects on different income groups **(4 marks)**
- Recommending an alternative policy approach with justification **(4 marks)**

Essay Questions**Extension Question 5**

The government of Ghana is considering implementing a price floor for locally grown rice to support farmers.

- Analyse three specific problems that might arise from implementing this rice price floor policy in Ghana. **(15 marks)**
- Evaluate one alternative policy approach that could support rice farmers while avoiding the problems identified in part (b). **(5 marks)**

Question 6

The Ghanaian government has implemented a price ceiling on rental housing in Accra to make housing more affordable.

- Examine three specific effects this rent ceiling would likely have on Accra's housing market over time. **(15 marks)**

- b. Discuss how the effectiveness of this rent ceiling policy might vary across different neighbourhoods in Accra. **(5 marks)**

Question 7

Ghana's National Petroleum Authority occasionally sets maximum prices (price ceilings) for petroleum products.

- Explain why governments implement price ceilings on essential commodities like fuel and identify two specific economic or social objectives they hope to achieve. **(6 marks)**
- Analyse three problems that typically arise when price ceilings are placed on petroleum products. **(9 marks)**
- Evaluate how the effectiveness of fuel price ceilings might differ between short-term and long-term implementation periods. **(5 marks)**

PLC Session 14

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to
 - explain the week's concepts in a practical way that will make it easier for learners to understand
 - identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
- Use your subject specific app to plan your lesson. Ask the app to
 - suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

- Plan the week's key assessment with your app
 - The key assessment for the week is **individual classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
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30 minutes

Enactment

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5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
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Section 6 Review

The lessons taught in section six are focused on the price and equilibrium analysis which was unpacked into price floor, price ceiling and the problems and impact of price control. The learners by the end of the lessons would have acquired knowledge and understanding in how price floor and price ceiling are presented graphically, state the examples of price control using the Ghanaian context, identify the problems and the impact of price control in Ghana. The teacher applied varied pedagogical skills, specifically Talk for learning approaches (TfL) and Building on What Others say. A recap of lessons learnt in year one and two were done and assessment techniques subject to the abilities of the learners to achieve the learning indicators for the weeks were done.

Teaching and Learning Resources

Week 13: Textbooks, Exercise books, Internet, Computer Lab, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 14: Textbooks, Exercise books, Internet, Computer Lab, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Teacher Assessment Manual and Toolkits for Curriculum Trial Handbook for Teachers

Economics PLC Handbook

Textbooks

Ackah, C., & Aryeetey, E. (2012). Globalization, trade and poverty in Ghana: A case study of Ghana. Sub-Saharan Publishers.

Lipsey, R. G., & Chrystal, K. A. (2020). Economics (14th ed.). Oxford University Press.

Mankiw, N. G. (2020). Principles of Economics (10th ed.). Cengage Learning.

McConnell, C. R., Brue, S. L., & Flynn, S. M. (2021). Economics: Principles, Problems, and Policies (22nd ed.). McGraw-Hill Education.

Osei-Assibey, E., & Frempong, E. (2021). Public sector economics: Principles and practice in Ghana. Woeli Publishing Services.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 13

Question 1

- Price Floor Definition (2 marks)
 - A minimum price set by government above the market equilibrium price (1 mark)
 - Prevents price from falling below the specified level (1 mark)
- Price Ceiling Definition (2 marks)
 - A maximum price set by government below the market equilibrium price (1 mark)
 - Prevents price from rising above the specified level (1 mark)
- Effectiveness Conditions (2 marks)

- Price floor effective only when set above equilibrium price (1 mark)
- Price ceiling effective only when set below equilibrium price (1 mark)
- Examples (2 marks)
 - Price floor example: Minimum wage, agricultural price supports (1 mark)
 - Price ceiling example: Rent controls, fuel price caps, essential drug price limits (1 mark)

Question 2

- Market Effect Analysis (4 marks)
 - Creates surplus as quantity supplied exceeds quantity demanded at GH¢800 (2 marks)
 - Market disequilibrium with excess supply (2 marks)
- Producer Effects (2 marks)
 - Farmers receive higher price than market equilibrium (1 mark)
 - Some farmers may increase production, others benefit from higher income (1 mark)
- Consumer Effects (2 marks)
 - Consumers pay higher price, reducing quantity demanded (1 mark)
 - Consumer surplus decreases due to higher prices (1 mark)
- Overall Market Consequences (2 marks)
 - Deadweight loss from market inefficiency (1 mark)
 - Government may need to purchase surplus or find alternative solutions (1 mark)

Question 3

- Part (a) - Supply and Demand Effects (4 marks)
 - Short-term: Shortage as quantity demanded exceeds quantity supplied (2 marks)
 - Long-term: Supply decreases as landlords exit market, demand may increase further (2 marks)
- Part (b) - Quality Effects (4 marks)
 - Short-term: Existing quality maintained initially (1 mark)
 - Long-term: Quality deteriorates as landlords reduce maintenance spending (2 marks)
 - New construction declines due to reduced profitability (1 mark)
- Part (c) - Alternative Developments (4 marks)
 - Illegal market emerges with higher illegal rents (2 marks)
 - Non-price rationing: waiting lists, discrimination, key money payments (2 marks)

Question 4 (20 marks)

- Explanation of price floor theoretical framework (8 marks)
 - Clear definition of price floor as minimum legal price (1 mark)
 - Accurate diagram showing market equilibrium before price floor (3 marks)
 - Accurate diagram showing price floor above equilibrium price (1 mark)

- Correct identification of resulting surplus (1 mark)
 - Explanation of how price floor affects quantity supplied (1 mark)
 - Explanation of how price floor affects quantity demanded (1 mark)
- b. Analysis of unintended consequences (6 marks)
- First consequence with economic reasoning (e.g., surplus production) (2 marks)
 - Second consequence with economic reasoning (e.g., government storage costs) (2 marks)
 - Third consequence with economic reasoning (e.g., smuggling/illegal market) (2 marks)
- c. Complementary policies (6 marks)
- First policy recommendation (3 marks)
 - Second policy recommendation (3 marks)

Question 5 (20 marks)

- a. Analysis of market structure effects (6 marks)
- Analysis of price controls in competitive markets with example (2 marks)
 - Analysis of price controls in monopolistic markets with example (2 marks)
 - Analysis of price controls in oligopolistic markets with example (2 marks)
- b. Conditions for effectiveness (9 marks)
- First condition with economic reasoning (3 marks)
 - Second condition with economic reasoning (3 marks)
 - Third condition with economic reasoning (3 marks)
- c. Historical evaluation (5 marks)
- Analysis of successful implementation with factors (2.5 marks)
 - Analysis of unsuccessful implementation with factors (2.5 marks)

Question 6 (20 marks)

- a. Analysis of problems with traditional price controls (6 marks)
- First reason with context-specific analysis (2 marks)
 - Second reason with context-specific analysis (2 marks)
 - Third reason with context-specific analysis (2 marks)
- b. Alternative intervention design (8 marks)
- Clear description of intervention mechanism (2 marks)
 - Economic reasoning supporting the design (2 marks)
 - Implementation details and governance structure (2 marks)
 - Expected outcomes for key stakeholders (2 marks)

- c. Unintended consequences and mitigation (6 marks)
- First potential consequence with mitigation strategy (2 marks)
 - Second potential consequence with mitigation strategy (2 marks)
 - Third potential consequence with mitigation strategy (2 marks)

WEEK 14

Question 1

- Problem 1: Market Shortages (**2 marks**)
 - Price ceiling below equilibrium creates excess demand over supply (1 mark)
 - Results in insufficient goods available for all consumers who want them (1 mark)
- Problem 2: Development of Illegal Markets (**2 marks**)
 - Desperate consumers willing to pay above ceiling price illegally (1 mark)
 - Undermines government policy and creates illegal economic activity (1 mark)
- Problem 3: Quality Deterioration (**2 marks**)
 - Producers reduce quality to maintain profit margins at controlled prices (1 mark)
 - Consumers receive inferior products despite price controls (1 mark)
- Problem 4: Misallocation of Resources (**2 marks**)
 - Non-price rationing mechanisms (queuing, favouritism) replace market forces (1 mark)
 - Resources not allocated to those who value them most, causing economic inefficiency (1 mark)

Question 2

- Part (a) - Employment Effects (**4 marks**)
 - Labour-intensive sectors: Significant job losses as employers cannot afford higher wages (2 marks)
 - Capital-intensive sectors: Minimal impact as labour costs are smaller proportion of total costs (1 mark)
 - Overall unemployment increases, particularly affecting low-skilled workers (1 mark)
- Part (b) - Business Impact Analysis (**4 marks**)
 - Small businesses: Severely affected, may close or reduce workforce significantly (2 marks)
 - Large corporations: Better able to absorb costs, may accelerate automation (1 mark)
 - Market concentration may increase as small competitors exit (1 mark)
- Part (c) - Income Distribution Effects (**4 marks**)
 - Workers who keep jobs benefit from higher wages (1 mark)
 - Unemployed workers lose all income, potentially worsening poverty (2 marks)
 - Overall effect on poverty unclear - depends on relative numbers of winners and losers (1 mark)

Question 3

- Part (a) - Housing Market Effects **(4 marks)**
 - Short-term: Immediate shortage as demand exceeds supply at controlled price (1 mark)
 - Long-term: Reduced new construction, deteriorating housing stock, exit of landlords (2 marks)
 - Housing market becomes increasingly dysfunctional over time (1 mark)
- Part (b) - Stakeholder Effects **(4 marks)**
 - Tenants: Those who find housing benefit, but many cannot find accommodation (2 marks)
 - Landlords: Reduced income, some exit market, reduced maintenance spending (1 mark)
 - Potential new residents: Extremely difficult to find housing, may relocate elsewhere (1 mark)
- Part (c) - Unintended Consequences **(3 marks)**
 - Illegal market rentals at higher prices than original market rates (1 mark)
 - Key money and under-the-table payments become common (1 mark)
 - Discrimination in tenant selection increases (1 mark)
- Part (d) - Overall Effectiveness Assessment **(3 marks)**
 - Policy fails to achieve affordability goal due to reduced supply (1 mark)
 - Creates more problems than it solves, harming overall housing market (1 mark)
 - Alternative policies (housing subsidies, supply-side support) would be more effective (1 mark)

Question 4

- Part (a) - Economic Rationale Analysis **(4 marks)**
 - Price ceiling rationale: Ensures affordability for low-income consumers during crisis (2 marks)
 - Price floor rationale: Protects farmer incomes and maintains production incentives (2 marks)
- Part (b) - Unintended Consequences Evaluation **(4 marks)**
 - Price ceiling consequences: Shortages, illegal markets, reduced quality, hoarding (2 marks)
 - Price floor consequences: Surplus production, wastage, higher consumer prices, government expense (2 marks)
- Part (c) - Distributional Effects Assessment **(4 marks)**
 - Price ceilings: Benefit low-income consumers but may hurt through shortages and quality reduction (2 marks)
 - Price floors: Help farmer incomes but burden urban poor and low-income consumers (2 marks)

- Part (d) - Alternative Policy Recommendation (**4 marks**)
 - Targeted subsidies to vulnerable populations rather than price controls (1 mark)
 - Strategic food reserves and improved distribution systems (1 mark)
 - Support for agricultural productivity improvements to increase supply (1 mark)
 - Justification: Market-based solutions more efficient, fewer distortions, better long-term outcomes (1 mark)

Question 5 (20 marks)

- a. Analysis of three problems (15 marks, 5 marks each)

Problem 1: Market surplus and storage costs

Explanation of surplus creation (3 marks)

Analysis of government purchasing requirements (1 mark)

Analysis of storage costs and quality deterioration issues (1 mark)

Problem 2: Unemployment

Explanation of Unemployment as a result of price floor (3 marks)

Analysis of minimum wage as an example (2 mark)

Problem 3: Market distortions

Explanation of resource misallocation (3 mark)

Analysis of smuggling/black market potential (1 mark)

Discussion of impact on related markets (1 mark)

- b. Alternative policy evaluation (5 marks)

Clear description of alternative policy (e.g., direct farmer subsidies, crop insurance) (1 mark)

Explanation of how it supports farmers (1 mark)

Analysis of how it avoids at least two problems identified in part (b) (2 marks)

Discussion of implementation considerations in Ghana's context (1 mark)

Question 6 (20 marks)

- a. Examination of three effects (15 marks, 5 marks each)

Effect 1: Housing shortage

- Explanation of reduced quantity supplied (3 marks)
- Analysis of increased quantity demanded (1 mark)
- Discussion of resulting housing scarcity (1 mark)

Effect 2: Quality deterioration

- Explanation of reduced maintenance incentives (3 marks)
- Analysis of landlords' cost-cutting responses (1 mark)
- Discussion of long-term housing stock degradation (1 mark)

Effect 3: Non-price rationing mechanisms

- Explanation of alternative allocation methods (waiting lists, connections) (3 marks)

Analysis of potential discrimination or side payments (1 mark)

Discussion of efficiency and equity implications (1 mark)

b. Discussion of neighbourhood variations (5 marks)

- Identification of relevant neighbourhood characteristics (income levels, housing types) (1 mark)
- Analysis of supply elasticity differences across neighbourhoods (1 mark)
- Analysis of enforcement challenges in different areas (1 mark)
- Discussion of differential impacts on formal vs. informal housing markets (1 mark)
- Overall conclusion about spatial effectiveness variations (1 mark)

Question 7 (20 marks)

a. Explanation and objectives (6 marks)

- Clear explanation of rationale for price ceiling implementation (2 marks)
- First objective with explanation (2 marks)
- Second objective with explanation (2 marks)

b. Analysis of three problems (9 marks, 3 marks each)

Problem 1: Shortages and queues

- Explanation of shortage creation (1 mark)
- Analysis of queuing and time costs (1 mark)
- Discussion of distribution inefficiencies (1 mark)

Problem 2: Black markets and corruption

- Explanation of black-market incentives (1 mark)
- Analysis of price premiums in unofficial markets (1 mark)
- Discussion of corruption in allocation systems (1 mark)

Problem 3: Investment reduction

- Explanation of reduced profit incentives (1 mark)
- Analysis of impact on maintenance and capacity (1 mark)
- Discussion of long-term supply implications (1 mark)

c. Short-term vs. long-term evaluation (5 marks)

- Analysis of short-term effectiveness for price stabilisation (1 mark)
- Analysis of short-term supply responses (1 mark)
- Analysis of long-term investment effects (1 mark)
- Analysis of long-term market adjustments and avoidance mechanisms (1 mark)
- Conclusion about optimal duration considerations (1 mark)

SECTION 7: MACROECONOMIC VARIABLES

STRAND: **GOVERNMENT ECONOMIC POLICY AND TRADE**

Sub-Strand: Macroeconomic variables (GDP, inflation, unemployment, exchange rate)

Week 15 & 16

Content Standard: *Demonstrate knowledge and understanding of the interrelationship between the fundamental macroeconomic variables.*

Learning Outcome: Distinguish the linkages and connections between the fundamental macroeconomic variables

Week 17

Content Standard: *Demonstrate knowledge and understanding in Aggregate Expenditure and the Multiplier*

Learning Outcome: Employ relevant approaches to analyse aggregate expenditure and multiplier

INTRODUCTION AND SECTION SUMMARY

Section seven covers government economic policy and trade focusing on Macroeconomic variables (GDP, inflation, unemployment, exchange rate). The content focuses on the connection between the fundamental variables, the aggregate expenditure and the calculation of multiplier. The section starts by recapping lessons learnt on macroeconomic variables from year 1 and 2. After which the connection and relationships among the macroeconomic variables are done. The section also looks at the aggregate expenditure components and how the multiplier is calculated.

Teachers should note that the concept of macroeconomics is linked to Government, Social Studies and Manufacturing.

The week and the indicators covered by the section are:

- Week 15: 1. Analyse the connection (linkage) between the fundamental macroeconomic variables and 2. Investigate relationship among macroeconomic variables
- Week 16: Describe aggregate expenditure
- Week 17: Calculate the multiplier

Recap weeks

Year 1	Week 19: Explain the meaning of the fundamental macroeconomic variables.
Year 2	Week 16: Identify the effects of changes in fundamental macroeconomic variables on the economy and Suggest control policies to mitigate the effect of the changes in the fundamental macroeconomic variables Week 17: Calculate National Income by using any of the three approaches. Week 18: Explain the uses and importance of National Income (E.g., standard of living)

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogical strategies to the teacher. There are Project-Based learning and Talk for Learning. In Project-Based learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to identify the connection or linkages or relationship between or among macro-economic variables by using the economy of Ghana as an example and present a project report in powerpoints. In Talk for Learning, the teacher is expected to assist the learners to discuss aggregate expenditure and to brainstorm on how to calculate the multiplier.

It must be indicated that teachers apply these pedagogies based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessment in this section are level 2, 3 and 4. Level 3 for the first two learning indicators that will be covered in week 15, level 2 for the third indicator for week 16 and level 4 for the indicator that will be covered in week 17. Teachers should note that level two, three and four questions are provided under key assessment of each week to enable them to prepare the learners toward the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Analyse the connection (linkage) between the fundamental macroeconomic variables	3	Strategy: Group Mode: Homework
Investigate the relationship among macroeconomic variables		
Describe aggregate expenditure	2	Strategy: Group Mode: Short Answer questions, Extension Project Work
Calculate the multiplier	4	Strategy: Individual work Mode: Homework

WEEK 15

Learning Indicators

1. Analyse the connection (linkage) between the fundamental macroeconomic variables
2. Investigate relationship among macroeconomic variables

Focal Area 1: The Connection/ Relationship between the fundamental macroeconomic variables

Definitions

Gross Domestic Product (GDP) – Measures the total value of goods and services produced in a country.

Inflation Rate – The rate at which the general level of prices for goods and services rises.

Unemployment Rate – The percentage of people willing and able to work but cannot find jobs.

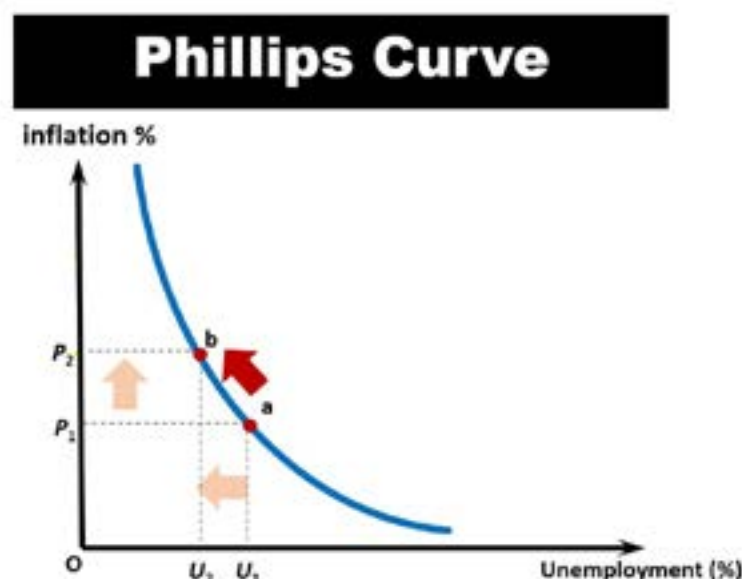
Interest Rate – The cost of borrowing money or the return on savings.

Exchange Rate – The value of Ghana's cedi compared to foreign currencies.

Government Budget – The government budget reflects the relationship between government revenue and government spending over a period, highlighting whether there is a surplus or a deficit.

Balance of Payments – *Balance of Payments (BOP) is a comprehensive record of all economic transactions between the residents of a country (e.g., Ghana) and the rest of the world over a specific period. It is typically divided into two main accounts: the Current Account (trade in goods, services, and transfers) and the Capital Account (investment flows).*

Phillips Curve- The traditional Phillips Curve suggests an inverse relationship between inflation and unemployment, where lower unemployment creates wage pressures that lead to higher inflation. This trade-off emerges because as the economy approaches full employment, workers gain bargaining power for higher wages, and firms face capacity constraints that allow price increases. Modern macroeconomic theory has refined this to incorporate expectations, suggesting that the trade-off exists primarily in the short run, with the long-run Phillips Curve being vertical at the natural rate of unemployment.



Introduction

The fundamental macroeconomic variables are interrelated and often influence one another in complex ways. Understanding the connections between these variables is essential for analysing the overall health and direction of an economy. The main macroeconomic variables include Gross Domestic Product (GDP), Inflation, Unemployment, Interest Rates, Exchange Rates, Balance of Payments, and Government Fiscal Position (Budget Deficit/Surplus).

GDP and Unemployment

According to Okun's Law, there is an inverse relationship between GDP and unemployment. When GDP grows, businesses expand production, leading to more jobs and lower unemployment. A fall in GDP typically leads to job cuts and higher unemployment.

GDP and Inflation

As GDP increases and the economy grows, demand for goods and services rises, potentially pushing up prices (demand-pull inflation). However, if growth is driven by improved productivity (supply side), inflation may not rise significantly.

Inflation and Interest Rates

Central banks often raise interest rates to reduce inflation and lower rates to stimulate inflation. Higher interest rates reduce borrowing and spending, cooling inflation. Lower interest rates encourage borrowing and investment, potentially increasing inflation.

Interest Rates and Exchange Rates

Higher interest rates attract foreign capital, increasing demand for the domestic currency and appreciating the exchange rate. Lower interest rates can lead to capital outflows, depreciating the currency.

Exchange Rates and Inflation

A depreciated exchange rate makes imports more expensive, contributing to imported inflation. An appreciated exchange rate can reduce inflation by lowering the cost of imports.

Government Budget and Interest Rates

A large budget deficit can lead to higher interest rates due to increased government borrowing (the "crowding out" effect). Persistent deficits may lead to inflation if financed by printing money.

Balance of Payments and Exchange Rates

A current account deficit (more imports than exports) can weaken a currency due to increased supply of the domestic currency. A surplus can strengthen the currency, as demand for exports leads to demand for the domestic currency.

Simple Concept Map of Relationships

Source: *Author Generated, 2025*

Learning Tasks

1. Recap the concept of macroeconomic variables by defining and explaining the fundamental macroeconomic variables, identifying the effects of changes in the macroeconomic variables on the economy, calculating national income using any of the three approaches and explaining the uses and importance of national income.
2. Form small groups (4–6 members) and each group selects a macroeconomic variable to focus on initially but must analyse how it links with at least two other variables. Each group should
 - Research Ghana's macroeconomic data (last 5–10 years) from sources like the Bank of Ghana, GSS, MoFEP, or World Bank.
 - Analyse trends in one main variable (e.g., GDP) and explore how it is influenced by or influences at least two other variables (e.g., inflation and unemployment).
 - Use graphs/charts to show correlations or patterns.
 - Develop a concept map or infographic showing the interlinkages.
3. Prepare a short power point presentation to explain
 - What their variable is.
 - How it connects with others.
 - Why these linkages matter for economic planning and citizens' welfare.
4. Present the group work to the class

Pedagogical Exemplars

Project-based Learning

Use the economy of Ghana as a case study and work in small mixed-ability groups and mixed groups to identify the connection or linkages between or among macro-economic variables and present a project report in powerpoints.

Guide learners in sourcing reliable economic data. Support with interpretation of graphs and relationships. Ask guiding questions (e.g., “What happened to inflation when GDP dropped in 2020?”). Assess presentations using rubric and give feedback.

Key Assessment Level 3: Group Homework

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

- Explain the basic relationships between the four fundamental macroeconomic variables: GDP, inflation, unemployment, and exchange rate.
- Give one example of how each variable can influence another.

Question 2 (10 marks)

- Describe how changes in Ghana’s exchange rate (cedi depreciation) would affect the other three macroeconomic variables.
- Explain the transmission mechanisms for each relationship.

Question 3 (12 marks)

- Analyse the complex interconnections between macroeconomic variables during an economic recession.
- Trace how an initial decline in GDP creates a chain reaction affecting unemployment, inflation, and exchange rate.

Question 4 (14 marks)

Ghana experienced the following macroeconomic conditions in 2022:

- GDP growth slowed from 5.4% to 3.1%
- Inflation rose from 12% to 54%
- Unemployment increased from 4.2% to 4.8%
- Cedi depreciated by 45% against the dollar

Investigate the relationships among these variables by:

- Analysing the primary causes of these interconnected changes
- Examining how each variable reinforced the others’ movements
- Predicting the likely sequential effects if these trends continued

Essay Questions

Question 5 (20 marks)

Ghana has experienced significant fluctuations in its inflation rate over the past decade.

- Analyse the relationship between Ghana's inflation rate and economic growth (GDP) **(6 marks)**
- Evaluate how changes in Ghana's inflation rate affect its exchange rate. **(7 marks)**

Question 6. (20 marks)

Ghana's exchange rate has shown significant fluctuations against major trading currencies.

- Analyse the relationship between Ghana's exchange rate and its balance of trade. **(6 marks)**
- Explain how changes in Ghana's exchange rate affect its inflation rate, identifying the main transmission mechanisms. **(7 marks)**
- Evaluate the interconnection between exchange rate movements and economic growth in Ghana. **(7 marks)**

PLC Session 15

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to
 - explain the week's concepts in a practical way that will make it easier for learners to understand
 - identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
- Use your subject specific app to plan your lesson. Ask the app to
 - suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group homework**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the homework (NTS 3k-3q).

10 minutes**Content Exploration**

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).

**Note**

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
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 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).

9. Remember to

- a. transfer your chats into your learning planner template.
- b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
- c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 16

Learning Indicator: Describe aggregate expenditure

Focal Area 1: Aggregate Expenditure

Introduction

Aggregate expenditure refers to the total planned spending on final goods and services in an economy over a given period, usually a year or a quarter. It is used to explain how the level of national output is determined and how equilibrium is reached in the economy.

The aggregate expenditure model focuses on **planned spending**, not actual spending. However, in reality, firms may experience **unplanned changes in inventories**. When aggregate expenditure is greater than output, inventories fall unexpectedly, signalling firms to increase production. When aggregate expenditure is less than output, inventories rise, leading firms to reduce production. Equilibrium is reached when there are **no unplanned changes in inventories**, meaning planned expenditure equals actual output.

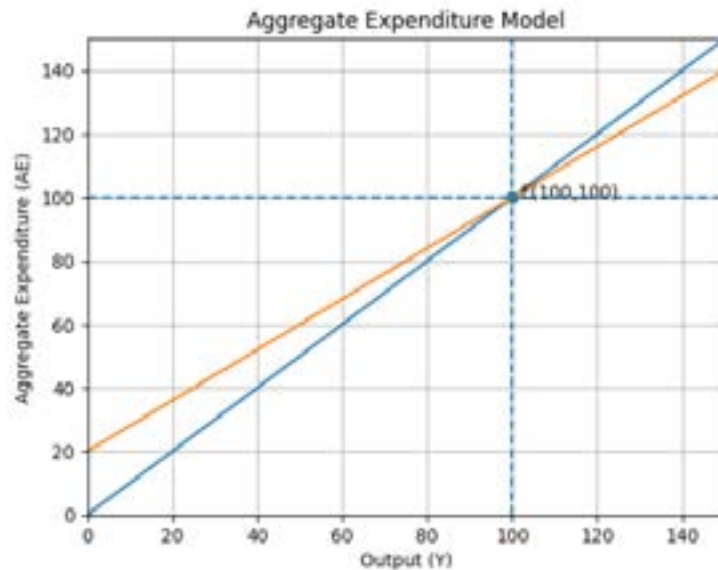
Aggregate expenditure consists of four main components. Consumption (C) is household spending on goods and services such as food, transport, housing, and communication. It is influenced by factors such as income, interest rates, taxation, and consumer expectations. Investment (I) refers to business spending on capital goods, residential buildings, and inventories. It depends on interest rates, business expectations, and the level of technology. Government spending (G) includes expenditure on goods and services such as roads, schools, and public sector wages. It is mainly determined by government policy and budget decisions. Net exports (NX) represent exports minus imports. They are influenced by exchange rates, foreign income levels, and trade policies.

The aggregate expenditure function is expressed as:

$$AE = C + I + G + NX$$

Equilibrium in the economy occurs when aggregate expenditure equals national output (GDP). At this point, there is no tendency for output to change because planned spending matches actual production.

There are three main methods used to determine equilibrium output. The algebraic method involves solving equations where aggregate expenditure is set equal to output. The tabular method uses a table to compare different levels of output with corresponding levels of aggregate expenditure to identify where they are equal. The graphical method uses the 45-degree line diagram, where the equilibrium point is shown at the intersection of the aggregate expenditure curve and the 45-degree line. The 45-degree line represents all points where output is equal to expenditure, making it a useful visual tool for identifying equilibrium.



Summary

Symbol	Component	Brief Description	Typical Ghanaian Examples
C	Consumption	Household spending on goods & services	Food at Makola Market, transport fares, and mobile data
I	Investment	Business spending on capital goods (plus residential construction & inventories)	A cocoa-processing plant expansion in Tema, new ride-hailing cars
G	Government Spending	Goods & services purchased by all levels of government	Construction of Agenda 111 hospitals, salaries of public-school teachers
X-M	Net Exports	Exports minus imports	Cocoa, gold, and oil (exports) minus imported machinery and refined fuel

Learning Tasks

- Sit in pairs and **discuss** the meaning of aggregate expenditure based on the formula:
 - C = Consumption
 - I = Investment
 - G = Government Expenditure
 - X = Exports
 - M = Imports

2. Each pair

- Discusses and agrees on what each component means in their own words
- Creates one real-life Ghanaian example for each component

Pedagogical Exemplars**Talk for Learning Approaches (TfL)**

Discuss the components of aggregate expenditure. Give equal opportunity to all learners. Pay attention to learners approaching proficiency. Facilitate discussion with guiding questions: “What does this spending mean for the economy?” “How do these activities increase national output?” and “Can we think of a local example in our town?” Circulate, clarify misconceptions, encourage economic language

Key Assessment Level 2: Short Answer Questions**Short answer questions (10 marks)**

1. What is the role of net exports (NX) in aggregate expenditure, and how does a trade deficit affect it?
2. Explain why consumption is often considered the largest component of aggregate expenditure.
3. Why are government transfer payments like pensions excluded from government purchases in the AE model?
4. Define investment in the context of aggregate expenditure and give a Ghanaian example.
5. When does macroeconomic equilibrium occur according to the aggregate expenditure model?

(**Note:** Select any one of these questions and give it out as a project work, or set a similar question)

Mini Project Works**Question 1 (20 marks)**

Provide data for learners to base their report on.

A recent economic report indicates that Ghana’s aggregate expenditure patterns have undergone significant shifts over the past five years. As economic analysts, prepare and deliver a presentation that:

- a. Analyse the components of aggregate expenditure in Ghana’s economy over the past five years.
- b. Evaluate how changes in two specific components have impacted Ghana’s overall economic growth, with supporting data and examples.

Question 2 (20 marks)

Provide research references to help completing this project. For example, key government policies, budget priorities, articles/books linked to the variables in the aggregate expenditure formula.

The Ministry of Finance has requested recommendations on how to stimulate economic growth through managing aggregate expenditure. Design a policy brief that:

- a. Examine how government policies have influenced each component of aggregate expenditure in Ghana over the past three years.
- b. Develop and justify two policy recommendations to optimise aggregate expenditure for sustainable economic growth.

PLC Session 16

45 minutes

Planning & Reviewing the Learning Plan

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2. Use your subject specific app to explore the content before planning. Ask the app to
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Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
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 - a. The key assessment for the week is **short answer questions**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the assessment (NTS 3k-3q).

10 minutes

Content Exploration

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WEEK 17

Learning Indicator: Calculate the multiplier

Focal Area 1: The Multiplier

Definition

Multiplier: The multiplier measures how much total output (GDP) will increase when there is a change in autonomous spending.

MPC: Marginal Propensity to Consume (MPC) is the fraction of any additional (marginal) income that a household spends on consumption rather than saving. MPC tells us how much of each extra Cedi earned is likely to be spent rather than saved.

MPS: Marginal Propensity to Save (MPS) is the fraction of any additional (marginal) income that a household saves rather than spends on consumption. MPS tells us how much of each extra Cedi earned is likely to be saved rather than spent.

Since all income is either spent or saved, $MPS = 1 - MPC$.

Introduction

The multiplier refers to the proportional amount of increase in final income that results from an injection of spending (like government expenditure, investment, or exports) into the economy. The types of multipliers include;

Investment multiplier, Government spending multiplier, Tax multiplier (usually negative), Export multiplier and Balanced budget multiplier.

Key Assumptions (for a simple multiplier)

- Prices remain constant
- Excess capacity exists in the economy
- The economy is closed (no foreign trade)
- Constant MPC

Formula for the Simple Multiplier

$$\text{Multiplier} = \frac{1}{1-MPC}$$

Where:

MPC = Marginal Propensity to Consume

$$MPC = \frac{\Delta C}{\Delta Y} \quad (\text{change in consumption/change in income})$$

$1 - MPC$ = Marginal Propensity to Save (MPS)

$$MPS = \frac{\Delta S}{\Delta Y} \quad (\text{change in savings/change in income})$$

Example

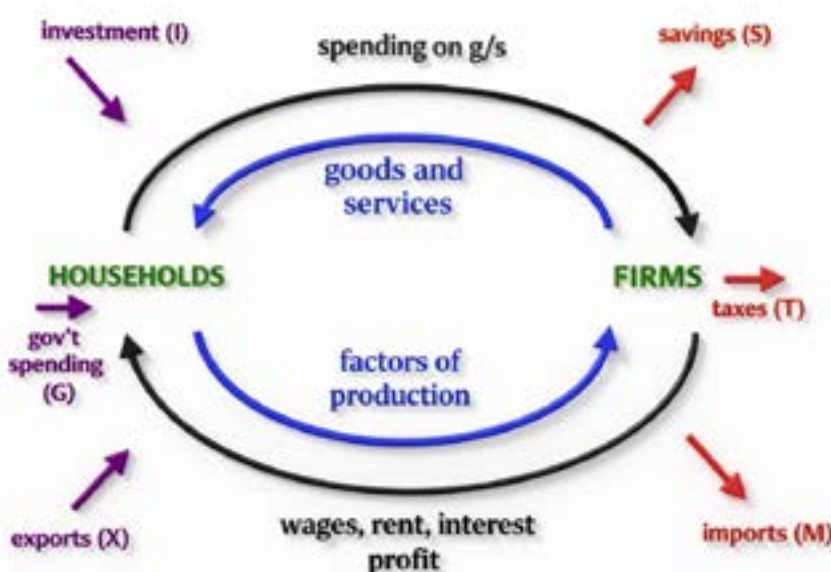
If $MPC = 0.8$, then:

$$Multiplier = \frac{1}{1-0.8} = \frac{1}{0.2} = 5$$

This means that a €1 million increase in consumption could lead to a €5 million increase in national income.

1. Understanding Circular Flow of Income

The circular flow of income explains how income, spending, and output are linked in an economy. Firms produce goods and services and pay incomes to households in the form of wages, rent, interest, and profit. Households then use this income to buy goods and services from firms. This creates a continuous flow of money and real resources between the two groups.



Leakages and injections affect this flow. Leakages are withdrawals from the circular flow, such as savings, taxes, and imports, which reduce total spending. Injections are additions into the flow, such as investment, government spending, and exports, which increase total spending. For the economy to be stable, injections must equal leakages.

The model also includes four sectors: households, firms, government, and the foreign sector. Each sector plays a role in shaping income and spending patterns in the economy.

2. Introduction to Aggregate Expenditure

Aggregate expenditure is the total planned spending on goods and services in an economy. It consists of consumption, investment, government spending, and net exports. Consumption is spending by households. Investment is spending by firms on capital goods. Government spending covers public services and infrastructure. Net exports measure exports minus imports.

Equilibrium national income occurs where aggregate expenditure equals output. At this level, there is no tendency for output to change because planned spending matches production.

Autonomous spending plays a key role. This is spending that does not depend on income, such as basic consumption or government expenditure. It ensures that aggregate expenditure starts above zero and drives economic activity even at low income levels.

3. Marginal Propensities

Marginal propensities measure how income changes are divided between different uses. The marginal propensity to consume (MPC) shows the proportion of additional income spent on consumption. The marginal propensity to save (MPS) shows the proportion saved. The marginal propensity to tax (MPT) shows the share paid as taxes, while the marginal propensity to import (MPM) shows the share spent on imports.

These propensities are important because they determine how income circulates in the economy. For example, if a household receives extra income and spends most of it, the effect on the economy is large. If most of it is saved or spent on imports, the impact is smaller.

In real life, a worker who receives a salary increase may spend part on food and transport, save part in a bank, pay taxes, and use some to buy imported goods. Each action affects the overall economy.

4. Simple Multiplier Concept

The multiplier shows how an initial increase in spending leads to a larger increase in national income. It is calculated using the formula:

$$\text{Multiplier} = 1 / (1 - \text{MPC})$$

If MPC is high, the multiplier is large because more income is spent at each stage. The process works like a chain reaction. One person's spending becomes another person's income, which leads to further spending.

For example, if government increases spending, workers and firms receive income. They spend part of it, creating more income for others. This continues until the effect gradually reduces due to leakages like savings.

5. The Open Economy Multiplier

In an open economy, the multiplier is adjusted to include leakages such as savings, taxes, and imports. The formula becomes:

$$\text{Multiplier} = 1 / (\text{MPS} + \text{MPT} + \text{MPM})$$

These leakages reduce the size of the multiplier because part of the income does not return to domestic spending. High taxes or high imports weaken the multiplier effect.

In a country like Ghana, if people spend more on imported goods, much of the income leaves the economy. This reduces the impact of government spending on national income.

6. The Paradox of Thrift

The paradox of thrift explains what happens when everyone tries to save more at the same time. While saving is good for an individual, it can be harmful for the economy if done collectively.

When people save more, consumption falls. This reduces aggregate expenditure, leading to lower output, income, and employment. As income falls, total savings may not increase as expected.

This shows how reduced spending can lead to economic contraction. It also highlights the role of consumer confidence in maintaining economic activity.

7. Applications of the Multiplier

The multiplier is used in fiscal policy to influence economic activity. Governments increase spending or reduce taxes to stimulate the economy during periods of low growth or high unemployment.

An increase in government spending can lead to higher output, more jobs, and increased income. This helps reduce unemployment and boost economic growth. It can also affect inflation if demand rises faster than supply.

Governments use the multiplier when they want to increase economic activity quickly, especially during recessions.

8. Limitations and Real-World Factors

The multiplier does not always work as expected in real economies. There are time lags between policy decisions and their effects. Inflation may occur if demand increases beyond the economy's capacity to produce.

Interest rates may rise as demand for money increases, which can reduce investment. Supply-side constraints, such as lack of skilled labour or poor infrastructure, can limit the increase in output.

The model also assumes constant prices and excess capacity, which may not hold in reality. As output increases, diminishing returns may set in, reducing the effectiveness of additional spending.

These factors show that while the multiplier is useful, it must be applied with caution in real-world situations.

Learning Tasks

Question for Brainstorming: “The government injects GHS 1,000 into the local economy through a community development project. Households in the community have a Marginal Propensity to Consume (MPC) of 0.75.”

- a. Discuss what the MPC means in this context
- b. Use the multiplier formula to
 - Calculate the multiplier
 - Calculate the total change in income (multiplier $\times$ GHS 1,000).
 - Discuss what this result means in real life.
- c. Discuss how the multiplier helps us understand the importance of spending in an economy

Pedagogical Exemplars

Talk for learning approaches (TfL)

Learners brainstorm on how to calculate the multiplier. Ask probing questions like: “what happens if people spend less and save more?” and “How would a lower MPC affect the economy?” Highlight the link between consumer behaviour and national income growth.

Support the learners during the discussion of the questions and guide them to correctly calculate the multiplier. Support the learners to understand and calculate MPT, MPS and MPM. Help them to interpret their results. Give equal opportunity to learners and give more time to learners approaching proficiency to also do the calculation correctly.

Key Assessment Level 4: Individual Homework

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

- Calculate the expenditure multiplier for an economy where the marginal propensity to consume (MPC) is 0.75.
- Explain what this multiplier value means for the economy.

Question 2 (10 marks)

An economy has the following consumption function: $C = 100 + 0.8Y$, where C is consumption and Y is income.

- Calculate the multiplier for this economy
- If government spending increases by GH¢50 million, calculate the total change in national income
- Analyse why the multiplier effect diminishes over successive rounds of spending

Question 3 (12 marks)

Ghana's government plans to invest GH¢2 billion in infrastructure projects. Economic data shows:

- Marginal Propensity to Consume = 0.6
 - Marginal Propensity to Import = 0.2
 - Tax rate = 20%
- Calculate the multiplier considering these leakages and determine the total impact on GDP.
 - Propose and explain factors that might make the actual multiplier different from your calculation.

Question 4 (16 marks)

During the COVID-19 pandemic, Ghana implemented various fiscal stimulus measures worth GH¢15 billion, including:

- Direct cash transfers to vulnerable households (GH¢5 billion)
- Support to businesses (GH¢7 billion)
- Infrastructure spending (GH¢3 billion)

The economy showed the following characteristics:

- Pre-pandemic MPC = 0.7
- During pandemic, household savings increased significantly
- Import dependency remained high at 25% of spending

- Many businesses operated below capacity

Critically evaluate:

- How to calculate different multipliers for each type of spending
- Why traditional multiplier calculations might be inadequate during the crisis
- The likely differential impacts of each stimulus measure
- Recommendations for optimising multiplier effects in future crises

Question 5 (20 marks)

Data Set:

Table 1 below shows economic data for Ghana for the period 2020-2022:

Economic Indicators	2020	2021	2022
GDP (billion GH¢)	380	420	465
Consumption (billion GH¢)	228	256	290
Savings (billion GH¢)	76	84	93
Tax Revenue (billion GH¢)	38	42	46.5
Imports (billion GH¢)	38	38	35.5
Change in Income (billion GH¢)	-25	+40	+45
Initial Government Stimulus (billion GH¢)	10	15	18

Requirements

- Using the data for each year, calculate
 - Marginal Propensity to Consume (MPC)
 - Marginal Propensity to Save (MPS)
 - Marginal Propensity to Tax (MPT)
 - Marginal Propensity to Import (MPM) for Ghana's economy. (12 marks)
- Calculate the value of the multiplier for each year using the comprehensive formula that includes all leakages from the circular flow of income. (3 marks)
- Verify the accuracy of your calculated multiplier values by comparing the predicted change in GDP (initial stimulus $\times$ multiplier) with the actual change in income for each year. Explain any discrepancies you identify. (5 marks)

Question 6: Regional Multiplier Analysis (DoK 4 – 20 marks)

The table below shows economic data for three regions in Ghana - Northern, Central, and Greater Accra:

Economic Indicator	Northern Region	Central Region	Greater Accra
Regional GDP (billion GH¢)	48	72	155
Marginal Propensity to Consume (MPC)	0.85	0.75	0.65
Marginal Propensity to Tax (MPT)	0.05	0.08	0.12
Marginal Propensity to Import (MPM)	0.10	0.17	0.23
Unemployment Rate (%)	14.2	11.5	8.3
Poverty Rate (%)	35.8	21.4	11.2
Infrastructure Quality Index (1-10)	3.2	5.1	7.4

- Calculate the multiplier value for each region using the comprehensive formula. (3 marks)
- The government has a regional development fund of GH¢30 billion that can be allocated to these three regions. If the primary goal is to maximise the overall increase in Ghana's GDP, how should the fund be allocated? Provide calculations to support your answer. (5 marks)
- Analyse how the different economic structures of the three regions account for the variations in their multiplier values. (4 marks)
- As an economic advisor to the government, develop a comprehensive strategy for allocating the GH¢30 billion that balances maximum GDP impact with equitable regional development. Your analysis should consider the socioeconomic indicators provided and potential long-term effects on regional inequality. (8 marks)

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 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

Section 7 Review

The lessons taught in section seven are focused on the macroeconomic variables, which were unpacked into The Connection/ Relationship between the fundamental macroeconomic, aggregate expenditure and the multiplier. The learners by the end of the lessons, would have acquired knowledge and understanding in how to investigate the relationship or connection among the different macroeconomics variables, describe aggregate expenditure and calculate the multiplier. The teacher applied varied pedagogical skills, specifically project-based learning and Talk for learning approaches (TfL). A recap of lessons learnt in years one and two was done and assessment techniques, subject to the abilities of the learners, to achieve the learning indicators for the weeks were done.

Teaching and Learning Resources

Week 15: Secondary Data from GSS or Bank of Ghana or Ministry of Finance or World Bank, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 16: Secondary Data from GSS or Bank of Ghana or Ministry of Finance or World Bank, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 17: Secondary Data from GSS or Bank of Ghana or Ministry of Finance or World Bank, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Blanchard, O., & Johnson, D. R. (2017). *Macroeconomics* (7th ed.). Pearson Education.

Dornbusch, R., Fischer, S., & Startz, R. (2018). *Macroeconomics* (13th ed.). McGraw-Hill Education.

Mankiw, N. G. (2021). Macroeconomics (11th ed.). Worth Publishers.

Osei-Assibey, E. (2018). Macroeconomic theory and policy: A Ghanaian perspective (2nd ed.). Woeli Publishing Services.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 15

Question 1

- GDP and Unemployment Relationship (**2 marks**)
 - Inverse relationship: Higher GDP growth typically leads to lower unemployment (1 mark)
 - Example: Economic expansion creates jobs, reducing unemployment rates (1 mark)
- Inflation and Exchange Rate Relationship (**2 marks**)
 - Generally inverse relationship: Higher inflation weakens currency (1 mark)
 - Example: High inflation in Ghana makes cedi less attractive, causing depreciation (1 mark)
- GDP and Inflation Relationship (**2 marks**)
 - Rapid GDP growth can lead to demand-pull inflation (1 mark)
 - Example: Economic boom increases demand for goods, pushing prices up (1 mark)
- Unemployment and Inflation Relationship (**2 marks**)
 - Phillips curve: Inverse relationship between unemployment and inflation (1 mark)
 - Example: Low unemployment leads to wage increases, causing cost-push inflation (1 mark)

Question 2

- Effect on Inflation (**3 marks**)
 - Cedi depreciation increases import prices, leading to cost-push inflation (2 marks)
 - Transmission: Weaker cedi → higher import costs → increased production costs → higher consumer prices (1 mark)
- Effect on GDP (**3 marks**)
 - Mixed effects: Exports become more competitive but imports more expensive (2 marks)
 - Transmission: Depreciation → cheaper exports boost demand → increased production and GDP (1 mark)
- Effect on Unemployment (**4 marks**)
 - Generally, decreases unemployment through export sector growth (2 marks)
 - Transmission: Depreciation → increased export competitiveness → higher export demand → more jobs in export industries (2 marks)

Question 3

- Initial GDP Decline Effects (**3 marks**)
 - Businesses reduce production and lay off workers (1 mark)

- Consumer spending falls due to reduced income (1 mark)
- Investment declines due to poor business prospects (1 mark)
- Unemployment Chain Reaction (**3 marks**)
 - Rising unemployment reduces consumer demand further (1 mark)
 - Creates downward spiral: less spending → more job losses → even less spending (2 marks)
- Inflation Response (**3 marks**)
 - Reduced demand leads to deflationary pressures (1 mark)
 - Lower inflation may provide some relief to consumers (1 mark)
 - But deflation can worsen recession by encouraging delayed purchases (1 mark)
- Exchange Rate Impact (**3 marks**)
 - Weak economy may lead to currency depreciation (1 mark)
 - Capital flight as investors seek better returns elsewhere (1 mark)
 - Depreciation can help exports but may worsen import-dependent inflation (1 mark)

Question 4

- Part (a) - Primary Causes Analysis (**5 marks**)
 - External shocks: Global inflation, supply chain disruptions, commodity price volatility (2 marks)
 - Fiscal challenges: High government debt, reduced investor confidence (2 marks)
 - Monetary policy responses: Currency depreciation due to external pressures (1 mark)
- Part (b) - Reinforcement Analysis (**5 marks**)
 - Cedi depreciation fueled inflation through higher import costs (2 marks)
 - High inflation eroded purchasing power, contributing to slower GDP growth (1 mark)
 - Economic slowdown led to job losses, increasing unemployment (1 mark)
 - Rising unemployment and inflation created negative feedback loop for economic growth (1 mark)
- Part (c) - Sequential Effects Prediction (**4 marks**)
 - Continued depreciation would worsen inflation, creating stagflation (1 mark)
 - Persistent high inflation would further reduce consumer spending and investment (1 mark)
 - Economic contraction would lead to more business failures and higher unemployment (1 mark)
 - Downward spiral could lead to economic crisis requiring intervention (1 mark)

Question 5 (20 marks)

- a. Inflation-GDP relationship analysis (6 marks)
 - Theoretical relationship explanation (6 marks)

b. Inflation's effect on other variables (7 marks)

- Inflation-exchange rate relationship (2 marks)
- Inflation-interest rate relationship (2 marks)
- Inflation-income distribution relationship (2 marks)
- Overall interaction analysis (1 mark)

Question 6 (20 marks)

a. Exchange rate-trade balance relationship (6 marks)

- Empirical evidence from Ghana (marks)

b. Exchange rate-inflation relationship (7 marks)

- Direct import price channel (2 marks)
- Indirect cost-push channel (2 marks)
- Expectations and monetary channel (2 marks)
- Overall pass-through rate (1 mark)

c. Exchange rate-GDP-growth interconnection (7 marks)

WEEK 16**Question 1**

- 1 mark for stating that NX represents exports minus imports
- 1 mark for explaining that a trade deficit (imports > exports) causes NX to be negative, reducing aggregate expenditure

Question 2

- 1 mark for identifying that consumption is household spending on goods and services
- 1 mark for noting it usually accounts for 60–70% of total spending in most economies

Question 3

- 1 mark for stating that transfer payments do not represent direct purchase of goods/services
- 1 mark for noting they are income redistributions and not counted as G in AE

Question 4

- 1 mark for defining investment as business spending on capital goods, construction, or inventories
- 1 mark for example, such as a cocoa-processing plant expansion or new ride-hailing cars

Question 5

- 1 mark for stating it occurs when AE equals GDP or total output
- 1 mark for recognising that this balance stabilises income, output, and employment

Question 1 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Analysis of Aggregate Expenditure Components (10 marks)	Learner correctly identifies all components of aggregate expenditure Expected components: Consumption (C): Household spending on goods and services Investment (I): Business spending on capital goods Government Spending (G): Public expenditure on goods and services Net Exports(X-M): Exports minus imports (Consumption, Investment, Government Spending, Net Exports) Learner provides a clear analysis of trends in each component over the past five years with relevant data Expected analysis: Consumption: Trends in household spending patterns, impact of inflation, changes in consumer confidence	Award 1/2 mark per component (Maximum 2 marks) Award 2 marks per component (Maximum 8 marks) Total Marks: 2 + 8 = 10
	Investment: Public and private investment trends, FDI patterns, capital formation Government Spending: Analysis of national budget allocations, fiscal policy changes Net Exports: Trade balance trends, major exports/imports, exchange rate impacts	
b. Evaluation of Impact on Economic Growth (7 marks)	Learner selects two appropriate components for in-depth analysis Any two components selected with clear justification for their significance to Ghana's economy Learner provides a critical evaluation of how changes in each selected component affected economic growth Expected evaluations may include: Consumption: How consumer spending has driven GDP growth, multiplier effects Investment: Role in productive capacity, job creation, technology adoption Government Spending: Impact of infrastructure investments, social programs, debt servicing Net Exports: Effects of trade balance on foreign exchange, domestic industries, employment Learner uses relevant economic data and statistics to support analysis	Award 1 mark per component for the two selected components (Maximum 2 marks) Award 1 mark per component (Maximum 2 marks) Award 1 mark per component data (Maximum 2 marks)

	Specific data points like: GDP growth rates Component percentage contribution to GDP Year-on-year growth rates of components Relevant economic indicators (inflation, exchange rates) Learner provides specific examples of economic policies or events that influenced these components Examples may include: COVID-19 pandemic impacts Government fiscal policies (e.g., tax changes, stimulus programs) Monetary policy decisions (interest rate changes) International economic factors (global price changes, trade agreements) Domestic structural reforms Accept from learners any correct evaluation, even if it is not included in the examples above.	Award $\frac{1}{2}$ mark for a good example per component for the two selected components (Maximum 1 mark) Total Marks: $2+2 + 2+1 = 7$
c. Presentation and communication skills	Learners demonstrate clear organisation and logical flow of presentation Well-structured presentation with introduction, component analysis, impact evaluation, and conclusion Learners show effective use of visual aids (charts, graphs,) Charts showing GDP composition, trend lines for components, comparative data visualisations Learner's engagement with the audience and effective responses to questions Maintains eye contact, speaks clearly, and accurately addresses questions with economic reasoning	Award a maximum of 1 mark for a good flow Award a maximum of 1 mark for a good infographic Award a maximum of 1 mark for a good audience engagement Total Marks: 3

Question 2 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Examination of Policy Influence on Aggregate Expenditure (10 marks)	Learner correctly identifies relevant government policies affecting aggregate expenditure Expected policies may include: Fiscal policies (taxation, public spending, subsidies) Monetary policies (interest rates, reserve requirements) Trade policies (tariffs, export promotion) Structural adjustment programs Social intervention programs Learner analyses how policies have influenced consumption expenditure Expected analysis: Impact of taxes on disposable income Effects of social welfare programs on household spending Influence of inflation targeting on purchasing power How interest rates affect consumer borrowing and spending Learner analyses how policies have influenced investment expenditure Expected analysis: Effects of corporate tax policies on business investment Impact of interest rates on capital investment Role of investment incentives and free zone Public-private partnership initiatives Influence of business regulatory environment Learner analyses how policies have influenced government spending	Award 1 mark per policy per component (Maximum 4 marks) Award a maximum of 2 marks Award a maximum of 2 marks Award a maximum of 2 marks Award a maximum of 2 marks Total Marks: 4+2+2+2+2 = 10

	Expected analysis: Budget allocation priorities Infrastructure development programs Public sector wage policies Debt management strategies Implementation of development agendas Learner analyses how policies have influenced net exports Expected analysis: Effects of exchange rate management Impact of export promotion initiatives Import substitution strategies Trade agreement implementation Impact of international competitiveness policies	
b. Policy Recommendations (8 marks)	Learner develops two clear and specific policy recommendations Possible recommendations may include: Investment in specific productive sectors Tax reforms to stimulate consumption or investment Export diversification initiatives Public infrastructure development Human capital development programs Financial sector reforms Public debt management strategies Learner provides strong economic reasoning and justification for each recommendation Expected justification: Clear economic theory application Reference to multiplier effects Consideration of opportunity costs Analysis of short-term vs. long-term impacts Consideration of structural economic factors Learner explains how each policy would impact specific components of aggregate expenditure Expected explanations: Direct and indirect effects on each component	Award 1 mark per policy recommendation (Maximum 2 marks) Award 1 mark each for two good, justified recommendations (Maximum 2 marks) Award 1 mark each for two good explanations (Maximum 2 marks) Award a maximum of 2 marks for a good challenge discussed (Maximum 2 mark) Total Marks: 2+2 + 2+2 = 8

	Quantitative estimates where possible Consideration of timing and implementation factors Analysis of stakeholder impacts Learner discusses potential challenges or limitations of recommended policies Expected challenges: Budgetary constraints Implementation capacity issues External economic factors Political feasibility Social considerations International obligations <i>Accept from learners any correct recommendations even if they are not included in the examples above.</i>	
c. Structure and Presentation of Policy Brief (2 marks)	Learners demonstrate a professional format and organisation appropriate for a policy brief Includes executive summary, problem statement, analysis section, recommendations, implementation considerations, and conclusion Effective use of economic terminology and clear communication Proper use of economic concepts (e.g., multiplier effect, aggregate demand, marginal propensity to consume,) with clear explanations accessible to policymakers	Award a maximum of 1 mark for a professional format Award a maximum of 1 mark for good use of economic concepts Total Marks: 2

WEEK 17

Question 1

- Formula Identification (2 marks)
 - Multiplier (k) = $1/(1-MPC)$ or $1/MPS$ (2 marks)
- Calculation (3 marks)
 - $MPC = 0.75$, therefore $MPS = 1 - 0.75 = 0.25$ (1 mark)
 - $k = 1/(1-0.75) = 1/0.25$ (1 mark)
 - $k = 4$ (1 mark)
- Economic Meaning (3 marks)
 - Every GH¢1 of initial spending increases total income by GH¢4 (2 marks)
 - Shows the amplifying effect of initial expenditure changes on national income (1 mark)

Question 2

- Part (a) - Multiplier Calculation (**3 marks**)
 - $MPC = 0.8$ from consumption function (1 mark)
 - $k = 1/(1-0.8) = 1/0.2 = 5$ (2 marks)
- Part (b) - Income Change Calculation (**3 marks**)
 - Change in $Y = k \times \text{Change in } G$ (1 mark)
 - Change in $Y = 5 \times \text{GH¢}50 \text{ million} = \text{GH¢}250 \text{ million}$ (2 marks)
- Part (c) - Diminishing Effect Analysis (**4 marks**)
 - Each round, people save part of additional income ($MPS = 0.2$) (2 marks)
 - Amount available for next round's spending decreases progressively (1 mark)
 - Process converges to finite limit due to leakages from circular flow (1 mark)

Question 3

- Complex Multiplier Calculation (**6 marks**)
 - Identify leakages: Savings (0.4), Imports (0.2), Taxes (0.2) (2 marks)
 - Total leakages = $MPS + MPM + \text{Tax rate} = 0.4 + 0.2 + 0.2 = 0.8$ (2 marks)
 - $k = 1/0.8 = 1.25$ (2 marks)
- GDP Impact Calculation (**2 marks**):
 - Total GDP impact = $1.25 \times \text{GH¢}2 \text{ billion} = \text{GH¢}2.5 \text{ billion}$ (2 marks)
- Factors Affecting Actual Multiplier (**4 marks**)
 - Time lags in spending may reduce immediate impact (1 mark)
 - Capacity constraints could limit response to increased demand (1 mark)
 - Confidence and expectations influence spending behavior (1 mark)
 - External economic conditions affect import and export patterns (1 mark)

Question 4

- Part (a) - Different Multipliers Calculation (**4 marks**)
 - Cash transfers: Higher MPC for vulnerable households, $k \approx 1/(1-0.8) = 5$ (1 mark)
 - Business support: Lower immediate multiplier due to capacity constraints, $k \approx 2-3$ (1 mark)
 - Infrastructure: Standard government multiplier, $k \approx 1/(1-0.7) = 3.33$ (1 mark)
 - Recognition that different spending types have different consumption patterns (1 mark)
- Part (b) - Traditional Multiplier Inadequacies (**4 marks**)
 - Crisis changes normal spending patterns and propensities (1 mark)
 - Increased uncertainty leads to higher precautionary savings (1 mark)
 - Supply-side constraints limit multiplier effectiveness (1 mark)
 - Behavioral changes during pandemic affect consumption decisions (1 mark)

- Part (c) - Differential Impact Analysis (**4 marks**)
 - Cash transfers: Highest immediate impact due to high MPC of recipients (1 mark)
 - Business support: Medium-term impact through employment preservation (1 mark)
 - Infrastructure: Long-term benefits but slower immediate impact (1 mark)
 - Import dependency reduces effectiveness of all measures (1 mark)
- Part (d) - Optimization Recommendations (**4 marks**)
 - Target spending toward groups with highest MPC (low-income households) (1 mark)
 - Combine demand-side stimulus with supply-side support (1 mark)
 - Prioritize domestic supply chains to reduce import leakages (1 mark)
 - Implement complementary policies to boost confidence and reduce uncertainty (1 mark)

Question 5 (20 marks)

Part a) Calculation of Propensities (12 marks)

For 2020

- MPC: Use 2020 values: $C/Y = 228/380 = 0.6$
- MPS: Use 2020 values: $S/Y = 76/380 = 0.2$
- MPT: Use 2020 values: $T/Y = 38/380 = 0.1$
- MPM: Use 2020 values: $M/Y = 38/380 = 0.1$

For 2021

- $MPC = \Delta C / \Delta Y = (256 - 228) / 40 = 28 / 40 = 0.7$
- $MPS = \Delta S / \Delta Y = (84 - 76) / 40 = 8 / 40 = 0.2$
- $MPT = \Delta T / \Delta Y = (42 - 38) / 40 = 4 / 40 = 0.1$
- $MPM = \Delta M / \Delta Y = (38 - 38) / 40 = 0 / 40 = 0$

For 2022

- $MPC = \Delta C / \Delta Y = (290 - 256) / 45 = 34 / 45 = 0.756$
- $MPS = \Delta S / \Delta Y = (93 - 84) / 45 = 9 / 45 = 0.2$
- $MPT = \Delta T / \Delta Y = (46.5 - 42) / 45 = 4.5 / 45 = 0.1$
- $MPM = \Delta M / \Delta Y = (35.5 - 38) / 45 = -2.5 / 45 = -0.056$

Award 1 mark for correct calculation of each of propensities per year per year making 4 marks for each year totally 12 marks.

Part b) Calculation of Multiplier (3 marks)

For 2020

- $k = 1 / (1 - MPC + MPT + MPM) = 1 / (1 - 0.6 + 0.1 + 0.1) = 1 / 0.6 = 1.67$

For 2021:

- $k = 1 / (1 - MPC + MPT + MPM) = 1 / (1 - 0.7 + 0.1 + 0) = 1 / 0.4 = 2.5$

For 2022

- $k = 1 / (1 - MPC + MPT + MPM) = 1 / (1 - 0.756 + 0.1 - 0.056) = 1 / 0.288 = 3.47$

Award 1 mark for each correct multiplier calculation.

Part c) Verification of Multiplier Values (5 marks)

For 2020

- Predicted change = $10 \times 1.67 = \text{GH¢}16.7$ billion
- Actual change = $-\text{GH¢}25$ billion
- Discrepancy = $\text{GH¢}41.7$ billion

Explanation: The large discrepancy suggests external economic shocks (likely COVID-19 pandemic effects) that significantly contracted the economy beyond what can be explained by the multiplier. The stimulus helped mitigate but could not prevent the economic contraction.

For 2021

- Predicted change = $15 \times 2.5 = \text{GH¢}37.5$ billion
- Actual change = $\text{GH¢}40$ billion
- Discrepancy = $\text{GH¢}2.5$ billion

Explanation: The close alignment suggests the multiplier accurately captured the relationship between stimulus and economic growth. The slightly higher actual growth may indicate positive sentiment or other minor favourable factors.

For 2022

- Predicted change = $18 \times 3.47 = \text{GH¢}62.46$ billion
- Actual change = $\text{GH¢}45$ billion
- Discrepancy = $\text{GH¢}17.46$ billion

Explanation: The overestimation suggests other factors limited the full multiplier effect, possibly supply constraints, inflation pressures, or external economic challenges, reducing the effectiveness of the stimulus.

Award 1 mark for correct calculation of predicted changes, 1 mark for identifying discrepancies, and 3 marks for valid explanations of the discrepancies.

Question 6 (20 marks)

Part a) Calculation of Regional Multipliers (3 marks)

Northern Region:

$$k = 1/(1-\text{MPC}+\text{MPT}+\text{MPM}) = 1/(1-0.85+0.05+0.10) = 1/0.30 = 3.33$$

Central Region:

$$k = 1/(1-\text{MPC}+\text{MPT}+\text{MPM}) = 1/(1-0.75+0.08+0.17) = 1/0.50 = 2.00$$

Greater Accra:

$$k = 1/(1-\text{MPC}+\text{MPT}+\text{MPM}) = 1/(1-0.65+0.12+0.23) = 1/0.70 = 1.43$$

Award 1 mark for each correct multiplier calculation. Total 3 marks

Part b) Optimal Allocation for Maximum GDP Impact (5 marks)

Comparison of Multiplier Effects (1 mark):

Northern Region has the highest multiplier (3.33), followed by Central Region (2.00) and Greater Accra (1.43).

Allocation Strategy (1 mark):

To maximise GDP impact, the entire GH¢30 billion should be allocated to the Northern Region as it has the highest multiplier.

Calculation of GDP Impact (2 marks):

Northern: $\text{GH¢}30 \text{ billion} \times 3.33 = \text{GH¢}99.9 \text{ billion}$

Central: $\text{GH¢}30 \text{ billion} \times 2.00 = \text{GH¢}60 \text{ billion}$

Greater Accra: $\text{GH¢}30 \text{ billion} \times 1.43 = \text{GH¢}42.9 \text{ billion}$

Conclusion (1 mark):

Allocating the full amount to the Northern Region would generate an additional GH¢99.9 billion in GDP, which is GH¢39.9 billion more than allocating to Central Region and GH¢57 billion more than allocating to Greater Accra.

Part c) Analysis of Regional Economic Structures (4 marks)

Northern Region (1-2 marks depending on depth of analysis):

Highest MPC (0.85) indicates a greater portion of additional income is spent locally

Lowest MPT (0.05) means minimal leakage through taxation

Relatively low MPM (0.10) suggests less leakage through imports

These factors combine to create the highest multiplier effect

The high MPC likely reflects high poverty rates and unmet basic needs

Central Region (1 mark):

Moderate MPC, MPT and MPM values

More balanced economy with moderate leakages

Intermediate development stage with growing import consumption

Greater Accra (1-2 marks depending on depth of analysis):

Lowest MPC (0.65) indicates higher savings or non-consumption leakages

Highest MPT (0.12) shows greater tax collection efficiency

Highest MPM (0.23) reflects greater import consumption and global economic integration

These factors create the lowest multiplier effect

The low MPC despite higher incomes suggests greater wealth concentration and possibly savings or investments outside the local economy

Award marks based on depth of analysis and accurate interpretation of how economic structures affect multiplier values.

Part d) Comprehensive Strategy for Equitable Regional Development (8 marks)

Balanced Allocation Strategy (2 marks): A strategy that considers both multiplier effects and development needs:

Northern Region: GH¢15 billion (highest poverty, highest multiplier)

Central Region: GH¢10 billion (moderate development needs)

Greater Accra: GH¢5 billion (lowest poverty, lowest multiplier)

Or other justified allocation that balances economic impact with equity

Projected Outcomes (2 marks): Calculation of GDP impact from proposed allocation:

Northern: $\text{GH¢}15 \text{ billion} \times 3.33 = \text{GH¢}49.95 \text{ billion}$

Central: $\text{GH¢}10 \text{ billion} \times 2.00 = \text{GH¢}20 \text{ billion}$

Greater Accra: $\text{GH¢}5 \text{ billion} \times 1.43 = \text{GH¢}7.15 \text{ billion}$

Total GDP impact: GH¢77.1 billion Analysis should note this is 77.2% of maximum possible impact while addressing regional disparities

Structural Reforms (2 marks): Proposals to improve multipliers in regions with lower values:

Initiatives to reduce import dependence in Greater Accra

Supply chain integration between regions

Local content requirements for regional projects

Skills development to increase local production capacity

Long-term Equity Considerations (2 marks): Analysis of how the strategy addresses:

Unemployment disparities across regions

Infrastructure gaps (as shown by the Infrastructure Quality Index)

Poverty reduction goals

Potential for sustainable regional growth after initial investment

Migration patterns between regions

Award marks based on the comprehensiveness of the strategy, quality of economic reasoning, and consideration of both efficiency and equity concerns.

SECTION 8: NATIONAL BUDGET

STRAND: **GOVERNMENT ECONOMIC POLICY AND TRADE**

Sub-Strand: **Concept of money, financial institutions and public finance**

Week 18, 19 & 20

Content Standard: *Analyse national budget and national debt*

Learning Outcome: Employ relevant information in the country to examine the national budget and debt

INTRODUCTION AND SECTION SUMMARY

Section eight covers government economic policy focusing on the concept of money, financial institutions and public finance. The learning outcome for the section is learners are to employ relevant information in the country to examine the national budget and debt. Specifically, learners are expected to understand how to analyse the national budget as well as national debt.

Teachers should note that the concept of national budget and debt is linked to Social Studies and Government.

The weeks and the indicators covered by the section are:

- Week 18: Describe the types of government expenditure and sources of revenue
- Week 19: Analyse the national debt and make meaning out of it
- Week 20: Calculate the incidence of taxation for the producer and consumer

Recap weeks

Year 1	Week 20: Explain the concept of money in an economy. Week 21: Describe the types of financial institutions.
Year 2	Week 20: Identify the principles, types and classification of taxation Week 21: Examine the advantages and disadvantages of taxation

SUMMARY OF PEDAGOGICAL EXEMPLARS

This section presents two different pedagogies to the teacher. These are collaborative learning and project-based learning. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to extract government expenditure, revenue, and national debt data from Ghana's national budget. In Project-Based Learning, the teacher is expected to guide learners to use a sample tax data as a case study to identify the incidence of taxation for the producer and consumer.

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK levels for the assessment in this section are level 2 for week 18 and level 4 for the rest of the weeks. Teachers should note that only level two, three and four questions are provided under key assessments to enable them to prepare the learners for the final exam. The teacher is expected to use the structure of the sample questions to set more questions for the preparation.

The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners.

The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Describe the types of government expenditure and sources of revenue	2	Strategy: Group Presentation Mode: Class work Practice Paper 2
Analyse the national debt and make meaning out of it	4	Strategy: Group Mode: Class work
Calculate the incidence of taxation for the producer and consumer	4	Strategy: Group Mode: Project Work

WEEK 18

Learning Indicator: Describe the types of government expenditure and sources of revenue

Focal Area 1: Government Expenditure

Definition

National Budget is a financial plan that outlines the government's estimated revenue (income) and expenditure (spending) for a specific period, usually a fiscal year. It reflects the government's priorities and plans for the economy

Introduction

Government expenditure refers to the total amount of money the government spends to meet the needs of the country. It includes spending on goods and services, infrastructure, and social support programmes. It is used to promote economic development, provide public services, and reduce poverty.

Government expenditure is classified into **two main types**: recurrent expenditure and capital expenditure.

1. Recurrent Expenditure

Recurrent expenditure refers to regular and ongoing spending required for the daily running of government. These are expenses that occur frequently and must be met to keep public services functioning.

It includes:

- Salaries and wages of public workers such as teachers, nurses, and police officers
- Payment of interest on public debt
- Administrative costs such as office supplies, electricity, and water
- Maintenance of public facilities like schools, hospitals, and roads
- Provision of goods and services such as teaching materials and medical supplies
- Transfer payments are also part of recurrent expenditure. These are payments made without direct exchange of goods or services. They are aimed at supporting individuals and reducing inequality.

Examples include:

Pension payments to retirees, Scholarships and grants, Subsidies to farmers or industries, Support to vulnerable groups, etc.

Although transfer payments do not create output directly, they increase income and can raise demand in the economy.

2. Capital Expenditure

Capital expenditure refers to long-term spending on assets and infrastructure that support future production and development. These are investments that improve the productive capacity of the economy.

It includes:

- Construction of roads, schools, hospitals, and markets
- Investment in machinery, equipment, and technology
- Development of irrigation systems and storage facilities
- Electrification and water supply projects
- Establishment of industrial zones and innovation centres

Capital expenditure leads to economic growth by improving infrastructure, creating jobs, and supporting private sector activity.

Functions of Government Expenditure

1. Provide public goods and services e.g., education, healthcare, security
2. Promote economic development through investments in infrastructure
3. Redistribute income through pensions, welfare, subsidies
4. Ensure national security e.g., military spending
5. Stabilise the economy e.g., during inflation or recession

Example in Ghana

In Ghana's national budget, government expenditure may include:

1. GETFund spending on schools and teacher training
2. NHIS allocations for health services
3. LEAP payments to support the vulnerable
4. Road construction and agriculture support programmes

Learning Tasks

1. Recap the Concept of money, financial institutions and public finance. Focus on explaining the concept of money in an economy, describing the types of financial institutions, identifying the principles, types and classification of taxation and examining the advantages and disadvantages of taxation.
2. Extract and categorise the various government expenditures into recurrent, capital and transfer expenditure.
3. Discuss the following guiding questions
 - i. Which sectors receive the most funding?
 - ii. Why do you think these sectors are prioritised?
 - iii. Are there sectors you think deserve more spending? Why?

- iv. How does this budget affect young people like you?
 - v. What are the possible economic implications of these spending patterns?
4. Use digital tools such as Google Docs, Canva, PowerPoint or flipcharts to summarise and prepare your presentation.
 5. Present your work to the class in 5–7 minutes.

Pedagogical Exemplars

Collaborative Learning

Learners work in mixed gender and ability groups to extract expenditure from Ghana's national budget and present their findings to the class. Facilitate group formation and guide learners through the task. Assist with access to budget data and digital tools. Each group receives a printed or digital excerpt from the most recent Ghana National Budget Statement (you can use the Ministry of Finance website or pre-prepared handouts). Observe group interactions and provide support when needed. Facilitate a whole-class discussion after all presentations, highlighting the importance of government spending in national development. Ask reflective questions like: "How does government spending affect you as a student?" and "Which sectors do you think should get more funding and why?" Encourage creativity such as the use of graphs, pie charts, photos, or skits. Allow peers assess each group based on clarity of explanation, accuracy of categorisation, visual/creative presentation, teamwork and confidence.

Focal Area 2: Government Revenue

Introduction

Government revenue is the money the government receives to finance its activities and provide public goods and services. It is the income collected from various sources during a specific period, usually a fiscal year. Government revenue is the total income the government collects from taxes, fees, grants, and other sources to fund its operations and national development. It is a critical part of the national budget.

Main Sources of Government Revenue

1. Tax Revenue

These are compulsory payments made by individuals and businesses to the government.

- a. Direct Taxes (paid directly to the government):
 - i. Income tax (on salaries)
 - ii. Corporate tax (on company profits)
 - iii. Property tax
- b. Indirect Taxes (included in the price of goods/services):
 - i. Value Added Tax (VAT)
 - ii. Import duties
 - iii. Excise duties (e.g., on alcohol, fuel, tobacco)

2. Non-Tax Revenue

These are other forms of income not related to taxes.

- a. Fees and charges (e.g., passport fees, court fines)
- b. Dividends from state-owned enterprises (e.g., Cocobod, GNPC)
- c. Licences and permits (e.g., mining and telecom licences)
- d. Rent from government properties

3. Grants and Donations

Money received from foreign governments and international organisations (e.g., IMF, World Bank, donor partners). Usually for specific development projects or emergencies

4. Loans (Borrowing)

Money borrowed domestically or externally to finance a budget deficit

Note: While loans are not revenue in the strictest sense, they are often used to supplement revenue when income is not enough.

Purpose of Government Revenue

1. To finance public services (education, health, roads,)
2. To pay government workers and public debt
3. To support economic development
4. To reduce inequality through social protection programmes

Strategic approaches to improving revenue collection in Ghana:

1. Expanding the Tax Base

- Identify and register more taxpayers, including informal sector businesses.
- Ensure all eligible individuals and businesses contribute to national revenue.

2. Improving Tax Administration

- Strengthen the capacity of the Ghana Revenue Authority (GRA).
- Use modern technology and digital platforms for tax filing and payment.

3. Enhancing Compliance and Enforcement

- Conduct audits and enforce penalties for non-compliance.
- Reduce tax evasion through stricter monitoring and reporting requirements.

4. Simplifying Tax Policies and Procedures

- Make tax laws clearer and easier to understand.
- Streamline processes to reduce bureaucratic delays for taxpayers.

5. Public Education and Awareness

- Educate citizens on the importance of paying taxes.

- Use campaigns to increase voluntary compliance.

6. Use of Technology and E-Services

- Introduce online tax filing and mobile payment options.
- Track and monitor transactions to improve efficiency and reduce leakages.

7. Targeted Incentives

- Offer tax reliefs or incentives to encourage compliance.
- Support sectors that have growth potential while ensuring fair contribution.

Learning Tasks

1. Take a printed or digital excerpt from the Ghana National Budget Statement (revenue section).
2. Carefully read and extract information about
 - i. Types of revenue collected.
 - ii. The amount collected or projected for each type.
 - iii. Trends or changes in comparison to the previous year (if data is available).
3. Categorise the revenue into
 - i. Tax Revenue
 - ii. Non-Tax Revenue
 - iii. Grants & Aid
 - iv. Borrowing (if included)
4. Discuss the following Guiding Questions
 - i. What are the top three sources of government revenue?
 - ii. Why do you think these sources are prioritised?
 - iii. What are the advantages or disadvantages of relying on each type?
 - iv. How can Ghana improve its revenue collection?
5. Use flipcharts, PowerPoint, or Canva to prepare a short presentation (5–7 minutes). Including:
 - i. A table or graph of revenue sources and amounts.
 - ii. A summary of their categorisation.
 - iii. At least one creative visual (e.g., infographic, pie chart, cartoon).

Pedagogical Exemplars

Collaborative Learning

Learners work in mixed gender and ability groups to extract sources of revenue from Ghana's national budget. Each group will present their findings to the whole class. Presentations will be peer-assessed using a simple rubric. Encourage learners to ask questions or give constructive feedback to their peers. Ask "What did you find surprising about how Ghana gets its money?" "How does government revenue affect service delivery in your community?" and "What advice would you give to improve revenue collection?" Summarise key insights and connects it to current events (e.g. Ghana Revenue Authority initiatives, e-levy, ¢1 per litre tax, IMF support,)

Key Assessment: Practice Paper 2

SHORT ANSWER QUESTIONS

Question 1 (6 Marks)

Describe THREE main types of government expenditure and explain how each contributes to the economy. **(6 marks)**

Question 2 (8 Marks)

Explain FOUR different sources of government revenue, giving one example for each source. **(8 marks)**

Group Work

Question 3

- Categorise the main types of government expenditure in Ghana, giving two specific examples of each category from the current national budget. **(6 marks)**
- Explain how government expenditure on education and infrastructure contributes to economic development in Ghana. **(6 marks)**
- Using a diagram, illustrate the percentage allocation of government expenditure across at least four key sectors in Ghana's most recent budget. **(6 marks)**

Hint



Conduct **Practice Paper 2**. It should cover contents taught from Year 1 to 3. Refer to the **Table of Specification and Structure of the Paper** at the end of this section. Learners' papers should be marked immediately and scores entered into the SAP.

TABLE OF TEST SPECIFICATION FOR PAPER 1 (MCQ) – 50 Marks

Question Number	Learning Indicator (LI)	DoK 1	DoK 2	DoK 3	TOTAL (per LI)
1	1.1.1.LI.2 – Identify various career prospects in Economics.		1		1
2	1.1.1.LI.3 – Describe the various tools used in Economic analysis	1			1

3	1.1.1.LI.4 – Relate the fundamental concepts of Economics to everyday life and societal challenges		1		1
4	1.1.2. LI.1 – Relate the concepts of demand to everyday life and societal challenges		1		1
5	1.1.2. LI.2 – Describe the demand for goods and services	1			1
6	1.1.2. LI.3 – State the law of demand and the types of demand			1	1
7	3.1.2. LI.1 – Calculate elasticity of demand for goods and services		1		1
8	3.1.2. LI. 2 – Evaluate factors affecting elasticity of Demand			1	1
9	1.1.3. LI.1 – Apply utility concepts to everyday life		1		1
10	1.1.3. LI.1 – Apply utility concepts to everyday life			1	1
11	1.1.3. LI.1 – Apply utility concepts to everyday life			1	1
12	1.1.3.LI. 2 – Apply the law of diminishing marginal utility to everyday life			1	1
13	2.1.3. LI.1 – Use the concept of utility to determine the equilibrium of a consumer		1		1
14	3.1.3. LI.1 – Explain substitution and income effects in utility		1		1
15	1.2.1.LI.1 – Explain the meaning of factors of production	1			1
16	1.2.1.LI. 2 – Identify the factors of production and their rewards	1			1
17	1.2.1.LI.1 – Relate the concepts of production to productivity	1			1
18	1.2.1.LI.2 – Investigate location and localisation of industries		1		1
19	1.2.1.LI.3 – Justify division of labour and specialisation in production			1	1
20	2.2.1. LI.1 – Identify the time periods in production		1		1
21	3.2.1. LI.1 – Describe economies of scale and diseconomies of scale	1			1
22	3.2.1. LI. 2 – Compare economies of scale to diseconomies of scale		1		1

23	3.2.1. LI.1 - Determine the equilibrium situation in a firm and in an industry			1	1
24	3.2.1. LI. 2 - Explain the objectives of the firms in an industry		1		1
25	3.2.1. LI. 3 - Identify price discrimination in the market	1			1
26	1.2.2. LI.1 - Describe supply and identify types of supply		1		1
27	1.2.2. LI.2 - State the law of supply		1		1
28	2.2.2. LI.1 - Determine the factors that affect supply of a commodity			1	1
29	1.2.3. LI.1 - Explain the concept of market		1		1
30	1.2.3. LI.2 - Identify the types of market	1			1
31	2.2.3. LI.1 - Explain market structures and the types of market structures			1	1
32	2.2.3. LI.2 - Determine the types of profits (super normal, normal and sub normal)		1		1
33	1.3.1. LI.1 - Describe price in the economy	1			1
34	1.3.1.LI. 2 - Discuss the factors that affect pricing in the economy			1	1
35	2.3.1. LI.1 - Explain equilibrium situation in the market			1	1
36	2.3.1.LI. 2 - Determine the equilibrium output and price in the market		1		1
37	3.3.1. LI.1 - Explain minimum (price floor) and maximum (price ceiling) price controls	1			1
38	1.4.1.LI 1 - Determine the types of ownership and control of resources in the local and global economy	1			1
39	2.4.1. LI.1 - Identify the effects of changes in fundamental macroeconomic variables on the economy		1		1
40	2.4.1. LI. 2 - Suggest control policies to mitigate the effect of the changes of the fundamental macroeconomic variables		1		1
41	2.4.1. LI.2 - Explain the uses and importance of National Income (e.g. standard of living)		1		1
42	1.4.2. LI.1 - Explain the concept of money in an economy	1			1

43	2.4.2. LI.1 – Describe the reasons for holding money			1	1
44	2.4.2. LI.2 – Describe the role of financial institutions in an economy	1			1
45	2.4.2. LI.4 – Examine the advantages and disadvantages of taxation			1	1
46	3.4.2. LI.3 – Calculate the incidence of taxation for the producer and the consumer			1	1
47	1.4.3. LI.1 – Describe the importance of agriculture to the Ghanaian economy	1			1
48	1.4.3. LI.2 – Describe the importance of industry to the Ghanaian economy		1		1
49	1.4.3. LI.2 – Cite examples of domestic trade	1			1
50	2.4.3. LI.2 – Compare domestic trade to international trade			1	1
	TOTAL (per DOK)	15	20	15	50

TABLE OF SPECIFICATION FOR PAPER 2 (Essay) – 80 Marks.

Q. No.	Learning Indicator (LI)	Question Parts	Marks	DOK Level	Description of Cognitive Demand
1	3.3.1. LI.1 – Explain minimum (price floor) and maximum (price ceiling) price controls	(a) Calculate surplus and shortage after policy	4	DOK 2 – Skill/ Concept	Requires use of data and correct computation of market imbalances.
		(b) Compare market effects and identify problems	8	DOK 3 – Strategic Thinking	Involves analysis and comparison of two government interventions.
		(c) Evaluate policy effectiveness and suggest alternatives	8	DOK 4 – Extended Thinking	Requires judgement and policy evaluation with justified suggestions.

2	2.3.1. LI.1 – Explain the meaning and measurement of National Income	(a) Calculate GDP and GDP per capita	8	DOK 2 – Skill/ Concept	Involves application of the expenditure formula and computation.
		(b) Compare contribution of expenditure components	6	DOK 3 – Strategic Thinking	Requires analytical comparison of expenditure structures.
		(c) Evaluate performance and limits of GDP	6	DOK 4 – Extended Thinking	Requires evaluation of GDP as a measure of living standards.
3	1.1.2. LI.2 – Describe the demand for goods and services	(a) Distinguish movement vs shift of demand curve	8	DOK 2 – Conceptual Understanding	Involves interpreting changes using diagrams.
		(b) Analyse factors influencing demand in Scenario B	7	DOK 3 – Strategic Thinking	Requires analysis of multiple determinants of demand.
		(c) Evaluate combined strategy in Scenario C	5	DOK 4 – Extended Thinking	Involves evaluation and recommendation based on combined effects.
4	1.1.1. LI.1 – Define Economics and identify basic economic problems	(a) Define Economics using Mensah family case	8	DOK 2 – Conceptual Understanding	Connects definition of Economics to real-life situations.
		(b) Examine family responses to economic challenges	7	DOK 3 – Strategic Thinking	Requires application of economic principles (trade-offs, substitution).
		(c) Assess educational value of family economic experiences	5	DOK 4 – Extended Thinking	Involves evaluation of practical relevance of economic understanding.

5	2.1.1. LI.1 – Distinguish between labour-intensive and capital-intensive production	(a) Identify method used by each farmer	8	DOK 1 – Recall/ Identification	Requires identification and description of observed features.
		(b) State four differences using examples	8	DOK 2 – Conceptual Understanding	Requires comparison of two production methods.
		(c) Give examples observed in Ghana	4	DOK 1 – Recall/ Application	Simple recall of examples from learners' environment.
6	2.2.2. LI.1 – Explain the concept of elasticity of supply	(a) Explain supply elasticity using tomatoes and cocoa	8	DOK 2 – Conceptual Understanding	Explains and applies concept using case examples.
		(b) Analyse how elasticity helps decision-making	7	DOK 3 – Strategic Thinking	Requires linking elasticity to decisions by farmers, consumers, and government.
		(c) Evaluate policy use of elasticity knowledge	5	DOK 4 – Extended Thinking	Requires proposing and justifying differentiated policies.
7	2.3.3. LI.1 – Explain challenges in the distribution of goods and services	(a) Analyse distribution problems and their effects	8	DOK 3 – Strategic Thinking	Involves analysis of impacts on different stakeholders.
		(b) Evaluate current distribution solutions	7	DOK 4 – Extended Thinking	Requires evaluation of strengths and weaknesses of policies.
		(c) Propose additional innovative solutions	5	DOK 4 – Extended Thinking	Involves synthesis and justified recommendation of new ideas.

8	2.3.2. LI.1 – Explain the principles and types of taxation	(a) Identify and describe principles of taxation	8	DOK 2 – Conceptual Understanding	Requires clear explanation and application of principles.
		(b) List and explain taxes in the case study	8	DOK 2 – Skill/ Concept	Requires classification of taxes as direct or indirect.
		(c) Name tax classifications and give examples	4	DOK 1 – Recall/ Recognition	Requires simple recall.

PLC Session 18**45 minutes****Planning & Reviewing the Learning Plan**

1. Begin the session by recapping lessons from the previous session, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand.
 - b. identify three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q).
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).

**Note**

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Use your app to plan and administer the mode of assessment for the Student Assessment Portal (SAP)
 - a. The key assessment for the week is **practice paper 2**. Chat with your app to plan this assessment by reviewing or developing the assessment items/tasks and marking schemes/rubrics for the practice paper (NTS 3k-3q).

10 minutes**Content Exploration**

5. As a subject group, select one problem or topic/idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through the problem individually for 3–4 minutes
 - c. the group then works through it together the problem, step by step
 - d. highlight the most common errors made at each step (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 19

Learning Indicator: Analyse the national debt and make meaning out of it

Focal Area 1: National Debt

Introduction

National debt (also called public debt or government debt) is the total amount of money a government owes to both domestic and foreign lenders. It is usually the result of borrowing to finance budget deficits when government spending exceeds revenue. National debt is the total money the government owes due to borrowing over time. While it can support development and crisis management, it must be managed carefully to avoid long-term economic challenges.

Types of National Debt

1. **Domestic Debt:** Money owed by the government to borrowers within the country. Example: Government Treasury bills and bonds purchased by banks, companies, and citizens in Ghana
2. **External (Foreign) Debt:** Money owed by the government to foreign governments, international organisations (like the World Bank or IMF), or international capital markets
Example: Eurobonds issued by the Government of Ghana

Why Governments Borrow

1. To finance development projects (e.g., roads, schools, hospitals)
2. To pay salaries and maintain essential services during revenue shortfalls
3. To stabilise the economy during crises (e.g., COVID-19)
4. To service existing debt (pay interest or refinance maturing loans)

Implications of National Debt

1. Positive
 - Can boost economic growth if used for productive investment
 - Helps manage temporary fiscal gaps
2. Negative
 - High interest payments can reduce funds for education, health, and infrastructure
 - Too much debt can lead to loss of investor confidence or dependency on external aid
 - Can contribute to inflation or currency depreciation if not well managed

Example in Ghana

As of recent years, Ghana's national debt has been high, with both domestic and external components. This has led to:

- High interest payments
- IMF bailouts and debt restructuring efforts

- Concerns about debt sustainability

A case study to help teachers present this to learners might be along the following lines:

Case Study: Ghana's National Debt Crisis and Restructuring

Background

Ghana has faced mounting public debt over the past decade, driven by persistent fiscal deficits, external shocks (like COVID-19 and global commodity price swings), and currency depreciation. By late 2022, the country was grappling with **unsustainable debt levels**, prompting a formal restructuring process under the **G20 Common Framework**.

A. Key Statistics (as of 2022–2023)

- **Total Public Debt:** Nearly **90% of GDP** in 2022
- **Debt Sustainability Target:** Reduce to **55% of GDP** to restore fiscal health
- **External Debt Composition**
 - Over **72% denominated in US dollars**
 - Followed by **17.7% in euros**, and smaller shares in yen and other currencies
- **Domestic Debt**
 - Held largely by local banks, pension funds, and the Bank of Ghana
 - Domestic debt restructuring included bond exchanges and maturity extensions

B. Debt Restructuring Measures

- **Domestic Debt Exchange Programme (DDEP)**

Launched in December 2022, this involved swapping old domestic bonds for new ones with longer maturities and lower interest rates.

- **External Debt Negotiations**

Ghana engaged with bilateral and private creditors, including China and Eurobond holders, to restructure external obligations.

- **IMF Support:**

Ghana secured a **\$3 billion IMF bailout** in 2023, contingent on fiscal reforms and debt sustainability efforts.

C. Impacts and Challenges

- **Short-Term Relief**

Debt service costs were reduced, easing pressure on government finances.

- **Investor Confidence**

Mixed reactions—some recovery in investor sentiment, but concerns remain over transparency and long-term reforms.

- **Social Implications**

Budget cuts and austerity measures affected public services and subsidies, sparking public debate.

D. Further Reading

Ghana: A Case Study of Sovereign Debt Restructuring Under the G20 Common Framework (CGD, 2024)

Public Debt Statistical Bulletin – Ministry of Finance, Ghana (Q3 2022)

Learning Tasks

1. **Access and extract data on Ghana’s national debt from official sources:**
 - i. Ministry of Finance Budget Statements (online or printed summaries).
 - ii. Focus on total debt, domestic debt, and external debt for a period of five years e.g., 2019–2023.
2. **Record the data in Microsoft Excel under the following headings:**
 - i. Year
 - ii. Total Debt (GHS billion)
 - iii. Domestic Debt (GHS billion)
 - iv. External Debt (GHS billion)
 - v. Debt-to-GDP ratio (if available)
3. **Use Excel to create the following:**
 - i. A line graph showing the trend in total debt over five years.
 - ii. A clustered bar chart comparing domestic and external debt each year.
 - iii. (Optional) A pie chart showing the proportion of debt in a selected year.
4. **Analyse the trend by answering these guiding questions:**
 - i. What has been the overall trend in Ghana’s national debt over the five years?
 - ii. Which type of debt dominates the total debt?
 - iii. What might be contributing to the increase or decrease?
 - iv. How might rising debt affect development in Ghana?
5. **Present your Excel charts and analysis to the class in 5–7 minutes.**

Pedagogical Exemplars

Collaborative Learning

Learners work in mixed gender and ability groups to extract data from Ghana’s national budget on debt over a five-year period and present their data in Microsoft excel and analyse the trend over the five-year period. Assist learners during group discussion and encourage every member of each group to participate. After the group presentation, guide a short discussion on “What are the risks and benefits of government borrowing?” Should Ghana borrow more or reduce debt? Why?” How can Ghana use borrowed funds more effectively?”

Key Assessment Level 4: Group Class Work

SHORT ANSWER QUESTIONS

Question 1 (6 Marks)

Define national debt and explain TWO main components that make up a country's national debt. (6 marks)

Question 2 (9 Marks)

Using Ghana's economic context, analyse THREE factors that contribute to increasing national debt and suggest ONE strategy to manage each factor. (9 marks)

Question 3 (10 Marks)

Compare and contrast the advantages and disadvantages of domestic borrowing versus foreign borrowing for financing national debt. Which would you recommend for a developing country like Ghana and why? (10 marks)

Question 4 (15 Marks)

Ghana's debt-to-GDP ratio has been a concern for policymakers. Critically evaluate the sustainability of Ghana's current national debt position. In your analysis, examine the economic, social, and political implications, and propose a comprehensive debt management strategy that balances development needs with fiscal responsibility. (15 marks)

Essay Question 5

- Critically analyse the sustainability of Ghana's current debt position using economic data from the past five years. In your analysis, distinguish between domestic and external debt components and evaluate their respective impacts on fiscal stability. (8 marks)
- To what extent have Ghana's debt servicing obligations affected government spending on key development sectors? Support your evaluation with specific examples and data. (6 marks)

PLC Session 19

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to
 - explain the week's concepts in a practical way that will make it easier for learners to understand
 - identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
- Use your subject specific app to plan your lesson. Ask the app to
 - suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)

- c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the essay (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
 - a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
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Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
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WEEK 20

Learning Indicator: Calculate the incidence of taxation for the producer and consumer

Focal Area 1: The Incidence of Taxation

Introduction

The incidence of taxation refers to who actually bears the burden of a tax, not just who pays it to the government. It helps us understand how the economic impact of a tax is distributed between different groups such as consumers, producers, or workers. The incidence of taxation is about who truly pays the cost of a tax in the economy, not just who sends the money to the government. It helps policymakers and economists assess how fair or effective a tax is. The incidence of taxation refers to who ultimately bears the economic burden of a tax, which may differ from who is legally required to pay it. This concept distinguishes between the statutory or legal incidence (who is legally obligated to pay) and the economic incidence (who actually bears the cost).

Key Concepts

1. **Legal Incidence:** The person or business legally responsible for paying the tax to the government. Example: A company is legally required to pay corporate tax.
2. **Economic Incidence:** The person or group who actually feels the economic burden of the tax. Example: If a business passes the cost of a new tax to consumers by raising prices, then consumers bear the incidence.

How Tax Incidence Works

When a tax is imposed, the burden can shift through price adjustments in the market. For example, if a tax is placed on producers, they might raise prices to pass some or all of the tax burden to consumers. Equally, a tax on consumers may reduce demand, which in turn pressures producers to lower prices to maintain sales. In doing so, producers may bear part of the tax burden through reduced revenue or profit margins.

Types of Tax Incidence

1. **Forward Shifting:** The tax is passed on to consumers through higher prices. Common with indirect taxes like VAT.
2. **Backward Shifting:** The tax is passed back to producers or workers, for example through lower wages or reduced profits.
3. **Absorption:** The business or seller absorbs the tax without passing it on to anyone, reducing their profit.

What Determines Tax Incidence?

Price elasticity of demand and supply:

- If demand is inelastic (consumers can't easily switch), consumers bear more of the tax.
- If supply is inelastic (producers can't easily change production), producers bear more of the tax.

Example in Ghana

A tax on fuel:

- Government collects it from oil companies (legal incidence).
- If prices at the pump go up, taxi drivers and passengers (economic incidence) may bear the burden.

General Formula for Tax Incidence

Consumer's Share of Tax Burden

$$\text{Consumer Tax Incidence} = \frac{P_{\text{After}} - P_{\text{Before}}}{\text{Tax per Unit}} \times 100\%$$

Producer's Share of Tax Burden

$$\text{Producer Tax Incidence} = \frac{\text{Tax per Unit} - (P_{\text{After}} - P_{\text{Before}})}{\text{Tax per Unit}} \times 100\%$$

Where

- P_{After} = Price before tax
- P_{Before} = Price after tax
- Tax per unit = The amount of tax imposed per unit of the good

Example

Suppose:

Price before tax = GH¢10

Price after tax = GH¢12

Tax per unit = GH¢5

Then:

Consumer's Tax Burden

$$\frac{12 - 10}{5} \times 100\% = \frac{2}{5} \times 100\% = 40\%$$

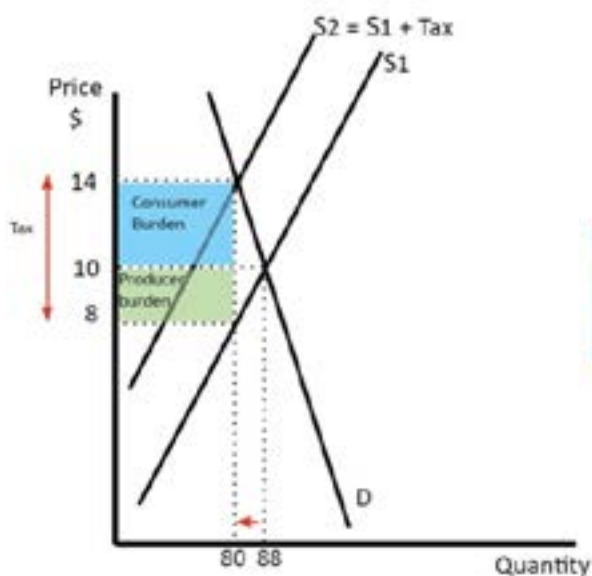
Producer's Tax Burden

$$\frac{5 - (12 - 10)}{5} \times 100\% = \frac{3}{5} \times 100\% = 60\%$$

So, **consumers bear 40%** of the tax, and **producers bear 60%**.

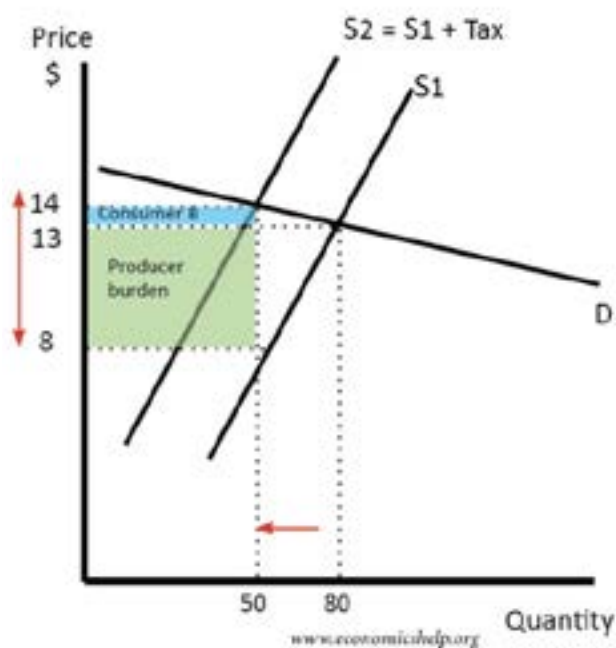
Elasticity values can be used to calculate consumer and producer share of taxation. Using the formula above consumer's share of tax = $E_s / (E_s - E_d)$ and producer's share = $E_d / (E_s - E_d)$, where E_d and E_s represent the price elasticity of demand and supply, respectively. In scenario where demand is elastic ($E_d = -2$) and supply is inelastic ($E_s = 0.5$), the consumer's share of the tax is $0.5/2.5 = 0.2$ or 20%, while the producer's share is $2/2.5 = 0.8$ or 80%. (note that absolute values are used so the -2 becomes 2) This indicates that producers bear the majority of the tax burden when supply is less responsive than demand. The formula highlights how elasticity shapes tax incidence: the side of the market that is less elastic bears more of the tax.

INCIDENCE OF TAX



NOTE: The relative burden between producer and consumer is determined by the price elasticity of demand (PED).

INCIDENCE OF TAX



The vertical distance between S and S1 is the tax per unit, and the incidence on the consumer is the distance P to P1 times the new quantity sold - 0 to Q1. Given that the government requires the whole tax, the producer must pay the rest out of its revenue. So, if the price does not rise at all (when PED is infinite), the whole incidence falls on the producer (in this case any increase in price would result in a drop in sales to zero).

Source: Author Generated, 2025

Learning Tasks

Use this simple case study “The government has imposed a GH¢5 per unit tax on soft drinks. Before the tax, the market price was GH¢15, and the quantity demanded was 1,000 units per week. After the tax, the price rose to GH¢18, and the quantity dropped to 800 units **per week.**”

a. Calculate

- i. How much of the GH¢5 tax is paid by the consumer (price increase)

- ii. How much is absorbed by the producer (price not passed on)
- b. Draw a diagram (using Excel, paper, or PowerPoint) to show
 - i. Pre-tax and post-tax equilibrium
 - ii. Tax wedge
 - iii. Price received by seller vs paid by buyer
- c. Analyse
 - i. Who bears more of the tax: producer or consumer?
 - ii. What factors determine this distribution?
 - iii. What are the possible effects on employment, investment, or consumption?
- d. Present

Prepare a PowerPoint presentation with the following slides:

 - i. Introduction and case study summary
 - ii. Tax data and findings
 - iii. Diagram showing incidence
 - iv. Analysis and conclusion
 - v. Policy advice (should government maintain, remove, or adjust the tax?)

Pedagogical Exemplars

Project-based Learning

Learners use a sample tax data as a case study and work in small mixed-ability groups and mixed groups to identify the incidence of taxation for the producer and consumer and present a project report in powerpoints to the class. Facilitate the discussion and summarise key insights. Encourage all learners to participate effectively.

Key Assessment Level 4: Group Project Work

SHORT ANSWER QUESTIONS

Question 1 (10 marks)

A specific tax of GH¢2.00 per unit is imposed on a product. Before the tax, the equilibrium price was GH¢10.00 and the quantity was 100 units. After the tax, the new equilibrium price paid by consumers is GH¢11.20 and the quantity is 80 units.

Calculate

- a. The tax incidence on consumers (**3 marks**)
- b. The tax incidence on producers (**3 marks**)
- c. What percentage of the tax burden is borne by each party? (**4 marks**)

Question 2 (18 marks)

Analyse how the price elasticity of demand and supply affects tax incidence. Using two different scenarios with numerical examples:

- Calculate tax incidence when demand is elastic ($E_d = -2$) and supply is inelastic ($E_s = 0.5$) **(6 marks)**
- Calculate tax incidence when demand is inelastic ($E_d = -0.3$) and supply is elastic ($E_s = 1.5$) **(6 marks)**
- Compare your results and explain the strategic implications for government tax policy **(6 marks)**

Question 3: Tax Incidence in Ghana's Telecommunications Sector

Study the data below showing the price elasticity of demand and supply for mobile data services in Ghana before and after the implementation of the Communication Service Tax (CST) increase from 6% to 9% in 2019.

Market Data	Before Tax Increase	After Tax Increase
Average price per GB (GH¢)	25.00	28.50
Monthly consumption (million GB)	50.0	46.5
Price elasticity of demand	-0.8	-0.8
Price elasticity of supply	0.5	0.5

- Using the data provided, calculate the tax incidence on consumers and producers of mobile data services. Show all your calculations and explain your methodology. **(8 marks)**
- Analyse how the price elasticity values influence the distribution of tax burden between consumers and producers in this market. Why does this distribution occur? **(6 marks)**
- Evaluate the economic and social implications of this tax incidence distribution for different stakeholders including government, telecommunications companies, and various consumer groups in Ghana. **(6 marks)**

Question 4: Tax Incidence in Ghana's Petroleum Market

The table below shows data for Ghana's petroleum market following the introduction of a new fuel levy of GH¢0.20 per litre in 2022.

Market Segment	Price Before Tax (GH¢/L)	Price After Tax (GH¢/L)	Price Elasticity of Demand	Price Elasticity of Supply
Urban consumers	10.50	10.65	-0.3	1.2
Rural consumers	10.80	10.95	-0.2	0.8
Commercial transport	10.40	10.55	-0.5	1.2

- a. Calculate the tax incidence on consumers and producers for each market segment. Explain the differences in tax incidence across the three segments with reference to the elasticity values. **(8 marks)**
- b. Using economic theory, analyse why the rural consumers bear a higher proportion of the tax burden compared to other segments. Include appropriate diagrams in your analysis. **(6 marks)**
- c. Critically evaluate whether this distribution of tax burden is equitable and propose policy measures that could address any inequities while maintaining government revenue targets. **(6 marks)**

PLC Session 20

45 minutes

Planning & Reviewing the Learning Plan

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
 - a. The key assessment for the week is **group project work**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the project (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then

- a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
- b. all teachers in the group work through a similar problem individually for 3–4 minutes
- c. the group then works through the problem together step by step
- d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about ‘How do I teach this?’ but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes

Enactment

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes

Reflection

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

SECTION 8 REVIEW

The lessons taught in section eight focused on the concepts of government economic policy. It covered government expenditure, government revenue, national debt and the incidence of taxation. The teacher applied collaborative learning and project-based learning pedagogical skills and assessment techniques subject to the abilities of the learners to achieve the learning indicators for each week. The assessment questions for each indicator covered DoK levels 2, 3 and 4.

Teaching and Learning Resources

Week 18: Ghana National Budget Statement, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google, Microsoft Excel

Week 19: Ghana National Budget Statement, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google, Microsoft Excel

Week 20: Sample tax datasets (prepared by teacher), Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google, Microsoft Excel or Graph templates

Additional Reading

Aryeetey, E., & Kanbur, R. (Eds.). (2017). *The economy of Ghana sixty years after independence*. Oxford University Press.

Quartey, P., Abor, J., & Nellis, J. G. (Eds.). (2024). *Monetary economics in emerging and developing countries*. Routledge.

Stiglitz, J. E., & Rosengard, J. K. (2015). *Economics of the public sector* (4th ed.). W. W. Norton & Company.

Todaro, M. P., & Smith, S. C. (2020). *Economic development* (12th ed.). Pearson Education.

Varian, H. R. (2014). *Intermediate microeconomics: A modern approach* (9th ed.). W. W. Norton & Company.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 18

Question 1

Expected Response: Students should describe three types of government expenditure:

1. Current/Recurrent Expenditure (2 marks)
 - Description: Day-to-day running costs of government (1 mark)
 - Economic contribution: Maintains public services, employs civil servants (1 mark)
2. Capital Expenditure (2 marks)
 - Description: Long-term investments in infrastructure and assets (1 mark)
 - Economic contribution: Creates jobs, improves productivity, attracts investment (1 mark)

3. Transfer Payments (2 marks)

- Description: Social welfare payments, subsidies, grants (1 mark)
- Economic contribution: Reduces inequality, supports vulnerable groups, stimulates consumption (1 mark)

Question 2

Expected Response: Students should explain four sources with examples:

1. Tax Revenue (2 marks)

- Explanation: Compulsory payments to government (1 mark)
- Example: Income tax, VAT, corporate tax (1 mark)

2. Non-Tax Revenue (2 marks)

- Explanation: Government earnings from services/assets (1 mark)
- Example: Fees, fines, licenses, dividends from state enterprises (1 mark)

3. Borrowing (2 marks)

- Explanation: Loans from domestic/foreign sources (1 mark)
- Example: Government bonds, World Bank loans, IMF financing (1 mark)

4. Grants and Aid (2 marks)

- Explanation: Financial assistance from foreign governments/organizations (1 mark)
- Example: Development aid, bilateral grants, multilateral funding (1 mark)

Question 3 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Categorization of Government Expenditure (6 marks)	Learner correctly categorises government expenditure into recurrent and capital expenditures. Expected categories: Recurrent Expenditure: Regular spending on day-to-day operations Capital Expenditure: Long-term investments in assets and infrastructure Learner provides specific examples from Ghana's current budget for each category. Expected examples: Recurrent: Public sector, wages and salaries Administrative costs	Award 1 mark per correct category (Maximum 2 marks) Award 1 mark per correct example (Maximum 4 marks) Total Marks: 2 + 4 = 6

	Interest payments on debt Subsidies and transfers Capital: Road construction and maintenance School building projects Hospital construction Energy infrastructure projects. Accept any other correct examples from Ghana's current budget.	
b. Economic Development Impact (6 marks)	Learner explains the contribution of education expenditure to economic development Expected points: Increased labour productivity Innovation and technological advancement Social mobility and reduced inequality Learner explains the contribution of infrastructure expenditure to economic development Expected points: Reduced production and transportation costs– Improved market access Attraction of private investment Job creation and multiplier effects Accept any other correct explanations of economic development impacts.	Award up to 3 marks for education impact explanation (Maximum 3 marks) Award up to 3 marks for infrastructure impact explanation (Maximum 3 marks) Total Marks: 3 + 3 = 6

c. Budget Allocation Diagram (6 marks)	Learner creates an accurate diagram showing percentage allocation across at least four key sectors Expected sectors may include: Education Health Infrastructure Defence Agriculture Social Protection Learner's diagram is clear, properly labelled, and visually effective Expected elements: Title– Appropriate chart type (pie chart, bar graph,) Clear labels Legend if needed Source of data Learner's data is accurate according to recent Ghanaian budget figures	Award $\frac{1}{2}$ mark per correctly included sector (Maximum 2 marks) Award up to 2 marks for diagram clarity and effectiveness (Maximum 2 marks) Award up to 2 marks for data accuracy (Maximum 2 marks) Total Marks: $2 + 2 + 2 = 6$
d. Presentation and communication skills	Learners demonstrate clear organisation and logical flow of presentation Well-structured presentation with introduction, component analysis, impact evaluation, and conclusion Learner's engagement with the audience and effective responses to questions Maintains eye contact, speaks clearly, and accurately addresses questions with economic reasoning	Award a maximum of 1 mark for a good flow Award a maximum of 1 mark for a good audience engagement Total Marks: $1 + 1 = 2$

WEEK 19

Question 1

Definition (2 marks)

- National debt is the total amount of money that a government owes to creditors (2 marks)
- Accept: Total outstanding borrowings of government/Total financial obligations

Two Components (4 marks - 2 marks each)

1. Domestic Debt (2 marks)

- Money borrowed from sources within the country (1 mark)

- Examples: Government bonds, treasury bills, loans from local banks (1 mark)

2. External/Foreign Debt (2 marks)

- Money borrowed from foreign sources (1 mark)
- Examples: World Bank loans, bilateral loans, Eurobonds (1 mark)

Question 2

Three Factors (6 marks - 2 marks each)

1. Budget Deficits

- Analysis: Government spending exceeds revenue (1 mark)
- Strategy: Improve revenue collection/reduce expenditure (1 mark)

2. Infrastructure Development Needs

- Analysis: Large capital projects require significant financing (1 mark)
- Strategy: Public-private partnerships/phased implementation (1 mark)

3. Economic Shocks

- Analysis: COVID-19, commodity price fluctuations affect finances (1 mark)
- Strategy: Build fiscal buffers/diversify economy (1 mark)

Application to Ghana (3 marks)

- Clear reference to Ghana's context (1 mark)
- Understanding of Ghana's specific debt challenges (1 mark)
- Realistic strategies for Ghana's situation (1 mark)

Question 3

Domestic Borrowing (3 marks)

- Advantages: No foreign exchange risk, keeps interest payments within economy (1 mark)
- Disadvantages: Crowds out private investment, limited domestic capital market (1 mark)
- Clear understanding demonstrated (1 mark)

Foreign Borrowing (3 marks)

- Advantages: Access to larger capital, lower interest rates, foreign currency (1 mark)
- Disadvantages: Exchange rate risk, conditionalities, debt servicing pressure (1 mark)
- Clear understanding demonstrated (1 mark)

Recommendation (4 marks)

- Clear choice with justification (2 marks)
- Reference to developing country context (1 mark)
- Consideration of practical implications (1 mark)

Question 4**Analysis of Current Position (4 marks)**

- Reference to Ghana's debt-to-GDP ratio trends (1 mark)
- Assessment of sustainability indicators (1 mark)
- Use of relevant economic data/concepts (1 mark)
- Understanding of debt sustainability framework (1 mark)

Economic Implications (3 marks)

- Impact on fiscal space and government spending (1 mark)
- Effects on economic growth and investment (1 mark)
- Currency and inflation pressures (1 mark)

Social Implications (2 marks)

- Effects on public service delivery (1 mark)
- Impact on poverty reduction and development programs (1 mark)

Political Implications (2 marks)

- Policy constraints and political pressure (1 mark)
- International relations and sovereignty issues (1 mark)

Comprehensive Strategy (4 marks)

- Realistic revenue enhancement measures (1 mark)
- Expenditure rationalization proposals (1 mark)
- Debt restructuring/management options (1 mark)
- Balance between development needs and fiscal responsibility (1 mark)

Question 5 (14 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Analysis of Debt Sustainability (8 marks)	Learner critically analyses Ghana's debt sustainability: Expected analysis points: Accurate presentation of Ghana's debt-to-GDP ratios (domestic and external) Analysis of debt service-to-revenue ratios Evaluation of debt sustainability indicators Assessment of debt trajectory trends Distinction between domestic and external debt impacts Critical examination of recent debt restructuring efforts	Award 1 mark for accurately presenting Ghana's debt position (Maximum 1 mark) Award 1 mark per component for domestic debt analysis (Maximum 3 marks) Award 1 mark per component for external debt analysis (Maximum 3 marks) Award 1 mark for fiscal stability impact analysis (Maximum 1 mark) Total Marks: 8

	Learner provides a clear analysis of trends in debt components with relevant data Expected analysis: Domestic debt: Growth trends, interest rates, refinancing risks External debt: Currency composition, creditor types, vulnerability to external shocks Fiscal stability impacts: Budget deficits, inflation effects, crowding out	
b. Evaluation of Debt Servicing Impact (6 marks)	Learner evaluates impact of debt servicing on development sectors. Expected evaluation points: Analysis of debt servicing as percentage of government expenditure Evaluation of trends in sectoral budget allocations Assessment of specific development sectors affected Learner provides specific examples with data Expected examples: Education sector: Budget allocation trends vs. debt service Healthcare sector: Investment patterns and constraints Infrastructure development: Delayed or cancelled projects Social protection: Impact on welfare programs	Award 1 mark for analysis of debt servicing percentage (Maximum 1 mark) Award 1 mark for evaluation of budget allocation trends (Maximum 1 mark) Award 1 mark for sector impact assessment (Maximum 1 mark) Award 1 mark per development sector with specific examples and data (Maximum 3 marks) Total Marks: 6

WEEK 20**Question 1****a. Tax incidence on consumers (3 marks)**

Consumer price increase = GH¢11.20 - GH¢10.00 = GH¢1.20 (2 marks)

Tax burden on consumers = GH¢1.20 per unit (1 mark)

b. Tax incidence on producers (3 marks)

Producer receives = GH¢11.20 - GH¢2.00 = GH¢9.20 (1 mark)

Producer burden = GH¢10.00 - GH¢9.20 = GH¢0.80 (1 mark)

Tax burden on producers = GH¢0.80 per unit (1 mark)

c. Percentage burden (**4 marks**)

Consumer percentage = $(\text{GH¢}1.20/\text{GH¢}2.00) \times 100 = 60\%$ (2 marks)

Producer percentage = $(\text{GH¢}0.80/\text{GH¢}2.00) \times 100 = 40\%$ (2 marks)

Question 2a. Elastic demand, inelastic supply (**6 marks**)

Tax burden distribution formula: Consumer burden = $E_s/(E_s + |E_d|) \times \text{Tax}$ (2 marks)

Consumer burden = $0.5/(0.5 + 2) \times \text{Tax} = 0.2 \times \text{Tax}$ (2 marks)

Producer burden = $2/(0.5 + 2) \times \text{Tax} = 0.8 \times \text{Tax}$ (1 mark)

Numerical example with calculation (1 mark)

b. Inelastic demand, elastic supply (**6 marks**)

Consumer burden = $1.5/(1.5 + 0.3) \times \text{Tax} = 0.833 \times \text{Tax}$ (3 marks)

Producer burden = $0.3/(1.5 + 0.3) \times \text{Tax} = 0.167 \times \text{Tax}$ (2 marks)

Numerical example with calculation (1 mark)

c. Strategic implications (**6 marks**)

Comparison of results showing burden shifts (2 marks)

Policy implications: Tax products with inelastic demand for revenue (2 marks)

Consideration of equity and efficiency effects (2 marks)

Question 3 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Calculation of Tax Incidence (8 marks)	Learner calculates tax incidence correctly Expected calculations: • Identification of price change (GH¢3.50) as the tax amount • Formula application: Consumer burden • Formula application: Producer burden • Correct substitution of elasticity values Learner shows methodology • Clear step-by-step working • Correct application of tax incidence formulas • Accurate calculations • Proper interpretation of results (percentage burden)	Award 1 mark for correctly identifying price change as tax amount (Maximum 1 mark) Award 1 mark for correct formula for consumer burden (Maximum 1 mark) Award 1 mark for correct formula for producer burden (Maximum 1 mark) Award 1 mark for correct substitution of elasticity values (Maximum 1 mark) Award 1 mark for each correct calculation step (Maximum 2 marks) Award 2 marks for correct final results with interpretation (Maximum 2 marks) Total Marks: 8

b. Analysis of Elasticity Influence (6 marks)	Learner analyses elasticity influence: • Expected analysis points: • Explanation of how relative elasticities determine burden sharing • Analysis of why inelastic demand leads to higher consumer burden • Explanation of why relatively elastic supply shifts burden to consumers Theoretical principles behind tax incidence determination Learner explains why this distribution occurs: • Analysis of consumer ability to avoid tax • Analysis of producer ability to pass on tax • Reference to market conditions in telecom sector Application to specific Ghanaian context	Award 1 mark per analysis point about elasticity influence(Maximum 3 marks) Award 1 mark per explanation point about distribution reasons(Maximum 3 marks) Total Marks: 6
c. Evaluation of Implications (6 marks)	Learner evaluates implications for stakeholders Expected stakeholder analyses: • Government: Revenue effects, policy objectives achievement • Telecom companies: Profitability, investment capacity • Consumers: Different income groups, usage patterns Learner provides economic and social implications: • Distributional effects across society • Digital inclusion implications • Economic efficiency considerations • Long-term market development impacts	Award 1 mark per stakeholder with clear analysis(Maximum 3 marks) Award 1 mark per implication with substantiated reasoning(Maximum 3 marks) Total Marks: 6

Question 4 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Calculation and Explanation of Tax Incidence (8 marks)	Learner calculates tax incidence for each segment Expected calculations for each segment: Identification of price changes vs. tax amount (GH¢0.20) Correct application of tax incidence formulas Accurate calculations for each segment Learner explains differences across segments: Analysis of how elasticity differences cause incidence variation	Award 1 mark for correct identification of tax amount(Maximum 1 mark) Award 1 mark per segment for correct calculations(Maximum 3 marks) Award 1 mark per segment for correct explanation of differences(Maximum 3 marks)
	Explanation of urban/rural/commercial differences Interpretation of results in economic terms	Award 1 mark for overall interpretation of results(Maximum 1 mark) Total Marks: 8
b. Analysis with Diagrams (6 marks)	Learner analyses rural consumer tax burden Expected analysis points: Explanation of how lower demand elasticity increases burden Analysis of rural market conditions affecting elasticity Theoretical explanation of relationship between elasticity and incidence Learner provides appropriate diagrams: Correct tax incidence diagrams for rural segment Proper labelling and tax burden illustration Comparative diagram showing difference with other segments	Award 1 mark per analysis point regarding rural burden(Maximum 3 marks) Award 1 mark for correct basic diagram(Maximum 1 mark) Award 1 mark for proper labelling and tax illustration(Maximum 1 mark) Award 1 mark for effective comparative diagram(Maximum 1 mark) Total Marks: 6

c. Evaluation and Policy Proposals (6 marks)	Learner evaluates equity of tax burden Expected evaluation points: Assessment against vertical and horizontal equity principles Consideration of ability-to-pay principles Analysis of distributional impacts across income groups Learner proposes policy measures Specific policy recommendations to address inequities Consideration of revenue implications Feasibility assessment of proposed measures Balancing efficiency and equity objectives	Award 1 mark per equity evaluation point(Maximum 3 marks) Award 1 mark per policy proposal with clear justification(Maximum 3 marks) Total Marks: 6
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SECTION 9: AGRICULTURE AND INDUSTRIALISATION

STRAND: **GOVERNMENT ECONOMIC POLICY AND TRADE**

Sub-Strand: **Agriculture, industrialisation, and trade**

Week 21

Content Standard: Demonstrate knowledge and understanding in linkages between agriculture and industry

Learning Outcome: Use relevant information in the environment to examine the connection between Agriculture and Industry

Week 22

Content Standard: *Demonstrate knowledge and understanding in free and external trade and exchange rate*

Learning Outcome: Compare and contrast free and external trade and analyse the exchange rate

INTRODUCTION AND SECTION SUMMARY

Section nine covers government economic policy and trade focusing on agriculture, industrialisation, and trade. The learning outcomes of the section are to enable learners to examine the connection between agriculture and industry as well as compare and contrast free and external trade and analyse the exchange rate. Specifically, it is expected that learners will use relevant information in their environment to calculate exchange rate for major trading currencies.

Teachers should note that the concept of government economic policy is linked Social Studies and Government.

The weeks and the indicators covered by the section are:

- Week 21: Analyse the link between agriculture and industry and Identify the challenges and solutions of industrialisation
- Week 22: Describe free and external trade and Calculate exchange rate for major trading currencies

Recap weeks

Year 1	Week 22: Describe the importance of agriculture to the Ghanaian economy. Week 23: Describe the importance of industry to the Ghanaian economy. Week 24: Identify the features of domestic trade and cite examples of domestic trade.
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Year 2	Week 22: Identify the challenges and solutions to the agricultural sector
	Week 23: Identify the challenges and solutions to the industrial sector
	Week 24: Explain the concept of International Trade and Compare domestic trade to international trade

SUMMARY OF PEDAGOGICAL EXEMPLARS

The three pedagogies are experiential learning, building on what others say, and collaborative learning. In Experiential learning, the teacher is expected to support learners embark on a fieldtrip to a nearby farm and industry /watch a video on farms and industries to observe and document the link between Agriculture and industry. The teacher is to also support the learners embark on a study tour to a nearby bank or foreign bureau or watch a video on banks or foreign bureau to identify the various currencies that Ghana trade in. In Building on What Others Say, the teacher is expected to support learners brainstorm on the challenges of industrialisation and suggest solutions to them, and learners discuss using previous knowledge acquired to explain free and external trade. In Collaborative learning, the teacher is expected to assist learners to form mixed ability and gender groups in order to discuss the meaning and difference between comparative and absolute advantage.

It must be indicated that teachers apply this pedagogy based on the abilities and learning styles of the learners in the class.

ASSESSMENT SUMMARY

The highest DOK level for the assessment in this section is level 3. Teachers should note that only level two and three questions are provided under key assessments to enable them to prepare the learners toward the final exam. Extension questions at DoK Level 4 are provided in the form of data response projects. The teacher is expected to use the structure of the sample questions to set more questions for the preparation. The teacher should use the listed strategy to conduct the assessment. The assessments should be marked and feedback given to the learners. The teacher must be mindful of the varied abilities of the learners in the class and design various support systems to meet the needs of each learner in the class.

Indicators	DOK Level	Assessment Strategy and/or Mode
Analyse the link between agriculture and industry	3	Strategy : Individual Mode: Class Work
Identify the challenges and solutions of industrialisation	3	Strategy : Individual Mode: Homework
Describe free and external trade	3	Strategy : Group Mode: Homework
Calculate exchange rate for major trading currencies	3	Strategy : Group Mode: Class Work

WEEK 21

Learning Indicators

1. Analyse the link between agriculture and industry
2. Identify the challenges and solutions of industrialisation

Focal Area 1: The Link Between agriculture and Industry

Introduction

The link between agriculture and industry refers to the mutual relationship and interdependence between the agricultural sector (farming, fishing, and livestock) and the industrial sector (manufacturing, processing, and construction). These two sectors support each other to achieve overall economic development. Agriculture and industry are two sides of the same economic coin. For a country like Ghana to develop sustainably, there must be a strong, coordinated link between farming and industrial production. A weak link causes inefficiencies, waste, and unemployment.

How Agriculture Supports Industry

Agriculture → Industry	Explanation
Supply of Raw Materials	Agriculture provides essential inputs like cocoa (for chocolate), cotton (for textiles), palm oil (for soap), maize and cassava (for flour and starch industries).
Market for Industrial Goods	Farmers buy fertilisers, tools, machinery, and storage facilities produced by industries.
Labour Supply	Surplus labour from rural agriculture often migrates to urban areas for industrial jobs.
Capital Formation	Agricultural income can be invested in setting up small-scale industries.
Food Supply	Ensures that industrial workers are well-fed, increasing productivity and reducing labour costs.

How Industry Supports Agriculture

Industry → Agriculture	Explanation
Provision of Farm Inputs	Industries produce tools, tractors, fertilisers, pesticides, and irrigation systems.
Processing of Agricultural Products	Industries add value by processing raw farm produce into finished goods (e.g., tomatoes into canned paste).
Storage and Packaging	Industry provides silos, refrigeration, and packaging materials to reduce post-harvest losses.

Transport and Communication	Industrial infrastructure (roads, trucks, ICT) helps farmers' access markets faster.
Research and Innovation	Industrial technology improves seeds, irrigation, and climate resilience in agriculture.

Why the Link is Important in Ghana

1. Boosts value addition and agro-processing
2. Reduces rural poverty and youth unemployment
3. Strengthens food security and export earnings
4. Encourages balanced development across sectors

Example in Ghana

Cocoa farming in rural Ghana → processed into chocolate by companies like Cocoa Processing Company in Tema.

Maize production → processed into flour or starch by agro-industries like Nestlé Ghana.

Learning Tasks

1. Recap the concept of agriculture and industrialisation by describing the importance of agriculture to the Ghanaian economy, describing the importance of industry to the Ghanaian economy, identifying the challenges and solutions to the agricultural sector and the industrial sector.
2. brainstorm answers to the following before going on a field trip or watching a video:
 - i. How does agriculture support industry?
 - ii. How does industry support agriculture?
3. Choose one of the following options based on resource availability
 - i. Option A: Field Trip to a nearby farm and agro-processing company
 - ii. Option B: Watch a short, locally relevant documentary/video on farming and agro-industrial processes
4. Observe and document the processes on the farm and in the industry
5. Take notes and ask questions from guides or record key moments in the video based on these guided observation questions:
 - i. What products are produced on the farm?
 - ii. Which of these products are used by the industry?
 - iii. What machines, fertilisers, or inputs are used on the farm from industry?
6. Discuss and summarise findings

7. Create a poster or PowerPoint presentation, include key points explaining:
 - i. The flow of resources between agriculture and industry
 - ii. The mutual dependence between the two sectors
8. Present your work to the class in groups

Pedagogical Exemplars

Experiential Learning

Learners embark on a fieldtrip to a nearby farm and industry /watch a video on farms and industries to observe and document the link between Agriculture and industry for presentation in mixed gender and ability groups. Introduce key concepts like raw materials, agro-processing, packaging, machinery, and fertiliser to the learners before the field trip or video watching. Support learners to embark on the fieldtrip or watch a video. During group presentation, allow other learners to ask critical questions or offer feedback. Facilitate a whole-class discussion to draw connections, correct misconceptions, and reinforce learning. Use the following assessment criteria for the group presentation; clarity and creativity of presentation, accuracy of linkages identified, use of real-life examples from field/video and team collaboration and gender inclusion.

Key Assessment Level 3: Individual Class Work

Short answer questions

1. Define the link between agriculture and industry.
2. Give two examples of how agriculture supports industry in Ghana.
3. State two ways industry helps reduce post-harvest losses in agriculture.
4. Explain why a weak link between agriculture and industry can limit national development.
5. Suggest two ways Ghana could strengthen the link between agriculture and industry and explain the potential benefits.
6. Discuss how cocoa farming and chocolate processing illustrate the interdependence of agriculture and industry in Ghana.

Focal Area 2: Challenges and Solution of Industrialisation

Introduction

Definition of Industrialisation

Industrialisation is the process by which an economy shifts from relying mainly on agriculture to one focused on manufacturing and industry. It involves the growth of factories, mechanised production, and the development of new technologies to increase output. Industrialisation transforms how goods are produced, improves efficiency, and diversifies the economy.

Objectives of Industrialisation

1. **Increase Production** – Boost the quantity and quality of goods produced locally to meet domestic and export demand.

2. **Create Employment** – Generate jobs in manufacturing, services, and supporting industries.
3. **Enhance Technology and Skills** – Promote technological advancement and train workers in new industrial skills.
4. **Diversify the Economy** – Reduce over-reliance on agriculture or raw material exports.
5. **Boost Exports and Revenue** – Increase foreign exchange earnings through manufactured goods.
6. **Improve Living Standards** – Provide higher incomes, better infrastructure, and access to essential goods and services.

Role and Contributions of Industrialisation

- **Economic Growth** – Industrialisation increases output, contributing to higher GDP. For example, Ghana's agro-processing factories turn cocoa and cassava into finished products for local consumption and export.
- **Employment Creation** – Factories, industrial parks, and supporting service sectors provide numerous jobs. The One District One Factory (1D1F) initiative has created jobs in regions previously lacking industrial activity.
- **Technological Advancement** – Industrialisation encourages the use of modern machinery and processes, improving productivity and innovation.
- **Infrastructure Development** – Growth of industries promotes better roads, energy supply, and logistics networks to support production and distribution.
- **Encourages Investment** – A strong industrial base attracts both domestic and foreign investors seeking opportunities in manufacturing and services.
- **Promotes Export-Led Growth** – Processed goods, such as packaged foods and manufactured textiles, can be exported, earning foreign exchange and reducing trade deficits.

Industrialisation has great potential to create jobs, boost exports, and modernise Ghana's economy. However, it comes with several challenges. With proper planning, investment in people and infrastructure, and support from both government and private sectors, Ghana can overcome these challenges and achieve sustainable industrial growth.

Challenges of Industrialisation

Challenge	Explanation
1. Inadequate Infrastructure	Poor roads, unreliable electricity, and limited water supply make production difficult and costly.
2. Lack of Capital	Many local entrepreneurs and governments lack funds to invest in factories, machinery, and technology.
3. Shortage of Skilled Labour	There are not enough trained technicians, engineers, and machine operators.
4. Overdependence on Imported Raw Materials	Industries often rely on expensive imported inputs due to weak links with local agriculture.
5. Limited Domestic Market	Low incomes and small populations reduce the demand for locally manufactured goods.

6. Poor Maintenance Culture	Machines and infrastructure break down often due to poor servicing and handling.
7. Environmental Degradation	Industrial pollution (air, water, noise) damages the environment and public health.
8. Political and Policy Instability	Changing government policies and poor enforcement discourage long-term investment.
9. High Cost of Production	Factors such as high electricity tariffs and taxes increase production costs.
10. Competition from Foreign Goods	Cheaper imported goods make it hard for local industries to compete.

Solutions to the Challenges

Solution	Explanation
1. Improve Infrastructure	Invest in roads, electricity, water, and ICT to attract and support industries.
2. Access to Affordable Credit	Provide low-interest loans and grants to industrial start-ups and SMEs.
3. Expand Technical and Vocational Education	Train more skilled workers through TVET institutions and apprenticeships.
4. Strengthen Agro-Industrial Linkages	Promote the use of local raw materials to reduce import dependence.
5. Promote Export Markets	Join trade blocs (e.g., AfCFTA) and promote local products internationally.
6. Encourage Public-Private Partnerships (PPP)	Let government and private sector work together to develop industry.
7. Enforce Environmental Regulations	Encourage clean technologies and punish polluting firms.
8. Provide Tax Incentives	Reduce taxes for local industries and offer tax holidays to attract investors.
9. Maintain Political Stability	Encourage consistent industrial policies regardless of changes in government.
10. Promote Made-in-Ghana Products	Campaigns and incentives can boost demand for local goods.

Examples in Ghana

1. The One District, One Factory (1D1F) policy aims to spread industrialisation across Ghana by supporting small factories.
2. Ghana EXIM Bank provides loans and export support to local manufacturers.
3. Tema Industrial Hub and Kumasi Industrial Park are examples of efforts to develop industrial zones.

Learning Tasks

1. Receive a challenge card with a common problem of Industrialisation in Ghana such as:
 - i. Lack of capital
 - ii. Poor infrastructure
 - iii. Low skilled labour
 - iv. Inadequate technology
 - v. Import dependency
 - vi. Environmental concerns
2. Brainstorm on:
 - i. What the challenge means in their own words
 - ii. Why the challenge exists
 - iii. What effects it has on Industrialisation
 - iv. What solutions could be applied in the Ghanaian Context?
3. After brainstorming, rotate to the next group's challenge card and read what the first group wrote and build on it by:
 - i. Adding new ideas
 - ii. Questioning unclear points
 - iii. Suggesting better or alternative solutions
 - iv. Drawing connections to other sectors (e.g., agriculture, education, environment)

Note: This process continues until all groups have contributed to each challenge.

1. Reviews all the contributions made by other groups and summarises key points
2. Prepares a brief report or presentation (poster, flip chart, or oral)
3. Highlights original ideas and how their thinking evolved through peer input
4. Present their findings and solutions to the whole class

Pedagogical Exemplars

Building on What Others say

Learners in mixed gender and ability groups, brainstorm on the challenges of industrialisation and suggest solutions to them and present their report to the class. Support the learners with the following guiding questions; “Has this challenge been solved in any country or region? How?” “What role can government, private sector, and individuals play?” and “What are the pros and cons of your proposed solutions?” Facilitate to clarify economic concepts, link to real-world examples (e.g., 1D1F policy, African Continental Free Trade Area), and summarise key

takeaways. Encourage all learners to participate effectively. Assess the group presentation based on understanding of the challenge and its economic implications, originality and practicality of proposed solutions, evidence of building on others' ideas and clarity and teamwork in presentation.

Key Assessment Level 3: Individual Homework

SHORT ANSWER QUESTIONS

Question 1 (6 Marks)

Explain THREE ways in which agriculture provides support to industrial development. **(6 marks)**

Question 2 (8 Marks)

Identify FOUR major challenges that Ghana faces in its industrialisation process and suggest ONE solution for each challenge. **(8 marks)**

Question 3 (10 Marks)

Analyse how the decline of Ghana's agricultural sector could negatively impact industrial growth. In your response, examine the interdependence between these two sectors using specific examples. **(10 marks)**

Question 4 (12 marks)

Compare the industrialisation challenges faced by Ghana with those of another developing country. Evaluate which solutions would be most effective for Ghana's specific context and justify your choice. **(12 marks)**

Question 5

Ghana has pursued various industrialisation strategies since independence with varying degrees of success.

- Analyse three major challenges that have hindered Ghana's industrialisation efforts over the past two decades. **(8 marks)**
- Propose and justify strategic solutions that could address these challenges while promoting sustainable industrial development. **(7 marks)**

Question 6

Technology and human capital development are critical factors in industrialisation.

- Examine the relationship between Ghana's educational system and its ability to meet the human resource needs of an industrialising economy. **(6 marks)**
- Propose innovative solutions to address these technological and human capital challenges, considering Ghana's specific socioeconomic context. **(6 marks)**

PLC Session 21

45 minutes

Planning & Reviewing the Learning Plan

- Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
- Use your subject specific app to explore the content before planning. Ask the app to

- a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
- a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).



Note

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app
- a. The key assessment for the week is **individual homework**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the homework (NTS 3k-3q).

10 minutes

Content Exploration

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then
- a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
 - b. all teachers in the group work through a similar problem individually for 3–4 minutes
 - c. the group then works through the problem together step by step
 - d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).



Note

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).
 - a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
 - b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).
9. Remember to
 - a. transfer your chats into your learning planner template.
 - b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
 - c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

WEEK 22

Learning Indicators

1. Describe free and external trade
2. Calculate exchange rate for major trading currencies

Focal Area 1: Free and External Trade

Introduction

External trade refers to the buying and selling of goods and services between one country and another. It is trade that takes place across national borders. External trade includes all forms of trade between Ghana and other countries.

Types of External Trade

Type	Description
Import	Buying goods/services from another country (e.g., Ghana imports cars from Japan).
Export	Selling goods/services to another country (e.g., Ghana exports cocoa to Switzerland).
Re-export	Goods imported into a country and then exported again without much change (e.g., Dubai re-exporting electronics).

Free trade is a type of external trade where countries trade with each other without restrictions such as tariffs, quotas, or bans. Free trade is a special form of external trade that removes all barriers to allow goods, services, and resources to move freely across borders.

Key Features of Free Trade

Feature	Explanation
No tariffs	No taxes on imported goods.
No quotas	No limit on the amount of goods imported or exported.
Open competition	Foreign and local producers compete equally in the market.
Encourages specialisation	Countries focus on producing goods where they have an advantage.

Difference between Free Trade and External Trade

Feature	Free Trade	External Trade
Meaning	Trade without restrictions between countries	Any kind of trade between countries (restricted or not)
Involves Rules?	Minimal or no government restrictions	May involve tariffs, quotas, and other controls

Focus	Promoting open markets and global integration	Covers all foreign trade activities
Example	Ghana trading duty-free with ECOWAS members	Ghana importing rice from Thailand (with tariffs)

Example in Ghana

- **External trade:** Ghana exports cocoa and gold, and imports cars, machinery, and rice.
- **Free trade:** Ghana is part of the African Continental Free Trade Area (AfCFTA), allowing free trade with other African countries.

Why It Matters

External and free trade help countries:

- Access goods they cannot produce
- Earn foreign exchange
- Promote economic growth
- Create jobs through exports

Free and external trade offer great opportunities for economic development but also pose challenges that need to be managed through good policies. For Ghana, balancing trade liberalisation with support for local industries is essential for sustainable development.

Advantages of External and Free Trade

Advantage	Explanation
1. Access to a Variety of Goods	Countries can get goods and services they do not produce locally (e.g., Ghana imports rice, electronics).
2. Specialisation and Efficiency	Each country focuses on producing what it does best, improving quality and lowering costs.
3. Creates Jobs and Incomes	Exporting industries create employment and bring income to producers.
4. Inflow of Foreign Exchange	Exporting goods brings in valuable foreign currencies (e.g., dollars, euros).
5. Encourages Innovation and Competition	Local industries improve to compete with foreign products, boosting quality.
6. Economic Growth	External trade increases national income and helps develop key sectors like agriculture and industry.
7. Access to Larger Markets	Free trade allows producers to sell to bigger markets beyond their country (e.g., AfCFTA in Africa).

Disadvantages of External and Free Trade

Disadvantage	Explanation
1. Overdependence on Foreign Goods	Countries may rely too much on imports and neglect local industries.
2. Collapse of Local Industries	Small businesses may be unable to compete with cheap imported goods.
3. Unfavourable Terms of Trade	Developing countries often export raw materials cheaply and import expensive finished goods.
4. Job Losses in Some Sectors	Free trade may lead to job losses in industries that cannot compete.
5. Exploitation of Natural Resources	Excessive exports may deplete natural resources like timber and gold.
6. Vulnerability to Global Shocks	External crises (like pandemics or war) can disrupt trade and affect economies.
7. Loss of Revenue	In free trade, the government may lose import duties and tariffs which are a source of revenue.

Example in Ghana

Advantage	Ghana benefits from exporting cocoa, gold, and oil to earn foreign exchange.
Disadvantage	Cheap imports like second-hand clothes and rice can hurt local textile and rice farmers.

Learning Tasks

1. Recap the concept of trade by identifying the features of domestic trade, citing examples of domestic trade, explaining the concept of International Trade and comparing domestic trade to international trade.
2. Discuss what external trade is
3. Explain what free trade means
4. Compare and contrast external trade with free trade.
5. Outline advantages and disadvantages of both types of trade

Pedagogical Exemplars

Building on What Others say

Learners discuss in mixed ability and gender groups using previous knowledge acquired to explain free and external trade. Provide clarification and prompts where needed but allows learners to express their ideas freely. Use simple and real examples such as Ghana exporting cocoa to Switzerland (external trade), Ghana importing cars from Japan (external trade) and ECOWAS free trade zone (free trade).

Focal Area 2: Comparative and Absolute Advantage in External and Free Trade

Introduction

Absolute and comparative advantage are important trade theories that explain why countries engage in international trade.

Absolute advantage, introduced by Adam Smith, occurs when a country can produce a good more efficiently than another country.

Comparative advantage, propounded by David Ricardo, occurs when a country can produce a good at a lower opportunity cost than another, even if it does not have an absolute advantage.

Both theories assume that labour is the only factor of production, factors of production are perfectly mobile within the country, trade is free, returns to scale are constant, and there are no transport costs. Including these definitions, proponents, and assumptions provides students with the proper context to understand the basis and rationale of international trade.

1. Comparative Advantage and Free Trade

- **Core Principle:** Comparative advantage is the foundation of free trade theory. It states that even if one country is less efficient in producing all goods (i.e., has no absolute advantage), it can still benefit from trade by specialising in goods it produces at a lower *opportunity cost*.
- **Free Trade Implication:** Under free trade—where tariffs and quotas are removed—countries specialise based on comparative advantage. This maximizes global output and consumer welfare through gains from trade.
- **Example:** Ghana may specialize in cocoa production, while Germany focuses on machinery. Even if Germany is more efficient in both, the opportunity cost of producing cocoa is higher for Germany, making trade mutually beneficial.

2. Absolute Advantage and External Trade

- **Core Principle:** Absolute advantage refers to a country's ability to produce a good using fewer resources than another country.
- **External Trade Implication:** Countries with absolute advantages in specific goods can export those goods more competitively. However, absolute advantage alone doesn't guarantee mutual gains unless both countries specialise in different goods.
- **Example:** If Ghana can produce gold more efficiently than its trading partners, it has an absolute advantage and can export gold profitably. But trade becomes truly efficient when both partners specialise according to their respective advantages.

How Absolute Advantage Works

A country has an absolute advantage if it can produce more of a good or service using the same number of resources as another country. Absolute advantage is about producing more efficiently.

In simple terms, who is better or faster at producing something?

Example (Ghana vs. Nigeria)

Country	Cocoa (tonnes)	Rice (tonnes)
Ghana	100	50
Nigeria	60	80

- Ghana produces more cocoa → Ghana has absolute advantage in cocoa
- Nigeria produces more rice → Nigeria has absolute advantage in rice

How Comparative Advantage Works

A country has a comparative advantage if it can produce a good at a lower opportunity cost than another country.. Comparative advantage is the main reason countries trade each focuses on what it does best relative to others.

In simple terms who gives up less to make something?

Opportunity cost is the *value of the next best alternative* that must be given up when a choice is made.

In economic terms this means that whenever a country, business, or individual chooses to produce one good, they give up the chance to produce something else with those same resources. That **forgone alternative** is the opportunity cost.

Follow the calculation below for the opportunity cost for cocoa and rice using the table above:

- For Ghana:
 - 1 tonne of cocoa produced by Ghana gives up 0.5 tonnes of rice ($50/100$)
 - 1 tonne of rice produced by Ghana gives up 2 tonnes of cocoa ($100/50$)
- For Nigeria:
 - 1 tonne of cocoa produced by Nigeria gives up 1.33 tonnes of rice ($80/60$)
 - 1 tonne of rice produced by Nigeria gives up 0.75 tonnes of cocoa ($60/80$)

So:

- Ghana gives up less rice to produce cocoa → Ghana has comparative advantage in cocoa
- Nigeria gives up less cocoa to produce rice → Nigeria has comparative advantage in rice
- Ghana will produce cocoa rather than rice.
- Nigeria will produce rice rather than cocoa

Key Differences

Feature	Absolute Advantage	Comparative Advantage
Focus	Who produces more	Who produces at lower opportunity cost
Based on	Efficiency	Trade-offs
Can a country have both?	Yes	No (each country specialises in one good)
Importance in trade	Less important	More important for determining trade patterns

Why It Matters for Ghana

- Ghana may not produce everything better but can specialise in what it gives up the least to produce (like cocoa).
- This boosts specialisation, trade, and economic growth.

Learning Tasks

1. Define the two concepts
 - i. What is absolute advantage?
 - ii. What is comparative advantage?
2. Use simple examples (from Ghana or everyday life):
 - i. A country that can produce more of everything (absolute advantage)
 - ii. A country that sacrifices less to produce one good (comparative advantage)
3. Use a scenario like: *“Ghana can produce 10 tonnes of cocoa or 5 tonnes of rice in a year. Nigeria can produce 6 tonnes of cocoa or 6 tonnes of rice. Which country has the absolute and comparative advantage in each product?”*
 - i. Fill in a table comparing production
 - ii. Calculate opportunity costs
 - iii. Identify which country should specialise in which product

Pedagogical Exemplars

Collaborative Learning:

Learners in mixed ability and gender groups, discuss the meaning and difference between comparative and absolute advantage. Support all groups to work together to reason through the task using all members' input. Support by clarifying concepts, guiding thinking, and correcting misconceptions

Key Assessment Level 3: Group Class Work

SHORT ANSWER QUESTIONS

Question 1 (6 Marks)

Define free trade and explain TWO characteristics that distinguish it from external trade. (6 marks)

Question 2 (10 Marks)

Compare the advantages and disadvantages of free trade versus restricted external trade for a developing country like Ghana. Support your analysis with TWO specific examples from Ghana's trading relationships. (10 marks)

Question 3

Case Study: Ghana and the African Continental Free Trade Area (20 marks)

The African Continental Free Trade Area (AfCFTA) came into effect in January 2021, creating a market of 1.3 billion people with a combined GDP of approximately \$3.4 trillion. Ghana was selected to host the AfCFTA Secretariat, symbolising the country's commitment to continental integration. Ghana's main exports include gold, cocoa, and crude petroleum, while its manufacturing sector contributes about 11% to GDP. The country has historically faced challenges including infrastructure deficits, energy supply issues, and competition from imported goods. Recent government initiatives like "One District, One Factory" aim to boost industrialisation.

- Using data from the case study, analyse how Ghana's current export structure might influence its ability to benefit from the AfCFTA. Identify both opportunities and challenges. **(8 marks)**
- Evaluate the extent to which Ghana's participation in the AfCFTA aligns with its comparative advantages. Provide specific examples from the case study. **(6 marks)**
- Based on the case study information, recommend strategies that Ghana could adopt to maximise benefits from the AfCFTA while addressing the identified challenges. **(6 marks)**

Question 4

Case Study: Comparative and Absolute Advantage in Ghana's Export Sectors (20 marks)

Ghana's economy has evolved significantly over the past decade. Traditionally, cocoa has been a major export, with Ghana being the world's second-largest producer, benefiting from favourable climate conditions and farming expertise developed over generations. The country produces high-quality cocoa beans at relatively low costs compared to competitors. In recent years, Ghana has also become a significant exporter of gold and, since 2010, crude oil.

The services sector has grown to contribute about 45% of GDP, with emerging strengths in information technology and financial services. However, Ghana continues to import most of its manufactured goods, including those that use its raw materials as inputs. For instance, Ghana exports raw cocoa beans but imports finished chocolate products at significantly higher prices. Recent government policies have focused on adding value to raw materials before export and developing new sectors like automobile assembly and pharmaceuticals.

- Using the information in the case study, differentiate between absolute and comparative advantage and analyse which of Ghana's export sectors demonstrate each type of advantage. **(8 marks)**
- Examine how Ghana's comparative advantages have evolved based on the case study information and evaluate the factors driving these changes. **(6 marks)**
- Based on the case study, critically assess whether Ghana should focus on sectors where it currently has comparative advantages (like cocoa production) or develop new areas of advantage (like manufacturing). Support your answer with economic reasoning. **(6 marks)**

Question 5

Case Study: Ghana's External Trade and Economic Development (20 marks)

Ghana's external trade patterns have undergone significant changes in recent years. The table below shows Ghana's major trading partners and products for 2022:

Top Export Destinations	% of Exports	Top Import Sources	% of Imports
China	18.9%	China	24.8%
Switzerland	17.2%	United States	11.3%
India	14.5%	United Kingdom	6.7%
South Africa	9.8%	Belgium	5.4%
United Arab Emirates	7.3%	India	4.9%

Major Exports

- Gold (44.2% of total exports)
- Crude petroleum (17.8%)
- Cocoa beans (15.2%)
- Processed cocoa products (5.1%)
- Timber products (3.5%)

Major Imports

- Machinery and equipment (21.3%)
- Petroleum products (18.7%)
- Electronics (14.6%)
- Vehicles (10.2%)
- Pharmaceuticals (8.5%)

While Ghana maintains a trade surplus in raw materials, it faces a significant deficit in manufactured goods. The government has implemented several policies to address this imbalance, including export promotion initiatives, import substitution strategies, and investment in processing facilities for cocoa and petroleum. However, challenges persist, including infrastructure limitations, energy supply issues, and competition from more established manufacturing nations.

- Using the data provided in the case study, analyse Ghana's external trade patterns and evaluate how these patterns affect the country's economic development. **(8 marks)**
- Examine how Ghana's position in global value chains, as reflected in the case study data, relates to the concept of comparative advantage. **(6 marks)**
- Based on the case study information, evaluate strategies that Ghana could adopt to improve its trade position while promoting industrial development. **(6 marks)**

Focal Area 3: The Calculation of Exchange rate for major trading currencies

Definitions

Buy Rate: Rate at which the bank buys foreign currency from you.

Sell Rate: Rate at which the bank sells foreign currency to you.

Appreciation: When the value of the cedi increases relative to other currencies.

Depreciation: When the cedi's value falls compared to other currencies

Introduction

Exchange rate refers to the price of one currency in terms of another.

Example: If \$1 = GH¢15, it means one US Dollar is exchanged for fifteen Ghana Cedis.

However, this price does not remain constant. It changes due to several key factors. Inflation affects exchange rates because countries with lower inflation tend to have stronger currencies. Interest rates also play a role, as higher interest rates attract foreign investors and increase demand for the currency. Political stability and economic performance are important, since stable countries are more attractive to investors. Other factors include balance of payments, government policies, and speculation in the foreign exchange market.

Changes in exchange rates have real effects on the economy. When a country's currency depreciates, exports become cheaper and more competitive, while imports become more expensive. This can benefit local producers but increase the cost of living for consumers. On the other hand, an appreciation of the currency makes imports cheaper and exports more expensive, affecting trade balance and domestic industries. Businesses that depend on imported raw materials or export markets are directly affected by these changes.

The discussion also goes beyond defining depreciation and devaluation. **Depreciation** occurs under a flexible exchange rate system when market forces cause the currency to lose value. **Devaluation**, on the other hand, is a deliberate decision by the government to reduce the value of its currency under a fixed exchange rate system. Both have wider implications for inflation, trade, and economic growth.

Major Trading Currencies for Ghana

Ghana trades with several countries, and commonly used foreign currencies include:

- US Dollar (USD)
- Euro (EUR)
- British Pound (GBP)
- Chinese Yuan (CNY)
- West African CFA Franc (XOF)

How to Calculate Exchange Rates

1. Direct Exchange Rate (Cedi per Foreign Currency)

This is how many Cedis you need to get 1 unit of a foreign currency.

Formula: Amount in Cedis = Amount in Foreign Currency × Exchange Rate

Example: If \$1 = GH¢15, how much is \$200 in cedis?

$$\text{GH¢} = 200 \times 15 = \text{GH¢}3,000$$

2. Indirect Exchange Rate (Foreign Currency per Cedi)

This is how many units of a foreign currency you get for 1 Ghana Cedi.

Formula: Amount in Foreign Currency = Amount in Cedis ÷ Exchange Rate

Example: How many US dollars will you get for GH¢3000 if \$1 = GH¢15?

$$\text{USD} = 3000 \div 15 = \$200$$

How do these rates compare to buy and sell rates:

Buy vs. Sell Rates

These are **practical transaction rates** used by banks or forex bureaus:

- **Buy Rate:** What the bank *pays you* when it buys foreign currency from you.
- **Sell Rate:** What the bank *charges you* when it sells foreign currency to you.

They reflect the **bank's pricing**, with a small margin (spread) for profit.

Direct vs. Indirect Exchange Rates

These describe **how exchange rates are quoted**, depending on which currency is considered *domestic*:

- **Direct Rate:** Domestic currency per 1 unit of foreign currency (e.g., GH¢15 = \$1).
- **Indirect Rate:** Foreign currency per 1 unit of domestic currency (e.g., \$0.0667 = GH¢1).

In short: **buy/sell rates tell you what you'll get or pay**, while **direct/indirect rates describe how the currency pair is expressed**.

Learning Tasks

1. Visit a nearby bank or forex bureau, or watch a short video showing currency exchange at a bank/forex bureau
2. Identify 3 major foreign currencies traded in Ghana.
3. Record their current exchange rates (buying and selling).
4. Convert:
 - i. GH¢500 into each of the foreign currencies.
 - ii. \$100, €100, and £100 into cedis using the current exchange rates.
5. Present findings in class using charts or PowerPoint.

Or (If learners cannot go for the field trip or watch a video)

1. Use a Scenario like this “Your group visited Fidelity Bank and found that the buying rate for 1 USD is GHS 12.00 and the selling rate is GHS 12.30”.
2. Calculate how many Ghana Cedis you need to buy \$150.
3. How many dollars will you get if you sell GHS 2,000?
4. What is the difference between the buying and selling rate, and why does it matter?
5. Prepare a 3-minute group presentation to explain your answers using a real-world example.

Pedagogical Exemplars

Experiential Learning

Learners embark on a study tour to a nearby bank or foreign bureau or watch a video on banks or foreign bureau to identify the various currencies that Ghana trade in and do a presentation in mixed gender and ability groups. During the pre-visit and pre-video session, lead a brainstorming on “*What is an exchange rate?*” and “*Why is it important in trade?*” Introduce key terms like forex bureau, buying rate, selling rate, currency pairs (e.g., GHS/USD, GHS/GBP, GHS/EUR). Assign each group a specific currency (e.g., USD, GBP, EUR, CNY, JPY) to focus on.

Option A: Arrange a visit to a nearby bank or forex bureau. Learners are tasked to identify the most frequently traded currencies, record buying and selling rates of those currencies and ask questions about how exchange rates are determined.

Option B (Alternative): Watch a documentary/video about how banks or forex bureaus operate in Ghana regarding currency exchange.

Option C (Alternative): Create and use a scenario.

Note: Each group should be given a Currency Exchange Observation Worksheet to complete during the tour/video.

Facilitate group discussions and guide learning. Provide support with calculations and concepts. Encourage peer collaboration and inclusive participation. Assess presentations using a rubric (accuracy, teamwork, creativity, clarity).

Key Assessment Level 3: Group Class Work

SHORT ANSWER QUESTIONS

Question 1 (8 marks)

The exchange rate between the Ghana Cedi (GHS) and US Dollar (USD) is 1 USD = 12.50 GHS.

- Calculate how much a Ghanaian trader will pay in cedis to import goods worth \$5,000 (3 marks)
- If the exchange rate changes to 1 USD = 13.20 GHS, calculate the new cost in cedis (3 marks)
- Determine whether the cedi has appreciated or depreciated (2 marks)

Question 2 (12 Marks)

Analyse how a 15% depreciation of the Ghanaian cedi against the US dollar could affect Ghana's external trade. Use economic reasoning and examples to support your response. In your answer, discuss:

- The likely impact on Ghana's cocoa exports to the USA (4 marks)
- The expected effect on Ghana's imports of machinery from Germany (4 marks)
- How these changes might influence Ghana's trade balance and economy (4 marks)

Question 3 (20 marks)**Foreign Exchange Market Data: Ghana's Currency Exchange**

Study the following data on Ghana's foreign exchange market and answer the questions that follow.

Table 1: *Exchange Rates for Major Trading Currencies against the Ghana Cedi (GH¢)*

Date	USD/GH¢	GBP/GH¢	EUR/GH¢	CNY/GH¢
January 1, 2023	10.0000	12.0500	10.6800	1.4500
April 1, 2023	11.2500	13.9800	12.2000	1.6300
July 1, 2023	11.5000	14.6500	12.5500	1.5900
October 1, 2023	12.3000	15.0200	13.0800	1.6800

Table 2: *Ghana's International Trade Data (Million USD)*

Quarter (2023)	Exports to USA	Exports to UK	Exports to EU	Exports to China
Q1	320	180	450	290
Q2	340	175	430	310
Q3	305	185	465	325

- Calculate the percentage change in the exchange rate for each currency against the Ghana Cedi from January 1 to October 1, 2023. Based on your calculations, analyse which currency experienced the greatest depreciation of the Ghana Cedi and explain the potential economic implications of this trend for Ghana's international trade. **(8 marks)**
- Using the data in both tables, calculate the value of Ghana's exports to each trading partner in Ghana Cedis for Q3 2023. Analyse how exchange rate fluctuations affected the cedi value of exports compared to Q1 and explain the significance of these changes for Ghana's export earnings. **(6 marks)**
- If a Ghanaian importer needed to convert 500,000 Ghana Cedis to purchase goods from the European Union on October 1, 2023, calculate how many Euros they would receive. If the same importer had conducted this transaction on January 1, 2023, calculate the difference in Euros received and analyse the implications of this difference for Ghanaian businesses that import from the EU. **(6 marks)**

Question 4 (20 marks)**Cross Currency Exchange Rates and Trade**

Study the following exchange rate matrix and trade data, then answer the questions that follow.

Table 1: *Cross Currency Exchange Rate Matrix (October 15, 2023)*

Currency	USD	GBP	EUR	GH¢	CNY
1 USD =	1.0000	0.8150	0.9320	12.5000	7.2500
1 GBP =	1.2270	1.0000	1.1435	15.3370	8.8957
1 EUR =	1.0730	0.8745	1.0000	13.4130	7.7790
1 GH¢ =	0.0800	0.0652	0.0746	1.0000	0.5800
1 CNY =	0.1379	0.1124	0.1285	1.7241	1.0000

Table 2: *Ghana's Import Data (October 2023)*

Import Category	Primary Source Country	Value in Source Currency	Import Duty Rate
Machinery	United States	2,500,000 USD	10%
Pharmaceuticals	United Kingdom	1,800,000 GBP	5%
Vehicles	European Union	3,200,000 EUR	15%
Electronics	China	15,000,000 CNY	20%

- Using the cross-currency exchange rate matrix, calculate the value of each import category in Ghana Cedis. Then calculate the total value of these imports in Ghana Cedis and analyse the significance of exchange rates in determining Ghana's import bill. **(8 marks)**
- If the Ghana Cedi depreciates by 5% against all major currencies next month, calculate the new exchange rates and determine the additional cost in Ghana Cedis for the same basket of imports. Analyse how this depreciation might affect Ghana's balance of trade and inflation rate. **(6 marks)**
- Calculate the import duty payable in Ghana Cedis for each import category based on the current exchange rates. If Ghana wanted to reduce its total import bill by 15% through import substitution, analyse which import category would be most strategic to target based on the data provided and explain your reasoning. **(6 marks)**

Question 5 (20 marks)**Exchange Rate Fluctuations and Investment Decisions**

Study the following data on exchange rates and investment returns, then answer the questions that follow.

Table 1: *Monthly Exchange Rates (GH¢ per unit of foreign currency)*

Month	USD/GH¢	GBP/GH¢	EUR/GH¢	CNY/GH¢
January	10.5000	12.8500	11.3000	1.5500
February	10.8000	13.0000	11.5000	1.5800
March	11.2000	13.7500	12.0000	1.6200
April	11.5000	14.2000	12.3500	1.6500
May	11.8000	14.5000	12.6000	1.6800
June	12.0000	14.8000	12.8000	1.7000

PLC Session 22**45 minutes****Planning & Reviewing the Learning Plan**

1. Begin the session by recapping lessons from the previous year/session/week, focusing on how learning was applied.
2. Use your subject specific app to explore the content before planning. Ask the app to
 - a. explain the week's concepts in a practical way that will make it easier for learners to understand
 - b. identify two or three common misconceptions learners may have on the week's content and how to address them using contexts familiar to Ghanaian learners. (NTS 3a, 3g and 3m).
3. Use your subject specific app to plan your lesson. Ask the app to
 - a. suggest the most effective method for teaching the week's concepts to learners with diverse backgrounds.
 - b. suggest learning activities, differentiation and essential questions based on the method of teaching (NTS 3a-3q)
 - c. review your prepared learning plan and address any challenging issues you may have identified in your subject area (NTS 3a-3c).

**Note**

- Take note of the recap topics linked to Years 1 and 2 while preparing for your lesson.
- Refer to the Values Learning Community Handbook and link the values for the week in your lesson to ensure that learners are applying what they learn.

4. Plan the week's key assessment with your app

- a. The key assessment for the week is **group classwork**. Chat with your app to plan this assessment, indicating what you and your learners will do before, during and after the classwork (NTS 3k-3q).

10 minutes**Content Exploration**

5. As a subject group, select one problem or idea/term in the week's content that is challenging (not a routine procedural question, but one that requires conceptual understanding) and then

- a. use the app, ask it to solve the problem step by step and explain the reasoning behind each step (you may be assisted by a teacher who is strong in the content area)
- b. all teachers in the group work through a similar problem individually for 3–4 minutes
- c. the group then works through the problem together step by step
- d. highlight the most common errors made at each step and discuss (NTS 1c, 1e, 2c, 2e, 3e-3j).

**Note**

- This part is not just about 'How do I teach this?' but how do I teach it for learners to understand?
- If the group still shares the same content gap, use the app: ask it to solve the problem step by step and explain the reasoning behind each step.
- Problems/ideas discussed should be sourced from the Teacher Manual content, not invented separately. This keeps the content exploration directly connected to what teachers will deliver.

30 minutes**Enactment**

6. Enact a teaching activity based on your learning plan (NTS 1a-1b, 1e-1g, 2c, 2e, 2f, 3c-3j and 3o).

- a. Colleagues observe with specific attention to clarity of concept explanation, use of familiar Ghanaian examples and how misconceptions are handled if they arise.
- b. After the enactment, ask for structured feedback from the group
 - i. was the concept explained in a way that a learner with no prior knowledge could follow?
 - ii. were the examples grounded in contexts familiar to Ghanaian learners?
 - iii. did any misconceptions surface and if so, how were they addressed?

5 minutes**Reflection**

7. Reflect and share your views on the session. One thing that worked well, what did not work well and what you will do differently. (NTS 1a, 1b).
8. Identify a critical friend to observe and provide feedback on your lesson in relation to the PLC Session conducted (NTS 1f, 1g).

9. Remember to

- a. transfer your chats into your learning planner template.
- b. read your Teacher Manual and related Learner Material in preparation for the next session. Take note of the recap weeks, which are linked to Years 1 and 2 (NTS 3a).
- c. integrate National Values, GESI, SEL, and 21st century skills into your learning activities, assessment tasks, and rubrics/mark schemes.

SECTION 9 REVIEW

The lessons taught in section nine are focused on agriculture, industrialisation and trade. It brought to the fore the link between agriculture and Industry, challenges and solution of industrialisation, free and external trade, comparative and absolute advantage, and the calculation of exchange rate for major trading currencies. The teacher applied three different pedagogical skill, specifically experiential learning, building on what others say and collaborative learning. Assessment techniques subject to the abilities of the learners to achieve the learning indicators for each week. The key assessment questions were all at DoK level 3 with extension questions provided at DoK level 4.

Teaching and Learning Resources

Week 21: Field trip to or Video of farm and industry, Challenge of industrialisation cards, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Week 22: Field trip to or Video of Bank or a Forex Bureau, Textbooks, Exercise books, Internet, Computer Lab, Markers, Ruler, Whiteboard, Pen, Projector, Pencil, Search engines such as Google

Additional Reading

Teacher Assessment Manual and Toolkits for Curriculum Trial Handbook for Teachers

Economics PLC Handbook

Textbooks

Aryeetey, E., & Baah-Boateng, W. (2016). The economy of Ghana: An overview of trade and finance. University of Ghana Reader Series.

Carbaugh, R. J. (2022). International economics (18th ed.). Cengage Learning.

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). International economics: Theory and policy (11th ed.). Pearson Education.

Osei-Assibey, E. (2021). International economics: A Ghanaian perspective (2nd ed.). Woeli Publishing Services.

Salvatore, D. (2019). International economics (13th ed.). Wiley.

MARKING SCHEMES FOR THE KEY ASSESSMENTS

WEEK 21

FOCAL AREA 1

Question 1

Marking scheme:

- 1 mark for identifying mutual relationship or interdependence
- 1 mark for mentioning support for economic development

Question 2

Marking scheme:

- 1 mark for each valid example (e.g., cocoa to chocolate, food supply to workers)

Question 3

Marking scheme:

- 1 mark for “storage”
- 1 mark for “packaging” or use of industrial refrigeration

Question 4

Marking scheme:

- 1 mark for idea of inefficiencies or waste
- 1 mark for unemployment or loss of income
- 1 mark for missed value addition
- 1 mark for less sustainable development

Question 5

Marking scheme:

- 1 mark for each strategy (e.g., investment in agro-processing, rural infrastructure)
- 1 mark for each matching benefit (e.g., higher incomes, reduced imports)

Question 6

Marking scheme:

- 1 mark for identifying cocoa as raw material from agriculture
- 1 mark for chocolate production as industrial process
- 1 mark for mention of companies like Cocoa Processing Co.
- 1 mark for value addition or job creation explanation

FOCAL AREA 2

Question 1

Expected Response - Three ways agriculture supports industry:

1. Raw Material Supply (2 marks)

- Agriculture provides raw materials for agro-processing industries (1 mark)

- Examples: Cocoa for the chocolate industry, cotton for textiles, oil palm for soap manufacturing (1 mark)

2. Market for Industrial Products (2 marks)

- Agricultural sector creates demand for industrial goods (1 mark)
- Examples: Demand for fertilizers, machinery, pesticides, processing equipment (1 mark)

3. Capital Formation/Foreign Exchange (2 marks)

- Agricultural exports earn foreign exchange for industrial imports (1 mark)
- Examples: Cocoa exports funding machinery imports, agricultural profits invested in industry (1 mark)

Alternative Acceptable Responses:

- Labour Supply: Agriculture releases surplus labour for industry
- Food Security: Ensures food supply for industrial workers
- Infrastructure Development: Agricultural development creates infrastructure used by industry

Question 2

Expected Response - Four challenges with solutions:

Challenge 1: Inadequate Infrastructure (2 marks)

- Challenge: Poor roads, unreliable electricity, inadequate water supply (1 mark)
- Solution: Government investment in infrastructure development/Public-Private Partnerships (1 mark)

Challenge 2: Limited Access to Capital (2 marks)

- Challenge: High interest rates, lack of credit facilities for industrial investment (1 mark)
- Solution: Establish development banks, microfinance institutions, venture capital funds (1 mark)

Challenge 3: Skilled Labour Shortage (2 marks)

- Challenge: Lack of technical and managerial skills in the workforce (1 mark)
- Solution: Invest in technical education, vocational training, and capacity building programs (1 mark)

Challenge 4: Technology Gap (2 marks)

- Challenge: Outdated technology and limited access to modern equipment (1 mark)
- Solution: Technology transfer agreements, research and development investment, foreign direct investment (1 mark)

Alternative Acceptable Challenges:

- Market access limitations
- Policy and regulatory constraints
- Competition from imports
- Environmental degradation

Question 3

Expected Response Structure:

Understanding of Interdependence (**3 marks**)

- Clear explanation of how agriculture and industry are linked (1 mark)
- Recognition that a decline in one sector affects the other (1 mark)
- Understanding of forward and backwards linkages (1 mark)

Specific Impacts of Agricultural Decline (**4 marks**)

1. Raw Material Shortages (2 marks)

- Reduced supply of agricultural inputs for agro-processing industries (1 mark)
- Example: Decline in cocoa production affecting chocolate manufacturing, reduced palm oil affecting soap production (1 mark)

2. Reduced Market Demand (2 marks)

- Lower agricultural incomes reduce demand for industrial products (1 mark)
- Example: Farmers buying fewer fertilisers, machinery, and processing equipment (1 mark)

Strategic Analysis (**3 marks**)

- Analysis of multiplier effects on the economy (1 mark)
- Discussion of employment implications in both sectors (1 mark)

Consideration of foreign exchange earnings and industrial import capacity (1 mark)

Question 4

Expected Response Structure:

Comparison with Another Developing Country (**4 marks**)

Ghana's Challenges (2 marks)

- Infrastructure deficits, limited industrialization base (1 mark)
- Heavy dependence on primary commodity exports (1 mark)

Comparative Country Challenges (2 marks)

- Example Countries: Nigeria, Kenya, Bangladesh, Vietnam
- Identification of similar/different challenges (1 mark)
- Specific examples from chosen country (1 mark)

Solution Analysis (**4 marks**)

Effective Solutions for Ghana (2 marks)

- Solutions that address Ghana's specific context (1 mark)
- Consideration of Ghana's resource endowments and capabilities (1 mark)

Justification (2 marks)

- Evidence-based reasoning for solution choice (1 mark)
- Reference to successful examples from other countries (1 mark)

Strategic Evaluation (4 marks)**Feasibility Assessment (2 marks)**

- Political and economic feasibility of proposed solutions (1 mark)
- Timeline and resource requirements consideration (1 mark)

Critical Thinking (2 marks)

- Recognition of potential limitations or risks (1 mark)
- Integration of multiple perspectives and factors (1 mark)

Question 5 (15 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Analysis of Structural Challenges (8 marks)	Learner analyses challenges hindering industrialisation Expected challenges may include: • Infrastructure deficits (energy, transportation, • Limited access to finance and high cost of capital • Inadequate technological capacity • Competition from imported products • Weak institutional and regulatory frameworks • Limited market size and access Learner provides comprehensive analysis with: • Clear identification of challenges • Detailed explanation of each challenge • Evidence/examples supporting analysis • Consideration of interconnections between challenges	Award 1 mark for identification of each relevant challenge (Maximum 3 marks) Award 1 mark for detailed explanation of each challenge (Maximum 3 marks) Award 1 mark for providing supporting evidence/examples (Maximum 1 mark) Award 1 mark for analysing interconnections between challenges (Maximum 1 mark) Total Marks: 8
b. Strategic Solutions (6 marks)	Learner proposes strategic solutions: Expected solution areas: • Infrastructure development strategies • Financial/investment policies • Technology acquisition/development approaches • Human capital development • Institutional reforms	Award 0.5 mark for each relevant solution proposed (Maximum 3 marks) Award 0.5 mark for each proper justification element (Maximum 4 marks) Total Marks: 7

	• Market development strategies Learner justifies solutions with: • Clear connection to identified challenges • Feasibility assessment • Potential impact analysis • Consideration of sustainability	
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Question 6 (12 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Examination of Educational System and Industrial Needs (6 marks)	Learner examines relationship Expected examination points: • Alignment between curriculum and industry needs • Technical and vocational education relevance • Higher education orientation • Industry-academia collaboration • Practical skills development • Continuing education and retraining	Award 1 mark for each relevant aspect of the relationship examined (Maximum 6 marks) Total Marks: 6
b. Innovative Solutions (6 marks)	Learner proposes technological solutions: • Technology acquisition strategies • Innovation ecosystem development • Digital transformation approaches Learner proposes human capital solutions: • Education system reforms • Skills development programs • Knowledge transfer mechanisms Learner considers Ghana's context: • Feasibility within resource constraints • Cultural and institutional factors • Implementation pathways	Award 1 mark for each relevant technological solution (Maximum 2 marks) Award 1 mark for each relevant human capital solution (Maximum 2 marks) Award 1 mark for each contextual consideration (Maximum 2 marks) Total Marks: 6

WEEK 22**FOCAL AREA 1****Question 1**

Definition of Free Trade (2 marks)

- Trade without barriers, restrictions, or tariffs between countries (2 marks)
- Accept: Unrestricted exchange of goods and services across borders

Two Characteristics (4 marks - 2 marks each)**1. No Trade Barriers**

- Free trade eliminates tariffs, quotas, and other restrictions (1 mark)
- External trade may involve various trade barriers and regulations (1 mark)

2. Market-Driven Prices

- Free trade allows prices to be determined by supply and demand (1 mark)
- External trade prices may be influenced by government policies and interventions (1 mark)

Question 2**Free Trade Advantages (2 marks)**

- Increased competition and efficiency (1 mark)
- Access to larger markets and cheaper goods (1 mark)

Free Trade Disadvantages (2 marks)

- Threat to domestic industries (1 mark)
- Potential job losses in uncompetitive sectors (1 mark)

Restricted External Trade Advantages (2 marks)

- Protection of infant industries (1 mark)
- Government revenue from tariffs (1 mark)

Restricted External Trade Disadvantages (2 marks)

- Higher consumer prices (1 mark)
- Reduced competitiveness of domestic industries (1 mark)

Ghana-Specific Examples (2 marks)

- Ghana-EU Economic Partnership Agreement (EPA) - free trade benefits/challenges (1 mark)
- Ghana's protection of poultry industry through import restrictions (1 mark)

Question 3 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Analysis of Export Structure and AfCFTA (8 marks)	Learner analyses Ghana's export structure from case study • Analysis of primary commodity dependence (gold, cocoa, petroleum) • Evaluation of limited manufacturing base (11% of GDP) • Assessment of value addition potential Learner identifies opportunities from AfCFTA • Market access to 1.3 billion people	Award 1 mark for each aspect of export structure analysed using case data (Maximum 3 marks) Award 1 mark for each opportunity identified with case reference (Maximum 2 marks) Award 1 mark for each challenge identified

	• Potential for expanded manufacturing– Strategic position as AfCFTA host Learner identifies challenges from case study • Infrastructure deficits mentioned in case • Energy supply issues highlighted • Competition from other African producers	with case reference (Maximum 3 marks) Total Marks: 8
b. Evaluation of AfCFTA and Comparative Advantage (6 marks)	Learner evaluates alignment with comparative advantages • Identification of Ghana's comparative advantages from case • Analysis of how AfCFTA supports these advantages • Evaluation of potential misalignments Learner provides specific examples from case study • Examples related to cocoa sector • Examples related to gold/petroleum • Examples related to manufacturing initiatives	Award 1 mark for each aspect of alignment evaluation using case data (Maximum 3 marks) Award 1 mark for each specific example with case reference (Maximum 3 marks) Total Marks: 6
c. Strategy Recommendations (6 marks)	Learner recommends strategies based on case study • Strategies to leverage export strengths mentioned • Strategies to address infrastructure/ energy challenges • Strategies related to “One District, One Factory” initiative Learner justifies recommendations using case information • Connection to AfCFTA opportunities • Feasibility within Ghana's context as described • Potential outcomes for economic development	Award 1 mark for each strategy recommendation based on case study (Maximum 3 marks) Award 1 mark for each justification using case information (Maximum 3 marks) Total Marks: 6

Question 4 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Differentiation and Application of Trade Concepts (8 marks)	Learner differentiates between absolute and comparative advantage • Clear definition of absolute advantage • Clear definition of comparative advantage • Explanation of key differences between concepts Learner analyses Ghana's export sectors using case study • Analysis of cocoa sector (traditional expertise, quality, costs) • Analysis of gold and oil sectors • Analysis of emerging services sector (IT, finance) • Analysis of manufacturing limitations mentioned	Award 0.5 mark for each aspect of conceptual differentiation (Maximum 1.5 marks) Award 1.5 marks for each sector analysed using appropriate advantage concept with case references (Maximum 6.5 marks) Total Marks: 8
b. Examination of Evolving Comparative Advantages (6 marks)	Learner examines evolution of comparative advantages from case • Analysis of traditional advantages (cocoa) • Analysis of newer advantages (oil, services) • Assessment of potential emerging advantages Learner evaluates driving factors from case study • Government policies mentioned (value addition focus)– Resource discoveries (oil) • Sectoral growth patterns (services sector growth)	Award 1 mark for each aspect of comparative advantage evolution examined using case data (Maximum 3 marks) Award 1 mark for each driving factor evaluated using case information (Maximum 3 marks) Total Marks: 6
c. Critical Assessment of Development Strategy (6 marks)	Learner assesses focus on current advantages using case study • Analysis of benefits (e.g., cocoa sector strengths) • Analysis of limitations (e.g., raw material dependence) Learner assesses developing new advantages using case study • Analysis of government initiatives mentioned (auto, pharmacy) • Assessment of value addition potential for cocoa Learner provides balanced recommendation with economic reasoning:– Strategic approach based on case information– Economic principles applied to Ghana's context	Award 1 mark for each aspect of current advantage focus assessed using case data (Maximum 2 marks) Award 1 mark for each aspect of new advantage development assessed using case data (Maximum 2 marks) Award 1 mark for each element of economic reasoning in recommendation (Maximum 2 marks) Total Marks: 6

Question 5 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Analysis of External Trade Patterns (8 marks)	Learner analyses trade composition using case data • Analysis of export concentration (gold, petroleum, cocoa) • Analysis of import composition (machinery, petroleum products) • Assessment of raw materials surplus vs. manufactured goods deficit Learner analyses trade direction using case data • Analysis of major trading partners (China, Switzerland,) • Assessment of geographical trade patterns Learner evaluates development implications using case study • Analysis of value addition challenges • Assessment of government policy responses mentioned • Evaluation of infrastructure and energy constraints noted	Award 1 mark for each aspect of trade composition analysed using case data (Maximum 3 marks) Award 1 mark for each aspect of trade direction analysed using case data (Maximum 2 marks) Award 1 mark for each development implication evaluated using case information (Maximum 3 marks) Total Marks: 8
b. Examination of Global Value Chains and Comparative Advantage (6 marks)	Learner examines Ghana's value chain position from case study • Analysis of primary commodity focus (44.2% gold,) • Assessment of limited processed exports (5.1% processed cocoa) • Evaluation of high-value imports (machinery, electronics) Learner relates to comparative advantage concept • Analysis of current comparative advantages evident in data • Assessment of value chain positioning implications • Evaluation of potential for upgrading within value chains	Award 1 mark for each aspect of value chain position examined using case data (Maximum 3 marks) Award 1 mark for each connection to comparative advantage concept using case information (Maximum 3 marks) Total Marks: 6

c. Strategy Evaluation for Trade Position (6 marks)	Learner evaluates strategies based on case study • Assessment of export promotion initiatives mentioned • Evaluation of import substitution approaches noted • Analysis of processing facility investments referenced Learner connects strategies to industrial development • Analysis of potential to address trade deficits in manufactured goods • Assessment of strategies to overcome challenges mentioned • Evaluation of potential outcomes for economic diversification	Award 1 mark for each strategy evaluated using case study information (Maximum 3 marks) Award 1 mark for each connection to industrial development using case data (Maximum 3 marks) Total Marks: 6
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FOCAL AREA 2

Question 1

- a. Initial cost calculation (3 marks)
 - Conversion: $\$5,000 \times 12.50 = \text{GHS } 62,500$ (2 marks)
 - Correct answer: GHS 62,500 (1 mark)
- b. New cost calculation (3 marks)
 - Conversion: $\$5,000 \times 13.20 = \text{GHS } 66,000$ (2 marks)
 - Correct answer: GHS 66,000 (1 mark)
- c. Currency movement (2 marks)
 - Identification: The cedi has depreciated (1 mark)
 - Explanation: More cedis needed to buy the same amount of dollars (1 mark)

Question 2

- a. Impact on cocoa exports (4 marks)
 - Cocoa becomes cheaper for US buyers (1 mark)
 - Increased competitiveness in US market (1 mark)
 - Higher export revenue in cedi terms (1 mark)
 - Specific numerical example or calculation (1 mark)
- b. Impact on machinery imports (4 marks)
 - Machinery becomes more expensive in cedi terms (1 mark)
 - Increased cost of production for Ghanaian businesses (1 mark)
 - Potential reduction in machinery imports (1 mark)

- Specific numerical example or calculation (1 mark)

c. Overall trade balance implications (**4 marks**)

- Improved trade balance due to increased exports and reduced imports (1 mark)
- Potential inflationary pressure from expensive imports (1 mark)
- Impact on economic growth and development (1 mark)
- Strategic reasoning connecting both effects (1 mark)

Question 3 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Calculation and Analysis of Exchange Rate Changes (8 marks)	Learner calculates percentage changes correctly • USD/GH¢: $[(12.3000 - 10.0000) / 10.0000] \times 100 = 23.0\%$ • GBP/GH¢: $[(15.0200 - 12.0500) / 12.0500] \times 100 = 24.6\%$ • EUR/GH¢: $[(13.0800 - 10.6800) / 10.6800] \times 100 = 22.5\%$ • CNY/GH¢: $[(1.6800 - 1.4500) / 1.4500] \times 100 = 15.9\%$ Learner identifies GBP experienced greatest depreciation (24.6%) Learner analyses economic implications • Impact on import costs from UK • Effect on export competitiveness to UK • Implications for trade balance with UK • Broader economic consequences (inflation,)	Award 0.5 mark for each correct percentage calculation (Maximum 2 marks) Award 1 mark for correct identification of currency with greatest depreciation (Maximum 1 mark) Award 1 mark for each relevant economic implication analysed (Maximum 5 marks) Total Marks: 8
b. Calculation and Analysis of Export Values (6 marks)	Learner calculates Q3 export values in Ghana Cedis • USA: 305 million USD $\times 11.5000 = 3,507.5$ million GH¢ • UK: 185 million USD $\times 14.6500 = 2,710.25$ million GH¢ • EU: 465 million USD $\times 12.5500 = 5,835.75$ million GH¢ • China: 325 million USD $\times 1.5900 = 516.75$ million GH¢ Learner calculates Q1 export values for comparison Learner analyses changes in cedi value of exports • Comparison between Q1 and Q3 values	Award 0.5 mark for each correct export value calculation (Maximum 2 marks) Award 1 mark for Q1 calculations (Maximum 1 mark) Award 1 mark for each relevant analytical point regarding changes (Maximum 3 marks) Total Marks: 6

	- Analysis of how depreciation affected export earnings - Significance for Ghana's economy	
c. Question 1c: Currency Conversion and Implication Analysis (6 marks)	Learner calculates Euro conversion for October 1 $500,000 \text{ GH¢} \div 13.0800 = 38,226.30 \text{ EUR}$ Learner calculates Euro conversion for January 1 $500,000 \text{ GH¢} \div 10.6800 = 46,816.48 \text{ EUR}$ Learner calculates difference $46,816.48 - 38,226.30 = 8,590.18 \text{ EUR}$ Learner analyses implications - Impact on import costs for Ghanaian businesses - Effect on pricing decisions - Implications for business planning and cash flow - Potential hedging strategies	Award 1 mark for correct October calculation (Maximum 1 mark) Award 1 mark for correct January calculation (Maximum 1 mark) Award 1 mark for correct difference calculation (Maximum 1 mark) Award 1 mark for each relevant implication analysed (Maximum 3 marks) Total Marks: 6

Question 4 (20 Marks)

Assessment focus	Marking guidance	Mark allocation
a. Import Value Calculations and Analysis (8 marks)	Learner calculates import values in Ghana Cedis - Machinery: $2,500,000 \text{ USD} \times 12.5000 = 31,250,000 \text{ GH¢}$ - Pharmaceuticals: $1,800,000 \text{ GBP} \times 15.3370 = 27,606,600 \text{ GH¢}$ - Vehicles: $3,200,000 \text{ EUR} \times 13.4130 = 42,921,600 \text{ GH¢}$ - Electronics: $15,000,000 \text{ CNY} \times 1.7241 = 25,861,500 \text{ GH¢}$ Learner calculates total import value: $- 31,250,000 + 27,606,600 + 42,921,600 + 25,861,500 = 127,639,700 \text{ GH¢}$ Learner analyses significance of exchange rates - Relative importance of each currency for import bill - Vulnerability to specific currency fluctuations - Impact on trade deficit and foreign reserves	Award 0.5 mark for each correct import value calculation (Maximum 2 marks) Award 1 mark for correct total calculation (Maximum 1 mark) Award 1 mark for each relevant analytical point (Maximum 5 marks) Total Marks: 8

b. Depreciation Impact Calculations and Analysis (6 marks)	Learner calculates new exchange rates after 5% depreciation • USD: $12.5000 \times 1.05 = 13.1250$ GH¢ • GBP: $15.3370 \times 1.05 = 16.1039$ GH¢ • EUR: $13.4130 \times 1.05 = 14.0837$ GH¢ • CNY: $1.7241 \times 1.05 = 1.8103$ GH¢ Learner calculates new import values and additional cost • New total import cost with these rates • Difference from original cost Learner analyses economic implications • Impact on balance of trade • Effect on inflation • Consequences for monetary policy	Award 0.5 mark for each correct new exchange rate calculation (Maximum 2 marks) Award 1 mark for correct new import cost and difference calculations (Maximum 1 mark) Award 1 mark for each relevant economic implication analysed (Maximum 3 marks) Total Marks: 6
c. Question 2c: Import Duty Calculations and Strategic Analysis (6 marks)	Learner calculates import duties in Ghana Cedis • Machinery: $31,250,000 \times 10\% = 3,125,000$ GH¢ • Pharmaceuticals: $27,606,600 \times 5\% = 1,380,330$ GH¢ • Vehicles: $42,921,600 \times 15\% = 6,438,240$ GH¢ • Electronics: $25,861,500 \times 20\% = 5,172,300$ GH¢ Learner calculates 15% reduction target amount Learner analyses strategic import substitution • Comparative analysis of import categories • Feasibility of local production • Economic impact of targeting specific categories • Policy recommendations	Award 0.5 mark for each correct import duty calculation (Maximum 2 marks) Award 1 mark for correct reduction target calculation (Maximum 1 mark) Award 1 mark for each relevant strategic analysis point (Maximum 3 marks) Total Marks: 6