

Week 4

AP Macroeconomics

Homework bundle for this week

本周作业合集

exercises.lol

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AP Macroeconomics

Name: _____ Score: _____

1. GDP is the market value of all _____ goods and services produced in a country in a year.
 - ☐ final
 - ☐ intermediate
 - ☐ used
 - ☐ financial
2. If you cook your own dinner instead of paying a restaurant, GDP:
 - ☐ does not rise (nonmarket production)
 - ☐ rises by the same amount
 - ☐ falls
 - ☐ doubles
3. The labour force includes:
 - ☐ the employed plus the unemployed who are looking
 - ☐ everyone of working age
 - ☐ only the employed
 - ☐ retirees and students
4. Inflation is:
 - ☐ a rise in the general price level
 - ☐ a fall in the general price level
 - ☐ a rise in one good's price only
 - ☐ a fall in output
5. Which kind of inflation does the least harm, because people can plan for it?
 - ☐ anticipated inflation
 - ☐ unanticipated inflation
 - ☐ hyperinflation
 - ☐ surprise inflation
6. In the circular flow, total spending equals total income.
 - ☐ True ☐ False

7. Hidden, unreported work that dodges taxes is part of the _____ economy.

8. A town has 95,000 employed and 5,000 unemployed. What is the unemployment rate, in percent?
_____ percent
9. If nominal GDP doubles only because prices doubled, real GDP is unchanged.
☐ True ☐ False
10. With $C = 700$, $I = 200$, $G = 300$, exports $X = 150$, and imports $M = 100$, what is GDP?

1. **final**

Only final goods count, so we don't double-count the intermediate parts.

2. **does not rise (nonmarket production)**

Unpaid household production has no market price, so GDP does not record it.

3. **the employed plus the unemployed who are looking**

It leaves out people not seeking work — retirees, full-time students, stay-at-home parents.

4. **a rise in the general price level**

Inflation is the average of all prices rising, not just one good.

5. **anticipated inflation**

When inflation is expected, workers and lenders build it into wages and interest rates.

6. **True**

Every dollar a household spends becomes a dollar of income for a firm's workers or owners.

7. **underground**

Because it is deliberately hidden, GDP records less output than really happened.

8. **5 percent**

Labour force = 100,000; rate = $5,000 \div 100,000 \times 100 = 5\%$.

9. **True**

No extra output was made, so real GDP — which strips out prices — stays the same.

10. **1250**

$GDP = C + I + G + (X - M) = 700 + 200 + 300 + (150 - 100) = 1250$.

2.1 The Circular Flow and GDP

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS net exports 净出口 • gross domestic product (gdp) 国内生产总值
 • circular flow model 循环流动模型 • consumption 消费 • investment 投资

Objective

Build the skills to answer exam questions on **the circular flow and GDP**.

You must be able to:

- use the **circular flow model** 循环流动模型 to trace goods, resources, and money
- define **gross domestic product (GDP)** 国内生产总值
- explain why intermediate goods, used goods, and financial transfers are excluded
- calculate GDP by the **expenditure approach**, $GDP = C + I + G + (X - M)$

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ The circular flow

Households supply resources to firms and buy goods; firms pay wages and sell goods. Money flows one way, goods and resources the other, with government and the foreign sector added.

■ GDP

The **market value of all final goods and services** produced **within a country** in a given period.

■ The expenditure approach

$$GDP = C + I + G + (X - M),$$

consumption + investment + government spending + net exports. **Intermediate** goods, **used** goods, and purely **financial** transfers are excluded (to avoid double-counting).

2 Practice

2.1 Define GDP. [1]

2.2 Write the expenditure-approach formula for GDP. [1]

2.3 Given $C = 500$, $I = 150$, $G = 250$, $X = 80$, $M = 100$ (all in billions), find GDP. [2]

3 Exam-style questions

3.1 GDP measures the value of [1]

- **A** all goods ever produced
 - **B** final goods and services produced in a period
 - **C** intermediate goods only
 - **D** used goods
-

3.2 Which of these is **excluded** from this year's GDP? [1]

- **A** a newly built car
 - **B** a haircut
 - **C** the resale of a used car
 - **D** a restaurant meal
-

3.3 An economy has $C = 700$, $I = 250$, $G = 350$, exports = 120, imports = 170 (all in billions).

(a) Find net exports. [1]

(b) Find GDP. [2]

Solutions

2.1 the market value of all final goods and services produced within a country in a given period.

2.2 $GDP = C + I + G + (X - M)$.

2.3 $GDP = 500 + 150 + 250 + (80 - 100) = 880$ billion.

3.1 B.

3.2 C — a used-car resale was counted when first sold.

3.3 (a) $X - M = 120 - 170 = -50$ billion. (b) $GDP = 700 + 250 + 350 + (-50) = 1250$ billion.

2. 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

- (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 ?

(i) People living on a fixed income

(ii) Borrowers with fixed interest-rate loans. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2.2 Limitations of GDP

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS gdp per capita 人均 • underground economy 地下经济 • externalities 外部性
• nonmarket transactions 非市场交易 • nominal gdp 名义

Objective

Build the skills to answer exam questions on **the limitations of GDP**.

You must be able to:

- explain why GDP omits **nonmarket transactions** 非市场交易
- describe how the **underground economy** 地下经济 causes GDP to understate output
- explain why GDP ignores **externalities** 外部性, resource depletion, and income distribution
- explain why **GDP per capita** 人均 GDP is better for comparing living standards

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ What GDP leaves out

- **Nonmarket** work: housework, volunteering, DIY.
- The **underground economy**: unreported and illegal activity (so GDP understates output).
- **Externalities** and resource depletion: pollution and using up nature are ignored.
- **Leisure** and the **distribution** of income: two countries with equal GDP can differ hugely in well-being.

■ GDP per capita

Dividing by population gives **GDP per capita**, a far better guide to average living standards than total GDP.

2 Practice

2.1 State two things that GDP fails to measure. [2]

2.2 State why GDP per capita is better than total GDP for comparing living standards. [1]

2.3 Explain why the underground economy causes GDP to understate output. [2]

3 Exam-style questions

3.1 GDP does **not** include [1]

- **A** restaurant meals
- **B** unpaid housework
- **C** newly built houses
- **D** exports

3.2 To compare living standards across countries, economists prefer [1]

- **A** total GDP
- **B** GDP per capita
- **C** nominal GDP
- **D** the CPI

3.3 A country has a high GDP but severe pollution and very unequal incomes.

(a) State two limitations of GDP that this illustrates. [2]

(b) Name a per-person measure that better reflects average living standards. [1]

Solutions

2.1 any two of: nonmarket production, the underground economy, externalities/pollution, leisure, income distribution.

2.2 it adjusts for population, so it reflects output **per person** rather than the size of the country.

2.3 its activity is unreported, so that output is missing from the official GDP figure.

3.1 B.

3.2 B.

3.3 (a) it ignores externalities/pollution and the distribution of income. (b) GDP per capita.

2. 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

- (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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. 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

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

(i) Real GDP

(ii) 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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2.3 Unemployment

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS natural rate 自然失业率 • unemployment rate 失业率 • cyclical 周期性
• frictional 摩擦性 • full employment 充分就业

Objective

Build the skills to answer exam questions on **unemployment**.

You must be able to:

- define the **labour force** 劳动力 and calculate the **unemployment rate** 失业率
- distinguish **frictional** 摩擦性, **structural** 结构性, and **cyclical** 周期性 unemployment
- explain that the **natural rate** 自然失业率 equals frictional plus structural unemployment
- relate **full employment** to the natural rate

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ The unemployment rate

$$\text{unemployment rate} = \frac{\text{unemployed}}{\text{labour force}} \times 100,$$

where the **labour force** = employed + unemployed (those actively seeking work).

■ Three types

- **Frictional** — between jobs, searching.
- **Structural** — skills or location mismatch.
- **Cyclical** — caused by a recession.

■ Natural rate

At full employment, cyclical unemployment is zero, so the **natural rate** = frictional + structural.

2 Practice

2.1 Write the formula for the unemployment rate. [1]

2.2 A country has 90 million employed and 10 million unemployed. Find the unemployment rate. [2]

2.3 Name the three types of unemployment. [2]

3 Exam-style questions

3.1 The natural rate of unemployment equals [1]

- **A** cyclical unemployment only
- **B** frictional plus structural unemployment
- **C** all three types added together
- **D** zero

3.2 A worker laid off during a recession is [1]

- **A** frictionally unemployed
- **B** structurally unemployed
- **C** cyclically unemployed
- **D** not unemployed

3.3 A country has a labour force of 50 million, of whom 46 million are employed.

(a) Find the number unemployed. [1]

(b) Find the unemployment rate. [2]

Solutions

2.1 unemployment rate = $\frac{\text{unemployed}}{\text{labour force}} \times 100$.

2.2 labour force = 100 million; rate = $\frac{10}{100} \times 100 = 10\%$.

2.3 frictional, structural, cyclical.

3.1 B.

3.2 C.

3.3 (a) $50 - 46 = 4$ million. (b) $\frac{4}{50} \times 100 = 8\%$.

1. The economy of Micanapy is in short-run equilibrium and is experiencing an inflationary gap.

Part A

Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Micanapy, and show each of the following.

- i. The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
- ii. The full-employment real output, labeled Y_F

Part B

Assume that policymakers take no action to close the inflationary gap. Explain how Micanapy's economy will self-adjust to full employment in the long run.

Part C

Suppose instead that Micanapy's central bank is considering using monetary policy to close the inflationary gap in the short run. The banking system in Micanapy has limited reserves.

- i. Identify a specific open-market operation that the central bank of Micanapy would implement to close the inflationary gap in the short run.
- ii. Draw a correctly labeled graph of the money market in Micanapy, and show the effect of the open-market operation identified in part C (i) on the nominal interest rate.

Part D

Based solely on the interest rate change shown on your graph in part C (ii), will each of the following increase, decrease, or remain the same in the short run?

- i. International financial capital flows into Micanapy. Explain.
- ii. The price of previously issued bonds in Micanapy
- iii. Private domestic investment spending in Micanapy

Part E

Based solely on the change in private domestic investment spending identified in part D (iii), will the unemployment rate in Micanapy increase, decrease, or remain the same in the short run? Explain.

2. The economy of Foxhound is in short-run equilibrium with the macroeconomic data shown in the table.

Labor force	15,000,000
Number of people not working but looking for work	900,000
Number of people who are retired	200,000
Number of people not working and not looking for work	100,000
Natural rate of unemployment	3%
Actual inflation rate	2%

Part A

How many people are employed in Foxhound?

Part B

Calculate the actual unemployment rate in Foxhound. Show your work.

Part C

Draw a correctly labeled graph of the short-run and long-run Phillips curves for the economy of Foxhound, and label the short-run equilibrium point as X. Plot the relevant numerical values on your graph.

Part D

If some individuals who are counted as employed in Foxhound retire, will the unemployment rate increase, decrease, or remain the same? Explain.

1. Assume that the economy of Vortania is in long-run equilibrium.
 - A. Draw a correctly labeled graph of the short-run and long-run Phillips curves for the economy of Vortania, and label the long-run equilibrium point as P.
 - B. Assume that new residential construction projects are being implemented in Vortania.
 - i. Will real output in Vortania increase, decrease, or remain the same in the short run? Explain.
 - ii. Assuming no change in inflationary expectations, on your graph in part A, show the short-run effect of the new residential construction projects on Vortania's economy, labeling the new short-run equilibrium point as S.
 - C. Vortania and Rhodara are trading partners with flexible exchange rates. The currency of Vortania is the Vortanian crown (VTC), and the currency of Rhodara is the Rhodaran mark (RHM). Assume that Vortania's capital and financial account (CFA) balance is zero. Now assume that Vortania imposes new tariffs on imports from Rhodara. Draw a correctly labeled graph of the foreign exchange market for the Vortanian crown, and show the effect of the tariffs on the SUPPLY of the Vortanian crown and the international value of the Vortanian crown.
 - D. Based solely on the change in the international value of the Vortanian crown shown in part C, will Vortania's net exports increase, decrease, or remain the same in the short run?
 - E. Based on the change in net exports identified in part D, what will happen to each of the following in the short run?
 - i. The capital and financial account (CFA) balance in Vortania. Explain.
 - ii. Employment in Vortania
 - F. Assume the central bank of Vortania wants to return the Vortanian crown to its international value before the imposition of the tariffs. Would the central bank buy or sell Vortanian crowns in the foreign exchange market? Explain.

1. Assume that the economy of Barrikos is in short-run equilibrium, with its economic data summarized in the table provided. The government budget is balanced, and the capital and financial account (CFA) balance is zero.

Cyclical unemployment rate	6%
Natural unemployment rate	4%
Structural unemployment rate	1%
Actual inflation rate	3%
Expected inflation rate	5%

- A. What is the numerical value of the actual unemployment rate in Barrikos?
- B. Using the relevant numerical values, draw a correctly labeled graph of the short-run and long-run Phillips curves for Barrikos. Indicate the current short-run equilibrium with a point labeled X. Plot the relevant numerical values on the graph.
- C. Based on your graph in part B, identify one specific fiscal policy action that the government of Barrikos would take to move the economy toward long-run equilibrium.
- D. Assume that the fiscal policy action identified in part C is implemented.
- Will the government budget in Barrikos move into surplus, move into deficit, or remain balanced? Explain.
 - Assume there is no change in inflationary expectations. On your graph in part B, show a possible new short-run equilibrium point, labeled Z, that would result from the fiscal policy action identified in part C.
 - Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part C on the real interest rate.
- E. Barrikos has an open economy and a flexible exchange rate. Based solely on the change in the real interest rate in Barrikos shown on your graph in part D (iii), will Barrikos' capital and financial account (CFA) balance move into surplus, move into deficit, or remain the same? Explain.
- F. Based on the change in Barrikos' capital and financial account (CFA) balance identified in part E, what will happen to the international value of Barrikos' currency? Explain.

1. The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.
- (a) Calculate Alpha's natural rate of unemployment. Show your work.
- (b) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Alpha, and show each of the following.
- (i) The current equilibrium output and price level, labeled Y_1 and PL_1 , respectively
 - (ii) The full-employment output, labeled Y_F
- (c) Assume that policymakers take no action to close the output gap.
- (i) Explain how Alpha's economy will adjust to full employment in the long run.
 - (ii) On your graph in part (b), show how Alpha's economy will adjust to full employment in the long run, labeling the new equilibrium price level PL_2 .
- (d) Assume instead that Alpha's central bank is considering using monetary policy to close a recessionary output gap. The banking system in Alpha has ample reserves. Identify a specific monetary policy action the central bank of Alpha would take to close the output gap in the short run.
- (e) Draw a correctly labeled graph of the reserve market in Alpha, and show the effect of the action taken by the central bank identified in part (d) on the policy rate.
- (f) Based on the change in the policy rate shown in part (e), what would happen to each of the following in the short run in Alpha?
- (i) The price of previously issued bonds
 - (ii) The price level. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Assume that the economy of Moneyland is in equilibrium with an actual unemployment rate equal to the natural rate of unemployment.
 - (a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.
 - (i) The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
 - (ii) The full employment output, labeled Y_F
 - (b) Assume that consumer spending in Moneyland decreases from \$110,000 to \$100,000 as a result of a decrease in disposable income in Moneyland from \$135,000 to \$110,000.
 - (i) Calculate the marginal propensity to consume in Moneyland. Show your work.
 - (ii) Show the short-run effect of the decrease in consumer spending in Moneyland on your graph in part (a), labeling the new equilibrium real output and price level Y_2 and PL_2 , respectively.
 - (c) Following the decrease in consumer spending, explain how the economy would adjust in the long run in the absence of any policy actions.
 - (d) The central bank of Moneyland is concerned about the short-run effects of the decrease in consumer spending on the broader economy and is considering taking action rather than waiting for the long-run adjustment process. Assuming the banking system in Moneyland has ample reserves, identify a specific monetary policy action the central bank of Moneyland would take to increase consumer spending.
 - (e) Draw a correctly labeled graph of the reserve market in Moneyland, and show the effect of the monetary policy action identified in part (d) on the policy rate.
 - (f) How would the change in the policy rate shown on your graph in part (e) affect each of the following in Moneyland in the short run?
 - (i) The quantity of national savings
 - (ii) Unemployment. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. Assume that in the country of Zeta, the civilian noninstitutional population aged 16 and over is 1,000,000. The labor force participation rate is 70%, the unemployment rate is 9%, and the natural rate of unemployment is 5%.
- (a) Calculate the number of people in Zeta that are unemployed. Show your work.
- (b) Is the economy of Zeta currently experiencing a recessionary gap, an inflationary gap, or no output gap? Explain.
- (c) Consumer goods and capital goods are produced in the country of Zeta. Draw a correctly labeled graph of the production possibilities curve for Zeta. Indicate a point, labeled A, that represents the current state of Zeta's economy.
- (d) If some individuals who are counted as unemployed in Zeta stop looking for work, what will happen to each of the following?
- (i) The labor force participation rate. Explain.
 - (ii) The unemployment rate

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

2. The United States and South Africa are trading partners with flexible exchange rates, and the United States current account balance with South Africa is zero.
- (a) Assume real income in the United States increases while real income in South Africa remains the same. Will United States net exports increase, decrease, or remain unchanged? Explain.
- (b) Based on your answer to part (a), what will happen to each of the following?
- (i) The capital and financial account balance in the United States
 - (ii) Actual unemployment in South Africa in the short run. Explain.
- (c) The currency of the United States is the dollar (USD), and the currency of South Africa is the rand (ZAR). Draw a correctly labeled graph of the foreign exchange market for the rand and show the effect of the increase in real income in the United States on the international value of the rand.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Assume a country's economy is operating below full employment.

(a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, and show each of the following.

- (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1 , respectively
- (ii) The full-employment output, labeled as Y_F

(b) Identify one fiscal policy action the country's government can take to restore full employment.

(c) Assume instead that no fiscal policy action is taken. Suppose a change in investment spending causes real GDP to increase by \$200 billion. Calculate the minimum change in investment spending that could have caused this increase in real GDP if the marginal propensity to save is 0.25. Show your work.

(d) Assume the output gap was initially \$800 billion. On your graph in part (a), show the short-run effect of the change in investment spending identified in part (c), labeling the new equilibrium real output as Y_2 and the new equilibrium price level as PL_2 .

(e) Given your answer to part (d), is the actual rate of unemployment greater than, less than, or equal to the natural rate of unemployment? Explain.

(f) Assume that private savings now increase. Draw a correctly labeled graph of the loanable funds market and show the effect of the increase in private savings on the real interest rate.

(g) Based solely on the change in the real interest rate shown in part (f), what will happen to each of the following?

- (i) Real GDP in the short run. Explain.
- (ii) Long-run aggregate supply. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. The government budget of the country of Geeland is currently balanced. The government budget is composed of tax revenues (T), transfer payments (TR), and government spending (G).
- (a) Assume the economy moves into a recession and there is no discretionary policy action.
- (i) Will the government budget move into a deficit or a surplus in the short run? Explain using the appropriate components of the government budget identified above.
- (ii) Based on your answer to part (a)(i), what will happen to the government debt?
- (b) Based on your answer to part (a)(i), identify one specific fiscal policy action that will balance the budget.
- (c) How will the fiscal policy action from part (b) affect the actual unemployment rate in the short run? Explain.
- (d) Did the government efforts to maintain a balanced budget make Geeland's recession more severe or less severe in the short run? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

MACROECONOMICS**Section II****Total Time—1 hour****Reading Period—10 minutes****Writing Period—50 minutes**

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume the United States economy is in recession.
 - (a) Draw a correctly labeled graph of the long-run aggregate supply, short-run aggregate supply, and aggregate demand curves, and show each of the following.
 - (i) Current price level, labeled PL_1
 - (ii) Current output, labeled Y_1
 - (b) Now assume the euro zone, a major trading partner of the United States, enters into a recession.
 - (i) What will be the effect on United States exports to the euro zone? Explain.
 - (ii) On your graph in part (a), show the effect of the change identified in part (b)(i) on real output in the United States.
 - (iii) What will be the effect of the change identified in part (b)(ii) on unemployment in the United States?
 - (c) Assume the euro zone recession causes a decrease in the demand for United States dollars in the foreign exchange market.
 - (i) Will the euro appreciate, depreciate, or remain unchanged against the dollar? Explain.
 - (ii) Draw a correctly labeled graph of the foreign exchange market for dollars, and show the effect of the decrease in the demand for dollars on the exchange rate for dollars.
 - (d) Assume the United States implements a combination of expansionary fiscal and monetary policies. In the absence of complete crowding out, what will be the effect of these policies on each of the following?
 - (i) Aggregate demand in the United States
 - (ii) The price level in the United States
 - (iii) Interest rates in the United States. Explain.

MACROECONOMICS**Section II****Planning Time—10 minutes****Writing Time—50 minutes**

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the United States economy is currently operating below the full-employment level of real gross domestic product with a balanced budget.
 - (a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, and show each of the following in the United States.
 - (i) Current output and price level, labeled as Y_1 and PL_1 , respectively
 - (ii) Full-employment output, labeled as Y_f
 - (b) The United States government increases spending on goods and services by \$100 billion, which is financed by borrowing. How will the increase in government spending affect each of the following?
 - (i) Cyclical unemployment
 - (ii) The natural rate of unemployment
 - (c) If the marginal propensity to consume is equal to 0.75, calculate the maximum possible change in real gross domestic product that could result from the \$100 billion increase in government spending.
 - (d) Using a correctly labeled graph of the loanable funds market, show the effect of the \$100 billion increase in government spending on the real interest rate.
 - (e) Based on the real interest rate change in part (d), what is the effect on the long-run economic growth rate? Explain.
 - (f) Now assume that instead of financing the \$100 billion increase in government spending by borrowing, the United States government increases taxes by \$100 billion. With this equal increase in government spending and taxes, will the real gross domestic product increase, decrease, or remain the same? Explain.

2.4 Price Indices and Inflation

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS inflation 通货膨胀 • price index 价格指数 • disinflation 通胀放缓
 • deflation 通货紧缩 • consumer price index (cpi) 消费者价格指数

Objective

Build the skills to answer exam questions on **price indices and inflation**.

You must be able to:

- define **inflation** 通货膨胀, **deflation** 通货紧缩, and **disinflation** 通胀放缓
- explain how the **Consumer Price Index (CPI)** 消费者价格指数 is built from a fixed basket
- calculate the **inflation rate** as the percentage change in a price index
- compute a price index with $\text{index} = \frac{\text{cost now}}{\text{cost in base year}} \times 100$

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ The CPI

Track the cost of a **fixed basket** of goods: $\text{CPI} = \frac{\text{cost of basket now}}{\text{cost in base year}} \times 100$. The base year has $\text{CPI} = 100$.

■ The inflation rate

The **percentage change** in the index between two periods:

$$\text{inflation rate} = \frac{\text{new index} - \text{old index}}{\text{old index}} \times 100.$$

■ The three terms

Inflation = rising prices; **deflation** = falling prices; **disinflation** = inflation that is still positive but **slowing**.

2 Practice

2.1 Define inflation. [1]

2.2 A basket costs \$250 now and \$200 in the base year. Find the CPI. [2]

2.3 The CPI rises from 120 to 126. Find the inflation rate. [2]

3 Exam-style questions

3.1 The CPI is based on [1]

- **A** every good in the economy
 - **B** a fixed basket of goods
 - **C** food only
 - **D** exports
-

3.2 Disinflation means that [1]

- **A** prices are falling
 - **B** inflation is slowing but still positive
 - **C** prices are rising very fast
 - **D** there is no inflation at all
-

3.3 A basket cost \$400 in 2020 (the base year) and \$460 in 2024.

(a) Find the 2024 CPI. [2]

(b) State the total percentage rise in prices. [1]

Solutions

2.1 a sustained rise in the general price level.

2.2 $\text{CPI} = \frac{250}{200} \times 100 = 125.$

2.3 $\frac{126 - 120}{120} \times 100 = 5\%.$

3.1 B.

3.2 B.

3.3 (a) $\text{CPI} = \frac{460}{400} \times 100 = 115.$ (b) 15%.

2. 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

- (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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. 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

- (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 ?
- (i) People living on a fixed income
 - (ii) Borrowers with fixed interest-rate loans. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. Assume that commercial banks must hold a minimum of 20% of their deposits as reserves. Now suppose that the central bank of the country sells \$100,000 of government bonds to commercial banks.
- (a) Calculate the maximum change and state the direction of change in the money supply as a result of the central bank bond sale. Show your work.
- (b) Draw a correctly labeled graph of the money market and show the effect of the change in the money supply identified in part (a) on the nominal interest rate.
- (c) Given the change in the money supply in part (a), if the velocity of money is constant, what will happen to the nominal gross domestic product? Explain.
- (d) Based on the change in the nominal gross domestic product in part (c), what happens to the price level if the real gross domestic product is constant?

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. 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?
- (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?
- (i) Aggregate demand. Explain.
 - (ii) Cyclical unemployment.

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

- (c) 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.
- (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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Name:

STOP

END OF EXAM

2.5 Costs of Inflation

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS anticipated 预期 • unanticipated 未预期 • shoe-leather costs 皮鞋成本
 • menu costs 菜单成本 • inflation 通货膨胀

Objective

Build the skills to answer exam questions on **the costs of inflation**.

You must be able to:

- distinguish **anticipated** 预期 from **unanticipated** 未预期 inflation
- explain how unanticipated inflation redistributes purchasing power between **borrowers** and **lenders**
- describe **menu costs** 菜单成本 and **shoe-leather costs** 皮鞋成本
- explain how inflation erodes savings and fixed nominal incomes

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Anticipated vs unanticipated

If inflation is fully **anticipated**, contracts adjust and little harm is done. **Unanticipated** inflation redistributes wealth by surprise.

■ Borrowers vs lenders

Surprise inflation lets **borrowers** repay in cheaper money — they **gain**; **lenders** and savers **lose**.

■ Menu and shoe-leather costs

Menu costs = the effort of re-pricing goods. **Shoe-leather costs** = the bother of holding less cash and visiting the bank more often. Inflation also erodes the real value of savings and fixed incomes.

2 Practice

2.1 State who gains from unanticipated inflation: borrowers or lenders.

[1]

2.2 Define menu costs. [1]

2.3 Explain how inflation hurts people living on a fixed income. [2]

3 Exam-style questions

3.1 Unanticipated inflation benefits [1]

- **A** lenders
- **B** borrowers
- **C** savers
- **D** everyone equally

3.2 Shoe-leather costs arise because people [1]

- **A** re-print price tags
- **B** hold less cash and visit the bank more
- **C** save more
- **D** borrow less

3.3 Inflation turns out much higher than expected.

(a) State whether a borrower with a fixed-rate loan gains or loses. [1]

(b) Explain why. [2]

Solutions

2.1 borrowers.

2.2 the cost to firms of changing their listed prices.

2.3 their nominal income is fixed while prices rise, so its real value (what it can buy) falls.

3.1 B.

3.2 B.

3.3 (a) the borrower gains. (b) they repay a fixed nominal amount with money that is now worth less, so the real value repaid is lower than expected.

2. 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

- (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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. 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

- (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 ?
- (i) People living on a fixed income
 - (ii) Borrowers with fixed interest-rate loans. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. Assume the expected inflation rate in a country is 3%, the current unemployment rate is 6%, and the natural rate of unemployment is 4%.
- (a) Draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium as point X and plot the numerical values above on the graph.
 - (b) Is the actual inflation rate greater than, less than, or equal to the expected inflation rate of 3%?
 - (c) Assume loans were made taking into account the expected inflation rate of 3%. Will lenders be better off or worse off after they realize the actual inflation rate identified in part (b) ? Explain.
 - (d) Based on the relationship between the actual and the expected inflation rates identified in part (a), what will happen to the natural rate of unemployment in the long run?
-

2.6 Real v. Nominal GDP

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS real gdp 实际 • nominal gdp 名义 • inflation 通货膨胀

Objective

Build the skills to answer exam questions on **real versus nominal GDP**.

You must be able to:

- distinguish **nominal GDP** 名义 GDP (current prices) from **real GDP** 实际 GDP (constant prices)
- explain why real GDP is preferred for measuring output over time
- calculate real GDP and the **GDP deflator** GDP 平减指数
- convert a nominal value to a real value with $\text{real} = \frac{\text{nominal}}{\text{price index}} \times 100$

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Nominal vs real

Nominal GDP uses **current** prices, so it rises when prices rise. **Real GDP** uses **base-year** prices, stripping out inflation, so it reflects true changes in **output**.

■ The GDP deflator

$$\text{GDP deflator} = \frac{\text{nominal GDP}}{\text{real GDP}} \times 100.$$

■ Converting

$\text{real} = \frac{\text{nominal}}{\text{price index}} \times 100$. Real GDP is preferred because a rise in nominal GDP could be only higher prices, not more output.

2 Practice

2.1 State the difference between nominal and real GDP. [2]

2.2 Nominal GDP is \$600 billion and the price index is 120. Find real GDP. [2]

2.3 State why real GDP is preferred for measuring economic growth. [1]

3 Exam-style questions

3.1 Real GDP is measured using [1]

- **A** current prices
- **B** base-year prices
- **C** future prices
- **D** zero prices

3.2 The GDP deflator equals [1]

- **A** $\frac{\text{real}}{\text{nominal}} \times 100$
- **B** $\frac{\text{nominal}}{\text{real}} \times 100$
- **C** nominal – real
- **D** the CPI

3.3 Nominal GDP is \$800 billion and real GDP is \$640 billion.

(a) Find the GDP deflator. [2]

(b) State whether prices have risen or fallen since the base year. [1]

Solutions

2.1 nominal GDP uses current prices; real GDP uses constant base-year prices to remove the effect of inflation.

2.2 $\text{real} = \frac{600}{120} \times 100 = \500 billion.

2.3 it removes price changes, so it shows the true change in output.

3.1 B.

3.2 B.

3.3 (a) $\frac{800}{640} \times 100 = 125$. (b) risen (the deflator is above 100).

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

- 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.
- The equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
 - 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

2. 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

- (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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. 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

- (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 ?
- (i) People living on a fixed income
 - (ii) Borrowers with fixed interest-rate loans. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. 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

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

(i) Real GDP

(ii) 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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. 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?

(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?

(i) Aggregate demand. Explain.

(ii) Cyclical unemployment.

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

(c) 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.

(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.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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END OF EXAM

2.7 Business Cycles

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS output gap 产出缺口 • recessionary gap 衰退缺口 • inflationary gap 通胀缺口
 • expansion 扩张 • business cycle 经济周期

Objective

Build the skills to answer exam questions on **business cycles**.

You must be able to:

- identify the four phases of the **business cycle** 经济周期: expansion, peak, contraction, trough
- relate movements in **real GDP** to unemployment and inflation over the cycle
- distinguish the **output gap** 产出缺口 between actual and potential GDP
- define a **recessionary gap** 衰退缺口 and an **inflationary gap** 通胀缺口

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ The four phases

Expansion (rising output) → **peak** → **contraction** / **recession** (falling output) → **trough** → recovery.

■ Over the cycle

In an **expansion** unemployment falls and inflation tends to rise; in a **recession** the reverse happens.

■ Output gaps

The **output gap** is actual minus potential real GDP. Below potential is a **recessionary gap**; above potential is an **inflationary gap**.

2 Practice

2.1 Name the four phases of the business cycle.

[2]

2.2 Define a recessionary gap. [1]

2.3 State what happens to unemployment during an expansion. [1]

3 Exam-style questions

3.1 The lowest point of the business cycle is the [1]

- **A** peak
 - **B** trough
 - **C** expansion
 - **D** boom
-

3.2 An inflationary gap occurs when actual GDP is _____ potential GDP. [1]

- **A** below
 - **B** above
 - **C** equal to
 - **D** unrelated to
-

3.3 An economy's actual real GDP is below its potential.

(a) Name this type of output gap. [1]

(b) State what is likely to be high in this phase. [1]

(c) Name the phase of the business cycle. [1]

Solutions

2.1 expansion, peak, contraction (recession), trough.

2.2 the gap when actual real GDP is below potential (full-employment) GDP.

2.3 it falls.

3.1 B.

3.2 B.

3.3 (a) a recessionary gap. (b) unemployment. (c) contraction / recession.

3. Assume that in the country of Zeta, the civilian noninstitutional population aged 16 and over is 1,000,000. The labor force participation rate is 70%, the unemployment rate is 9%, and the natural rate of unemployment is 5%.
- (a) Calculate the number of people in Zeta that are unemployed. Show your work.
- (b) Is the economy of Zeta currently experiencing a recessionary gap, an inflationary gap, or no output gap? Explain.
- (c) Consumer goods and capital goods are produced in the country of Zeta. Draw a correctly labeled graph of the production possibilities curve for Zeta. Indicate a point, labeled A, that represents the current state of Zeta's economy.
- (d) If some individuals who are counted as unemployed in Zeta stop looking for work, what will happen to each of the following?
- (i) The labor force participation rate. Explain.
 - (ii) The unemployment rate

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM