

Past-paper walk-through

Real v. Nominal GDP ■ 2.6

eXercise

Questions in this set

- 2025 Set 1 Q3
- 2024 Set 1 Q2
- 2024 Set 2 Q2
- 2022 Set 2 Q2
- 2021 Set 1 Q3

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 3

2025 Set 1 ■ Q3

3. The table provided shows the quantities and unit prices of shirts, bread, and pants, the only three goods produced in the country of Middleland in 2021 and 2022. Assume that 2021 was the base year.

	Shirts	Bread	Pants
Unit Prices in 2021	\$11	\$4	\$12
Unit Prices in 2022	\$10	\$5	\$15
Quantities Produced in 2021 and 2022	50	70	30

Question 3

- A. Was the real GDP in 2021 in Middleland greater than, less than, or equal to the nominal GDP in 2021? Explain.
- B. Calculate the real GDP in Middleland in 2022. Show your work.
- C. Assume that Middleland was in short-run equilibrium in 2022 and that POTENTIAL real GDP was \$1,150 in 2022. Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Middleland in 2022, and show each of the following.
 - i. The equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
 - ii. The full-employment output, labeled Y_F
- D. Assume the marginal propensity to consume in Middleland is 0.8. Calculate the minimum change and state the direction of change in government spending required to close the output gap in the short run in Middleland. Show your work.

STOP
END OF EXAM

Solution 3

(a)

Mark scheme

- Real GDP in 2021 was EQUAL to nominal GDP in 2021. Because 2021 is the base year, the price level has not changed relative to itself, and real values always equal nominal values in the base year. 1 point.

Solution 3

(b)

Mark scheme

- Real GDP in Middleland in 2022 =

1,190 (2021 base – year prices applied to 2022 quantities). *Work:* $Real GDP = (11 \times 50) + (4 \times 70) + (12 \times 30) = 550 + 280 + 360 = 1,190$. 1 point for the calculation with work shown.

Solution 3

(c)

Mark scheme

- This line is only the stem instructing the student to draw the AD/SRAS/LRAS graph for 2022 and 'show each of the following'; it has no independently scorable content beyond what is graded in C(i) and C(ii).

Solution 3

(c)(i)

Mark scheme

- Draw a correctly labeled aggregate demand–aggregate supply graph (Price Level on the vertical axis, Real GDP on the horizontal axis) with a downward-sloping AD curve and an upward-sloping SRAS curve intersecting at the equilibrium point, labeling the equilibrium price level PL_1 and equilibrium real output Y_1 . 1 point.

Solution 3

(c)(ii)

Mark scheme

- On the same graph, add a vertical long-run aggregate supply (LRAS) curve positioned to the LEFT of Y_1 (since 2022 short-run output $Y_1 = 1,190$ exceeds potential real GDP of 1,150), and label the full-employment output on the LRAS curve as Y_F . 1 point.

Solution 3

(d)

Mark scheme

- Minimum change in government spending = a DECREASE of \$8. Work:
Output Gap = Potential GDP – Actual 2022 Real GDP = \$1,150 – \$1,190
= –\$40. Spending multiplier = $1/(1-MPC) = 1/(1-0.8) = 5$. Minimum
 $\Delta G = \text{Output Gap} \div \text{Multiplier} = -\$40 \div 5 = -\$8$ (government spending
must decrease by \$8 to close the inflationary output gap). 1 point for the
calculation with work shown.

Question 2

2024 Set 1 ■ Q2

The table provided shows economic data for the country of Louland. The base year is year 1, and the GDP deflator in year 2 is 115.

	Year 1	Year 2
Nominal GDP	800,000	1,035,000
Population	1,000	1,200

Question 2

- (a) Calculate real GDP in Louland in year 2. Show your work.
- (b) How would the change in real GDP from year 1 to year 2 affect the demand for money and the nominal interest rate in Louland?
- (c) Did the standard of living of the average citizen in Louland increase, decrease, or remain the same from year 1 to year 2? Explain using numbers.
- (d) What was the numerical value of the inflation rate from year 1 to year 2?
- (e) If nominal wages increased by 10% from year 1 to year 2, what happened to the real wages of workers in Louland during this time? Explain.

Solution 2

(a)

Mark scheme

- Real GDP = $(\text{Nominal GDP} \div \text{GDP Deflator}) \times 100 = (1,035,000 \div 115) \times 100 = 900,000$.

Solution 2

(b)

Mark scheme

- Real GDP increased from year 1 to year 2, so the demand for money increases (more transactions require money at each price level). With the money supply unchanged, the money demand curve shifts right, so the nominal interest rate increases.

Solution 2

(c)

Mark scheme

- The standard of living of the average citizen in Louland decreased from year 1 to year 2. Real GDP per capita in year 1 was 800 and real GDP per capita in year 2 was 750 ($750 < 800$), so real output per person fell, indicating a lower standard of living.

Solution 2

(d)

Mark scheme

- The inflation rate from year 1 to year 2 was 15% (the percentage increase in the price level/GDP deflator between the two years).

Solution 2

(e)

Mark scheme

- Real wages decreased. Explanation: nominal wages increased by only 10%, which is less than the 15% inflation rate over the same period ($10\% < 15\%$), so real (inflation-adjusted) wages fell.

Question 2

2024 Set 2 ■ Q2

The table provided shows the quantity and price of food and clothing, the only two goods produced and consumed in the country of Maltrose, in year 1 and year 2. Assume that year 1 is the base year.

	Year 1 Price	Year 1 Quantity	Year 2 Price	Year 2 Quantity
Food	\$10	12	\$13	10
Clothing	\$5	16	\$4	20

Question 2

- (a) Calculate the nominal GDP in year 2. Show your work.
- (b) Calculate the GDP deflator in year 2. Show your work.
- (c) What was the numerical value of the inflation rate from year 1 to year 2?
- (d) Assuming that the expected inflation rate between years 1 and 2 was 3%, were each of the following better off, worse off, or unaffected as a result of the economic conditions between year 1 and year 2?
 - (d)(i) People living on a fixed income
 - (d)(ii) Borrowers with fixed interest-rate loans. Explain.

Solution 2

(a)

Mark scheme

- Nominal GDP_{Year2} = $(\$13 \times 10) + (\$4 \times 20) = \$130 + \$80 = \$210$. Award the point for computing price $\times$ quantity for each good in year 2 and summing to \$210.

Solution 2

(b)

Mark scheme

- $$\begin{aligned} \text{GDP Deflator}_{\text{Year}\backslash,2} &= \frac{\text{Nominal GDP}_{\text{Year}\backslash,2}}{\text{Real GDP}_{\text{Year}\backslash,2}} \times 100 = \\ &= \frac{\$210}{(\$10 \times 10) + (\$5 \times 20)} \times 100 = \\ &= \frac{\$210}{\$200} \times 100 = 105\% \end{aligned}$$

Real GDP values year-2 quantities at year-1 (base-year) prices \$10 and \$5. Award the point for the correct setup and result of 105.

Solution 2

(c)

Mark scheme

- With the GDP deflator equal to 100 in the base year (year 1) and 105 in year 2, the inflation rate from year 1 to year 2 is $\frac{105 - 100}{100} \times 100\% = 5\%$.

Solution 2

(d)

Mark scheme

- Stem only — asks whether (i) people on a fixed income and (ii) borrowers with fixed-rate loans were better off, worse off, or unaffected, given actual inflation of 5% versus an expected inflation rate of 3%. Scored in (d)(i) and (d)(ii) below.

Solution 2

(d)(i)

Mark scheme

- People living on a fixed income were worse off. Actual inflation (5%) exceeded expected inflation (3%), so the real purchasing power of their fixed nominal income fell by more than they had anticipated.

Solution 2

(d)(ii)

Mark scheme

- Borrowers with fixed interest-rate loans were better off. Explanation: because actual inflation (5%) exceeded expected inflation (3%), the real interest rate they ended up paying (nominal rate minus actual inflation) was lower than the real rate they had expected (nominal rate minus expected inflation), so the real value/burden of their fixed debt payments decreased by more than expected.

Question 2

2022 Set 2 ■ Q2

The table below shows macroeconomic data for Country A.

Year	Nominal GDP	GDP Deflator	Population
2020	40,000	100	100
2021	88,000	200	110

Question 2

(a)(i) Calculate each of the following for Country A in year 2021. Show your work.

Real GDP

(a)(ii) Calculate each of the following for Country A in year 2021. Show your work.

Real GDP per capita

(b) Based solely on the data provided, has the standard of living for the average person in Country A increased, decreased, or stayed the same between 2020 and 2021? Explain.

(c) How would an increase in government spending on education affect economic growth in Country A? Explain.

(d) Assume that Country A produces consumer goods and capital goods. Draw a correctly labeled production possibilities curve for Country A, and show the effect of the increase in government spending on education on your graph.

Solution 2

(a)(i)

Mark scheme

- Real GDP in 2021 = 44,000. Work: $\text{Real GDP} = (\text{Nominal GDP} \div \text{Price Index}) \times 100 = (88,000 \div 200) \times 100 = 44,000$. 1 point for the correct value (44,000) with work shown. (In the official scoring guidelines this single point is shared with part (a)(ii): both the real GDP and real GDP per capita values are required together for the point.)

Solution 2

(a)(ii)

Mark scheme

- Real GDP per capita in 2021 = 400. Work: Real GDP per Capita = Real GDP $\div$ Population = 44,000 $\div$ 110 = 400. 1 point for the correct value (400) with work shown. (Shares its official 1 point with part (a)(i); each value is graded here for its own point.)

Solution 2

(b)

Mark scheme

- The standard of living for the average person in Country A has STAYED THE SAME between 2020 and 2021. Explanation: real GDP per capita in Country A did not change from 2020 to 2021 (it remains 400, per the data provided and the value computed in part (a)(ii)) — and real GDP per capita, not nominal GDP or population alone, is the best measure available here of the average person's standard of living. 1 point for stating 'stayed the same' AND explaining via unchanged real GDP per capita.

Solution 2

(c)

Mark scheme

- An increase in government spending on education WILL PROMOTE (increase) economic growth in Country A. Explanation: spending on education increases human capital — the skills, knowledge, and training embodied in workers — which makes the labor force more productive; higher labor productivity increases the economy's potential (long-run) output, i.e., economic growth. 1 point for stating that growth increases AND explaining via human capital and labor productivity.

Solution 2

(d)

Mark scheme

- Draw a correctly labeled production possibilities curve (PPC) graph: axes Capital Goods (vertical) and Consumer Goods (horizontal), with a bowed-out (concave-to-the-origin) curve PPC_1 — 1 point. Second point: show an outward (rightward) shift of the entire curve, from PPC_1 to a new curve PPC_2 lying further from the origin at every point (an arrow from PPC_1 to PPC_2), reflecting the economic growth from the increase in human capital/labor productivity identified in part (c) — 1 point. Total 2 points.

Question 3

2021 Set 1 ■ Q3

Flowerland is an open economy with a flexible exchange rate regime. The natural rate of unemployment is 5%, the frictional rate of unemployment is 4%, and the actual rate of unemployment is 7%.

(a) What is the numerical value of the cyclical rate of unemployment in Flowerland?

Question 3

2021 Set 1 ■ Q3

Flowerland is an open economy with a flexible exchange rate regime. The natural rate of unemployment is 5%, the frictional rate of unemployment is 4%, and the actual rate of unemployment is 7%.

(b) Assume the foreign demand for lavender oil produced in Flowerland increases.

What will happen to each of the following in Flowerland in the short run?

(b)(i) Aggregate demand. Explain.

(b)(ii) Cyclical unemployment.

Question 3

2021 Set 1 ■ Q3

Flowerland is an open economy with a flexible exchange rate regime. The natural rate of unemployment is 5%, the frictional rate of unemployment is 4%, and the actual rate of unemployment is 7%.

(c) The table shows the market basket quantities and prices of lavender oil and roses, the only two goods produced in Flowerland.

Goods	Quantity (in units)	2019 Price per Unit	2020 Price per Unit
Lavender oil	40	\$3	\$4
Roses	4	\$20	\$25

Question 3

Assume 2019 is the base year. Based on the data in the table, calculate the price index for year 2020 in Flowerland. Show your work.

Question 3

2021 Set 1 ■ Q3

Flowerland is an open economy with a flexible exchange rate regime. The natural rate of unemployment is 5%, the frictional rate of unemployment is 4%, and the actual rate of unemployment is 7%.

(d) If nominal income in Flowerland increased by 20% from 2019 to 2020, will the standard of living of the average citizen of Flowerland increase, decrease, or stay the same from 2019 to 2020? Explain.

Solution 3

(a)

Mark scheme

- The numerical value of the cyclical rate of unemployment in Flowerland is 2%.

Solution 3

(b)

Mark scheme

- This is the question stem introducing two sub-parts, (i) and (ii), about the short-run effects on Flowerland of an increase in foreign demand for lavender oil; it carries no points of its own in the scoring guidelines. The 2 points for this part are allocated entirely to 3(b)(i) and 3(b)(ii) below.

Solution 3

(b)(i)

Mark scheme

- State that aggregate demand will increase. Explain: an increase in foreign demand for lavender oil (a Flowerland export) increases net exports, a component of aggregate demand, so AD increases.

(b)(ii)

Mark scheme

- State that cyclical unemployment will decrease, as the increase in aggregate demand raises real output and employment, reducing cyclical unemployment.

Solution 3

(c)

Mark scheme

- Calculate the price index for year 2020 as 130, showing work: $\text{Price Index} = \left[\frac{\text{Value of the market basket in 2020}}{\text{Value of the market basket in 2019}} \right] \times 100 = \frac{(\$4 \times 40) + (\$25 \times 4)}{(\$3 \times 40) + (\$20 \times 4)} \times 100 = \frac{\$260}{\$200} \times 100 = 130.$

Solution 3

(d)

Mark scheme

- State that the standard of living of the average citizen of Flowerland will decrease. Explain: nominal income increased by 20% from 2019 to 2020, but this is less than the inflation rate over the same period (the price index rose from 100 to 130, i.e., 30% inflation), so real income falls, decreasing the standard of living.