

# Financial Sector



## Developing Understanding

### BIG IDEA 1

#### Economic Measurements **MEA**

- What is money?

### BIG IDEA 2

#### Markets **MKT**

- How is the price of money determined?

### BIG IDEA 4

#### Macroeconomic Policies **POL**

- How do banks create money?
- How do the actions of a country's central bank affect financial decision making and the economy?

In the previous unit, students explored the effects of fiscal policy. In this unit, students will evaluate the macroeconomic effects of monetary policy. Before doing so, though, they should first have an understanding of how the financial sector works and be able to describe how monetary policy is implemented and transmitted through the banking system. This understanding begins with an introduction to financial assets, including money, and the way in which fractional reserve banking allows for the expansion of the money supply. Students will then build on their understanding of the financial sector by learning how to model the money market, the reserve market, and the loanable funds market.

## Building Course Skills

**1.A 1.B 2.A 3.C 4.A 4.C**

In this unit, students will describe the workings of the financial sector so they can apply that understanding in context. Devote sufficient time to introducing students to new concepts and vocabulary. Vocabulary lists or rote memorization on their own will not allow for knowledge transfer.

Students will also be expected to represent a number of different markets graphically in this unit. Explain the underlying assumptions of each market and practice modeling these assumptions so that students can create properly labeled graphs to represent and evaluate economic situations.

Students will continue to build their quantitative skills by interpreting bank balance sheets and calculating changes in demand deposits, loans, and reserves in the banking system as a result of deposits, withdrawals, and monetary policy. Once again, it's important to spend time grounding students in the underlying concepts—in this case, with a thorough introduction to fractional reserve banking—and provide ample time for numerical examples and practice.


## Preparing for the AP Exam

Predicting and explaining the effects of fiscal and monetary policy actions is an important role of economists and an expectation of students on the AP Exam. Understanding fiscal and monetary policy will also help students become more informed citizens.

When responding to free-response questions on the AP Exam that ask which open-market operation is appropriate in a given economic scenario, students often use a scattershot approach and list all possible monetary policy actions rather than the appropriate open-market operation. Students should practice carefully reading and responding to the question, ensuring that they answer the question that is being asked. This will help students perform better on the exam and move them away from rote memorization and toward greater understanding.

Balance sheet questions are a common challenge area for students on the AP Exam. Use past AP Exam questions to analyze the tasks and determine key vocabulary and misunderstandings students have when approaching the questions. Then provide opportunities for guided practice answering questions.

## UNIT AT A GLANCE

Enduring Understanding	Topic	Suggested Skills	Class Periods
			~11–13 CLASS PERIODS
MEA-3	<b>4.1 Financial Assets</b>	<b>1.D</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	
	<b>4.2 Nominal v. Real Interest Rates</b>	<b>1.A</b> Describe economic concepts, principles, or models.	
	<b>4.3 Definition, Measurement, and Functions of Money</b>	<b>1.B</b> Identify an economic concept, principle, or model illustrated by an example.	
POL-2	<b>4.4 Banking and the Expansion of the Money Supply</b>	<b>3.C</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	
MKT-3	<b>4.5 The Money Market</b>	<b>4.A</b> Draw an accurately labeled graph or visual to represent an economic model or market.	
POL-1	<b>4.6 Monetary Policy</b>	<b>2.A</b> Using economic concepts, principles, or models, explain how a specific economic outcome occurs or what action should be taken in order to achieve a specific economic outcome.	
MKT-4	<b>4.7 The Loanable Funds Market</b>	<b>4.C</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	
<p> Go to <a href="#">AP Classroom</a> to assign the <b>Personal Progress Check</b> for Unit 4. Review the results in class to identify and address any student misunderstandings.</p>			

## SAMPLE INSTRUCTIONAL ACTIVITIES

The sample activities on this page are optional and offered to provide possible ways to incorporate various instructional approaches into the classroom. Teachers do not need to use these activities or instructional approaches and are free to alter or edit them. The examples below were developed in partnership with teachers from the AP community to share ways that they approach teaching some of the topics in this unit. Please refer to the Instructional Approaches section beginning on p. 113 for more examples of activities and strategies.

Activity	Topic	Sample Activity
1	4.1	<p><b>QHT</b></p> <p>Provide students with a list of critical vocabulary for this topic (e.g., stock, bond, interest rate, loan). Have students mark the list with a Q for words they have a question about, an H for words they have heard and might be able to identify, and a T for words they know well enough to teach to their peers. Discuss their markings as a class and have students who marked any words with a T describe the terms to their classmates.</p>
2	4.4, 4.5, 4.6	<p><b>Simulation and Debriefing</b></p> <p>Carry out an in-class simulation of open-market operations in an economy with limited reserves to give students a frame of reference for how T-accounts record lending activity while also observing the effects of central bank purchases and sales of securities. Have students take on the role of banks and give them a blank T-account and set of assets, typically securities and cash (deposits). With you acting as the central bank, introduce policy actions that require the “banks” to adjust their T-accounts accordingly. Debrief the experience with students to ensure that connections are made to the concepts being studied.</p>
3	4.5, 4.7	<p><b>Practice Modeling</b></p> <p>The money market, the reserve market, and the loanable funds market are introduced in this unit. When introducing how to graph each market, first model it for students by drawing it on the board and explaining the underlying assumptions while doing so (e.g., why the money demand curve is downward-sloping and why the money supply curve is vertical). Then provide an opportunity for students to practice generating the graph with appropriate labels themselves and work through different scenarios and shifts within the context of each graph.</p>



### Unit Planning Notes

Use the space below to plan your approach to the unit. Consider how you want to pace your course and methods of instruction and assessment.


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## SUGGESTED SKILL

 Interpretation

## 2.A

Using economic concepts, principles, or models, explain how a specific economic outcome occurs or what action should be taken in order to achieve a specific economic outcome.



## AVAILABLE RESOURCES

- External Resource > [The Federal Reserve Bank of St. Louis – Teaching the New Tools of Monetary Policy](#)

## TOPIC 4.6

# Monetary Policy

### Required Course Content

#### ENDURING UNDERSTANDING

##### POL-1

Fiscal and monetary policy have short-run effects on macroeconomic outcomes.

#### LEARNING OBJECTIVE

##### POL-1.D

- Define monetary policy and related terms.
- Explain (using graphs as appropriate) the short-run effects of a monetary policy action.
- Calculate (using data and balance sheets as appropriate) the effects of a monetary policy action.

#### ESSENTIAL KNOWLEDGE

##### POL-1.D.1

Central banks implement monetary policies to achieve macroeconomic goals, such as price stability.

##### POL-1.D.2

The tools of monetary policy may include the central bank's discount rate and other administered interest rates (e.g., interest on reserves), open market operations, and the required reserve ratio. The tools used and the way in which they are implemented differ between economies that have limited reserves in their banking system and economies that have ample reserves in their banking system. (The banking system in the United States has ample reserves, and the Federal Reserve's key policy tool is interest on reserves.)

##### POL-1.D.3

When the central bank conducts an open-market purchase (sale), reserves increase (decrease), thereby increasing (decreasing) the monetary base.

##### POL-1.D.4

When the central bank conducts an open-market purchase (sale) in an economy with limited reserves, the effect on the money supply is greater than the effect on the monetary base because of the money multiplier.

*continued on next page*

**LEARNING OBJECTIVE****POL-1.D**

- Define monetary policy and related terms.
- Explain (using graphs as appropriate) the short-run effects of a monetary policy action.
- Calculate (using data and balance sheets as appropriate) the effects of a monetary policy action.

**POL-1.E**

Define why there are lags to monetary policy.

**ESSENTIAL KNOWLEDGE****POL-1.D.5**

Many central banks carry out policy to hit a target range for an overnight interbank lending rate, sometimes referred to as the central bank's policy rate. (In the United States, this is the federal funds rate.)

**POL-1.D.6**

Central banks can influence the nominal interest rate in the short run, which in turn will affect investment and consumption. [See also EK MKT-5.G.2 for the influence on net capital inflows.] In an economy with limited reserves, the central bank can influence the nominal interest rate by changing the money supply. In an economy with ample reserves, changes in the money supply do not effectively change the nominal interest rate; instead, the central bank can influence the nominal interest rate by changing its administered interest rates.

**POL-1.D.7**

Expansionary or contractionary monetary policies are used to restore full employment when the economy is in a negative (i.e., recessionary) or positive (i.e., inflationary) output gap.

**POL-1.D.8**

Monetary policy can influence interest rates, aggregate demand, real output, and the price level. [See also EK MKT-5.E.3 for the effect on exchange rates.]

**POL-1.D.9**

A money market model, a reserve market model, and/or the AD–AS model may be used to demonstrate the short-run effects of monetary policy.

**POL-1.E.1**

In reality, there are lags to monetary policy caused by the time it takes to recognize a problem in the economy and the time it takes the economy to adjust to the policy action.

# Exam Overview

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The AP Macroeconomics Exam assesses student understanding of the skills and learning objectives outlined in the course framework. The exam is 2 hours and 10 minutes long and includes 60 multiple-choice questions and 3 free-response questions. **Starting with the 2022–23 school year (spring 2023 exam), a four-function calculator is allowed on both sections of the exam.** The details of the exam, including exam weighting and timing, can be found below:

Section	Question Type	Number of Questions	Exam Weighting	Timing
I	Multiple-choice questions	60	66.65%	70 minutes
II	Free-response questions	3	33.35%	60 minutes (includes a 10-minute reading period)
	Question 1: Long (10 points)			
	Question 2: Short (5 points)			
	Question 3: Short (5 points)			

## The exam assesses content from the four big ideas for the course:

**Big Idea 1:** Economic Measurements

**Big Idea 2:** Markets

**Big Idea 3:** Macroeconomic Models

**Big Idea 4:** Macroeconomic Policies

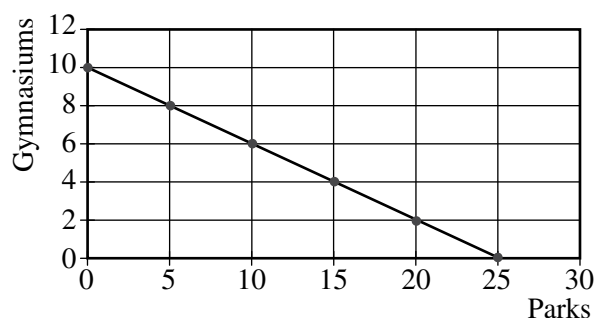
# Sample Exam Questions

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The sample exam questions that follow illustrate the relationship between the course framework and the AP Macroeconomics Exam and serve as examples of the types of questions that appear on the exam. After the sample questions are tables that show which skill, learning objective(s), and unit each question relates to. The answers to the multiple-choice questions are also provided.

## Section I: Multiple-Choice

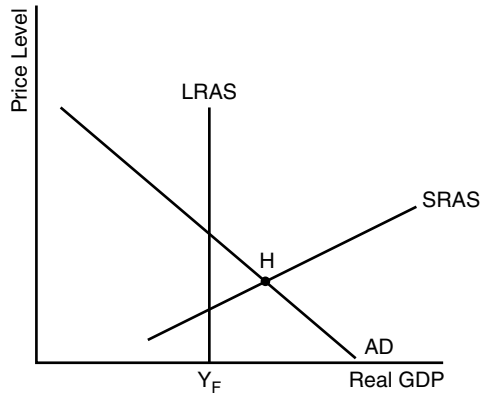
The following are examples of the kinds of multiple-choice questions found on the exam.



- The graph above shows the production possibilities curve for a small township that is deciding to build parks and gymnasiums. Which of the following combinations of parks and gymnasiums is unattainable given the township's available resources?
  - 5 parks and 6 gymnasiums
  - 5 parks and 8 gymnasiums
  - 10 parks and 6 gymnasiums
  - 15 parks and 4 gymnasiums
  - 20 parks and 4 gymnasiums
- Which of the following changes would result in an indeterminate change in the equilibrium price in a perfectly competitive market?
  - An increase in demand and a decrease in supply
  - An increase in demand and an increase in supply
  - A decrease in demand and an increase in supply
  - A decrease in demand with no change in supply
  - A decrease in supply with no change in demand

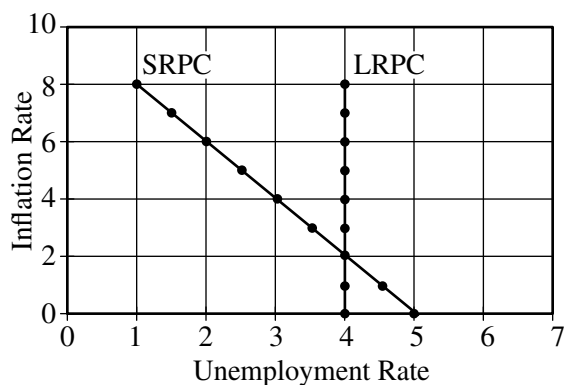
3. Which of the following is accounted for in the calculation of a country's gross domestic product?
- (A) Sales of stocks and bonds
  - (B) Changes in inventories
  - (C) Changes in product quality
  - (D) The underground economy
  - (E) Nonmarket activities
4. The population of Country X is 250,000, and the labor force is 200,000 people. If 175,000 people are employed, what is the unemployment rate?
- (A) 10%
  - (B) 12.5%
  - (C) 20%
  - (D) 80%
  - (E) 87.5%
5. Which of the following will happen if the government raises both taxes and spending by \$100 million and the marginal propensity to consume is 0.8?
- (A) Real GDP will decrease by a maximum of \$500.
  - (B) Real GDP will decrease by a maximum of \$400.
  - (C) Real GDP will increase by a maximum of \$100.
  - (D) Real GDP will increase by a maximum of \$400.
  - (E) Real GDP will increase by a maximum of \$500.
6. Which of the following would lead to an increase in nominal interest rates?
- (A) An expansionary monetary policy accompanied by an increase in the demand for money
  - (B) An expansionary monetary policy accompanied by a decrease in the demand for money
  - (C) An expansionary monetary policy conducted without any change in the demand for money
  - (D) A contractionary monetary policy accompanied by an increase in the demand for money
  - (E) A contractionary monetary policy accompanied by a decrease in the demand for money





7. A country's economy is in equilibrium at point H. Which of the following policies would be most effective to reduce the price level in the short run?
- (A) Increasing the minimum wage
  - (B) Increasing government expenditures
  - (C) Increasing interest on reserves
  - (D) Decreasing the required reserve ratio
  - (E) Decreasing income tax rates
8. Country H's current domestic output is lower than its potential domestic output. Assume that the central bank now decreases its administered interest rates. What will be the short-run effects of the central bank's action on cyclical unemployment and real income?
- (A) Cyclical unemployment will increase, and real income will increase.
  - (B) Cyclical unemployment will increase, and real income will decrease.
  - (C) Cyclical unemployment will remain the same, and real income will increase.
  - (D) Cyclical unemployment will remain the same, and real income will decrease.
  - (E) Cyclical unemployment will decrease, and real income will increase.
9. An increase in the demand for loanable funds could be best explained by which of the following?
- (A) A decrease in investment spending.
  - (B) An increase in the government's budget surplus.
  - (C) An increase in firms' optimism about the future performance of the country's economy.
  - (D) Domestic investors seeking higher returns by investing in foreign financial assets.
  - (E) An increase in political instability in the country.

10. If both contractionary monetary policy and contractionary fiscal policy are carried out, what will most likely happen to interest rates and real gross domestic product (GDP) in the short run?
- (A) Both interest rates and real GDP will increase.
  - (B) Both interest rates and real GDP will decrease.
  - (C) Interest rates will decrease, and real GDP will stay the same.
  - (D) Interest rates will increase, and real GDP will decrease.
  - (E) Real GDP will decrease, and the change in interest rates will be indeterminate.
11. If an economy is currently in a recessionary gap, which of the following changes would result in an increase in real GDP in the short run and a decrease in the price level in the long run?
- (A) The government begins running a budget surplus.
  - (B) There is an increase in real interest rates.
  - (C) The government increases income tax rates.
  - (D) There is an increase in the prices of the economy's productive resources.
  - (E) There is an increase in the productivity of the economy's resources.
12. If the government offers a tax credit to businesses, what will be the most likely effects of this action?
- (A) A decrease in consumption spending, an increase in aggregate demand, and an increase in real output
  - (B) An increase in consumption spending, a decrease in aggregate demand, and a decrease in real output
  - (C) An increase in investment spending, an increase in the capital stock, and an increase in real output
  - (D) A decrease in investment spending, a decrease in the capital stock, and an increase in real output
  - (E) A decrease in government spending, a decrease in aggregate demand, and a decrease in real output
13. If an economy experiences an improvement in technology, what will happen to its production possibilities curve (PPC) and its long-run aggregate supply (LRAS) curve?
- (A) Both curves shift inward.
  - (B) Both curves shift outward.
  - (C) The PPC shifts inward, and the LRAS curve stays the same.
  - (D) The PPC shifts outward, and the LRAS curve shifts inward.
  - (E) The PPC stays the same, and the LRAS curve shifts outward.



14. The diagram above shows the short-run Phillips curve (SRPC) and the long-run Phillips curve (LRPC) for an economy. If the rate of inflation is currently 6%, what is the current unemployment rate?
- (A) The current unemployment rate is 1%.  
 (B) The current unemployment rate is 2%.  
 (C) The current unemployment rate is 3%.  
 (D) The current unemployment rate is 4%.  
 (E) The current unemployment rate is 5%.
15. If the United States budget deficit increases, what will most likely happen to the United States dollar in the foreign exchange market?
- (A) It will appreciate because interest rates will increase.  
 (B) It will depreciate because interest rates will decrease.  
 (C) It will appreciate because interest rates will decrease.  
 (D) It will depreciate because interest rates will increase.  
 (E) It will not change because changes in the government budget have no effect on the exchange rate.

## Section II: Free-Response

The following are examples of the kinds of free-response questions found on the exam. Note that on the actual AP Exam, there will be one long free-response question worth 10 points and two short free-response questions, each worth 5 points.

1. Assume that the country of Zeetoland is in short-run equilibrium. The expected inflation rate is 4 percent, the actual rate of unemployment is 5 percent, the natural rate of unemployment is 6 percent, and the equilibrium real interest rate is 3 percent.
- (a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Zeetoland, 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 no policy action is taken to address the output gap in Zeetoland. Explain how the economy will adjust to full employment in the long run.
- (c) Assume instead that the central bank is concerned about the buildup of inflationary pressures in Zeetoland and is considering taking action to fight inflation. Assuming the banking system in Zeetoland has ample reserves, identify one monetary policy action the central bank would likely take.
- (d) How would the monetary policy action identified in part (c) affect each of the following in the short run?
  - (i) The price of previously issued bonds in Zeetoland
  - (ii) Real output in Zeetoland. Explain.
  - (iii) Net financial capital flows to Zeetoland. Explain.
- (e) Draw a correctly labeled graph of the foreign exchange market for Zeetoland's currency, the zeet, and show the effect of the monetary policy action identified in part (c) on the demand and the exchange rate for the zeet.
- (f) Based on the change in the value of the zeet shown in part (e), what will happen to Zeetoland's exports? Explain.

2. The table shows macroeconomic statistics for the country of Fehran.

Year	Nominal GDP	Tax Revenues	Government Outlays	Consumption Spending	Population	GDP Deflator
2011	\$150,000	\$25,000	\$25,000	\$75,000	100	100
2012	\$225,000	\$30,000	\$35,000	\$100,000	120	125

- (a) Using the data in the table, calculate each of the following and show your work.
  - (i) Fehran's real GDP in 2012
  - (ii) The inflation rate in Fehran from 2011 to 2012
- (b) Fehran is the only producer and exporter of electric vehicles. Assume the price level among Fehran's trading partners remains the same and the inflation rate calculated in part (a)(ii) is reflective of price changes for electric vehicles. As a result of the change in the relative price level, would foreign importers buy more or fewer electric vehicles from Fehran in 2012 compared to 2011? Explain.
- (c) Did the standard of living of the average person in Fehran increase, decrease, or stay the same between 2011 and 2012? Explain.
- (d) What effect will the changes in Fehran's government budget between 2011 and 2012 have on Fehran's national debt? Explain.

# Answer Key and Question Alignment to Course Framework

Multiple-Choice Question	Answer	Skill	Learning Objective	Unit
1	E	2.C	MOD-1.B	1
2	B	2.B	MKT-2.G	1
3	B	1.A	MEA-1.A	2
4	B	1.C	MEA-1.C	2
5	C	3.C	MOD-2.B, POL-1.A	3
6	D	2.B	POL-1.D, MKT-3.D	4
7	C	2.A	POL-1.D	4
8	E	3.A	POL-1.D	4
9	C	2.A	MKT-4.E	4
10	E	3.A	POL-1.F	5
11	E	2.A	MEA-2.B	5
12	C	3.A	POL-4.A	5
13	B	3.A	MOD-1.C	5
14	B	2.C	MOD-3.A	5
15	A	3.B	MKT-4.E, MKT-5.E	6

Free-Response Question	Question Type	Learning Objectives	Unit
1	Long	MOD-2.G, MOD-2.I, POL-1.D, MEA-3.A, MKT-5.G, MKT-5.C, MKT-5.E, MKT-5.F	3, 4, 6
2	Short	MEA-1.J, MEA-1.F, MOD-2.A, MEA-1.I, POL-3.B	2, 3, 5

The scoring information for the questions within this course and exam description, along with further exam resources, can be found on the [AP Macroeconomics Exam Page](#) on AP Central.



# Scoring Guidelines

## Question 1: Long

1. Assume that the country of Zeetoland is in short-run equilibrium. The expected inflation rate is 4 percent, the actual rate of unemployment is 5 percent, the natural rate of unemployment is 6 percent, and the equilibrium real interest rate is 3 percent.
  - (a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Zeetoland, 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 no policy action is taken to address the output gap in Zeetoland. Explain how the economy will adjust to full employment in the long run.
  - (c) Assume instead that the central bank is concerned about the buildup of inflationary pressures in Zeetoland and is considering taking action to fight inflation. Assuming the banking system in Zeetoland has ample reserves, identify one monetary policy action the central bank would likely take.
  - (d) How would the monetary policy action identified in part (c) affect each of the following in the short run?
    - (i) The price of previously issued bonds in Zeetoland
    - (ii) Real output in Zeetoland. Explain.
    - (iii) Net financial capital flows to Zeetoland. Explain.
  - (e) Draw a correctly labeled graph of the foreign exchange market for Zeetoland's currency, the zeet, and show the effect of the monetary policy action identified in part (c) on the demand and the exchange rate for the zeet.
  - (f) Based on the change in the value of the zeet shown in part (e), what will happen to Zeetoland's exports? Explain.

# Scoring Guidelines for Question 1: Long

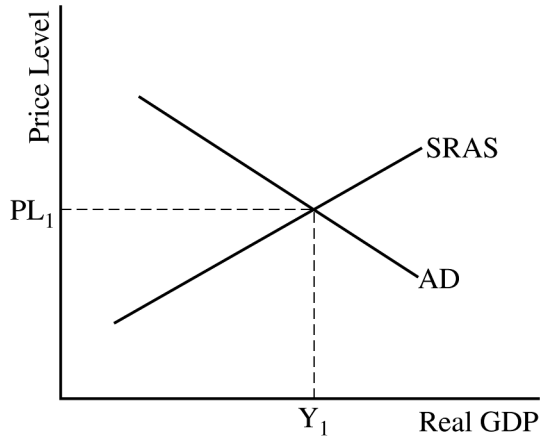
10 points

**Learning Objectives:** MOD-2.G MOD-2.I POL-1.D MEA-3.A MKT-5.G MKT-5.C MKT-5.E MKT-5.F

- (a) Draw a correctly labeled aggregate demand-aggregate supply graph that shows  $PL_1$  and  $Y_1$  at the intersection of AD and SRAS.

1 point  
4.A

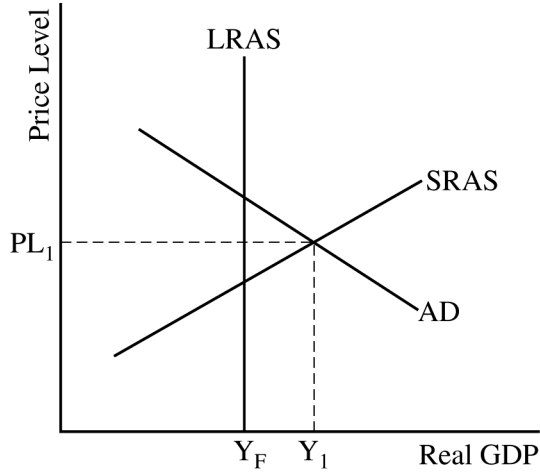
Task type: Create graphs or visual representations



For the second point, the graph must show a vertical LRAS curve to the left of  $Y_1$  and label the full employment output  $Y_F$ .

1 point  
4.B

Task type: Create graphs or visual representations



**Total for part (a) 2 points**

**(b)** Explain that short-run aggregate supply will decrease in the long run as a result of an increase in nominal wages, input prices, and/or inflationary expectations. **1 point**  
*Task type: Explain* **3.A**

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**(c)** State that the central bank would increase its administered interest rates (e.g., increase interest on reserves). **1 point**  
*Task type: Make assertions* **2.A**

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**(d)** (i) State that the price of previously issued bonds in Zeetoland would decrease. **1 point**  
*Task type: Make assertions* **3.A**

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(ii) State that real output in Zeetoland would decrease and explain that the increase in nominal interest rates in Zeetoland would decrease interest-sensitive consumption and investment spending and decrease aggregate demand. **1 point**  
*Task type: Explain* **3.A**

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(iii) State that Zeetoland will experience net financial capital inflows and explain that higher interest rates in Zeetoland will attract financial capital from other countries. **1 point**  
*Task type: Explain* **3.B**

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**Total for part (d)** **3 points**

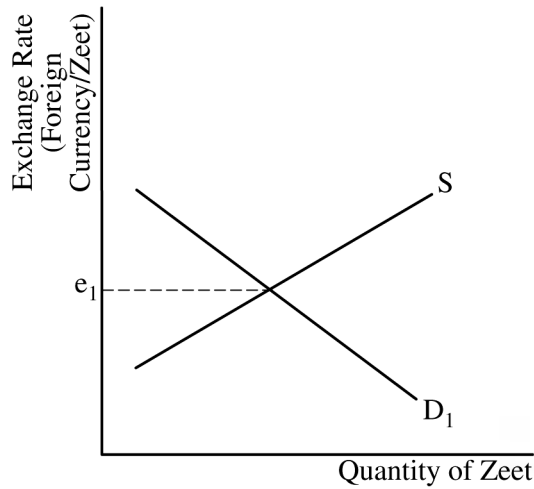


(e) Draw a correctly labeled graph of the foreign exchange market for the zeet.

1 point

Task type: Create graphs or visual representations

4.A

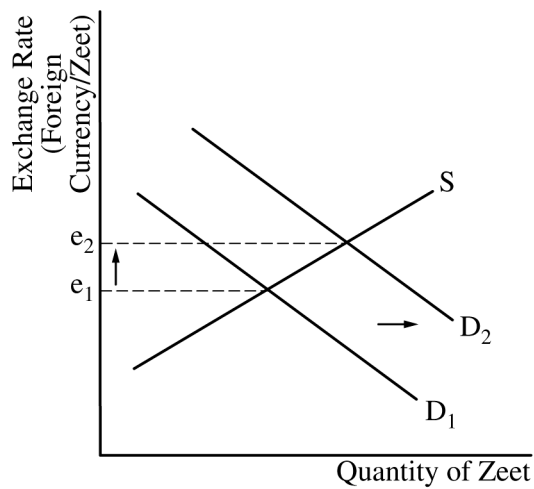


For the second point, the graph must show a rightward shift in the demand curve for the zeet and an increase in the exchange rate (an appreciation in the currency).

1 point

Task type: Create graphs or visual representations

4.C



Total for part (e) 2 points

(f) State that Zeetoland's exports will decrease and explain that the appreciation of the zeet will make Zeetoland's goods and services relatively more expensive than other countries' goods and services.

1 point

Task type: Explain

3.A

Total for question 1 10 points

## Question 2: Short

2. The table shows macroeconomic statistics for the country of Fehran.

Year	Nominal GDP	Tax Revenues	Government Outlays	Consumption Spending	Population	GDP Deflator
2011	\$150,000	\$25,000	\$25,000	\$75,000	100	100
2012	\$225,000	\$30,000	\$35,000	\$100,000	120	125

- (a) Using the data in the table, calculate each of the following and show your work.
- Fehran's real GDP in 2012
  - The inflation rate in Fehran from 2011 to 2012
- (b) Fehran is the only producer and exporter of electric vehicles. Assume the price level among Fehran's trading partners remains the same and the inflation rate calculated in part (a)(ii) is reflective of price changes for electric vehicles. As a result of the change in the relative price level, would foreign importers buy more or fewer electric vehicles from Fehran in 2012 compared to 2011? Explain.
- (c) Did the standard of living of the average person in Fehran increase, decrease, or stay the same between 2011 and 2012? Explain.
- (d) What effect will the changes in Fehran's government budget between 2011 and 2012 have on Fehran's national debt? Explain.

## Scoring Guidelines for Question 2: Short

5 points

**Learning Objectives:** **MEA-1.J** **MEA-1.F** **MOD-2.A** **MEA-1.I** **POL-3.B**

- (a) (i) Calculate Fehran's real GDP in 2012 as \$180,000 and show your work. **1 point**  
 $(\$225,000/125) \times 100 = \$180,000$   
*Task type: Perform numerical analysis* **1.C**

- (ii) Calculate the inflation rate in Fehran from 2011 to 2012 as 25% and show your work. **1 point**  
 $[(125-100) / 100] \times 100 = 25\%$   
*Task type: Perform numerical analysis* **1.C**

**Total for part (a)** **2 points**

- (b) State that foreign importers of electric vehicles will buy fewer electric vehicles from Fehran in 2012 and explain that electric vehicles in Fehran are relatively more expensive as a result of the increase in the price level. **1 point**  
*Task type: Explain* **2.C**

- (c) State that the standard of living of the average person in Fehran stayed the same and explain that real GDP per capita did not change from 2011 to 2012 or that it stayed at \$1,500. **1 point**  
*Task type: Explain* **2.C**

- (d) State that Fehran's national debt will increase and explain that government outlays are greater than taxes and a government adds to the national debt when it runs a budget deficit. **1 point**  
*Task type: Explain* **3.C**

**Total for question 2** **5 points**

## Big Idea 4: Macroeconomic Policies (POL) *cont'd*

### Enduring Understanding

### Learning Objective

### Essential Knowledge

#### **POL-1**

*Fiscal and monetary policy have short-run effects on macroeconomic outcomes.*

#### **POL-1.D**

- Define monetary policy and related terms.
- Explain (using graphs as appropriate) the short-run effects of a monetary policy action.
- Calculate (using data and balance sheets as appropriate) the effects of a monetary policy action.

#### **POL-1.D.1**

Central banks implement monetary policies to achieve macroeconomic goals, such as price stability.

#### **POL-1.D.2**

The tools of monetary policy may include the central bank's discount rate and other administered interest rates (e.g., interest on reserves), open market operations, and the required reserve ratio. The tools used and the way in which they are implemented differ between economies that have limited reserves in their banking system and economies that have ample reserves in their banking system. (The banking system in the United States has ample reserves, and the Federal Reserve's key policy tool is interest on reserves.)

#### **POL-1.D.3**

When the central bank conducts an open-market purchase (sale), reserves increase (decrease), thereby increasing (decreasing) the monetary base.

#### **POL-1.D.4**

When the central bank conducts an open-market purchase (sale) in an economy with limited reserves, the effect on the money supply is greater than the effect on the monetary base because of the money multiplier.

#### **POL-1.D.5**

Many central banks carry out policy to hit a target range for an overnight interbank lending rate, sometimes referred to as the central bank's policy rate. (In the United States, this is the federal funds rate.)

#### **POL-1.D.6**

Central banks can influence the nominal interest rate in the short run, which in turn will affect investment and consumption. [See also EK MKT-5.G.2 for the influence on net capital inflows.] In an economy with limited reserves, the central bank can influence the nominal interest rate by changing the money supply. In an economy with ample reserves, changes in the money supply do not effectively change the nominal interest rate; instead, the central bank can influence the nominal interest rate by changing its administered interest rates.

#### **POL-1.D.7**

Expansionary or contractionary monetary policies are used to restore full employment when the economy is in a negative (i.e., recessionary) or positive (i.e., inflationary) output gap.

#### **POL-1.D.8**

Monetary policy can influence interest rates, aggregate demand, real output, and the price level. [See also EK MKT-5.E.3 for the effect on exchange rates.]

#### **POL-1.D.9**

A money market model, a reserve market model, and/or the AD-AS model may be used to demonstrate the short-run effects of monetary policy.

*continued on next page*

## Big Idea 4: Macroeconomic Policies (POL) *cont'd*

### Enduring Understanding

### Learning Objective

### Essential Knowledge

#### **POL-1**

*Fiscal and monetary policy have short-run effects on macroeconomic outcomes.*

#### **POL-1.E**

Define why there are lags to monetary policy.

#### **POL-1.E.1**

In reality, there are lags to monetary policy caused by the time it takes to recognize a problem in the economy and the time it takes the economy to adjust to the policy action.

#### **POL-1.F**

Explain (using graphs as appropriate) the effects of combined fiscal and monetary policy actions.

#### **POL-1.F.1**

A combination of expansionary or contractionary fiscal and monetary policies may be used to restore full employment when the economy is in a negative (i.e., recessionary) or positive (i.e., inflationary) output gap.

#### **POL-1.F.2**

A combination of fiscal and monetary policies can influence aggregate demand, real output, the price level, and interest rates. [For additional details on fiscal and monetary policy actions and how to demonstrate their effects graphically, see LO POL-1.A and LO POL-1.D.]

#### **POL-2**

*The banking system plays an important role in the expansion of the money supply.*

#### **POL-2.A**

- Define key terms related to the banking system and the expansion of the money supply.
- Explain how the banking system creates and expands the money supply.
- Calculate (using data and balance sheets as appropriate) the effects of changes in the banking system.

#### **POL-2.A.1**

Depository institutions (such as commercial banks) organize their assets and liabilities on balance sheets.

#### **POL-2.A.2**

Depository institutions operate using fractional reserve banking.

#### **POL-2.A.3**

Banks' reserves are divided into required reserves and excess reserves.

#### **POL-2.A.4**

Excess reserves are the basis of expansion of the money supply by the banking system.

#### **POL-2.A.5**

The money multiplier is the ratio of the money supply to the monetary base.

#### **POL-2.A.6**

The size of expansion of the money supply depends on the money multiplier.

#### **POL-2.A.7**

The maximum value of the money multiplier can be calculated as the reciprocal of the required reserve ratio.

#### **POL-2.A.8**

The amount predicted by the simple money multiplier may be overstated because it does not take into account a bank's desire to hold excess reserves or the public holding more currency.

*continued on next page*

# **Appendix: AP Macroeconomics Graphs and Visuals**

# AP Macroeconomics Graphs and Visuals

Students are expected to model economic situations using graphs or visual representations throughout the AP Macroeconomics course. The pages that follow identify the graphs and visuals that are required on the AP Macroeconomics Exam along with the associated learning objectives. One illustrative example of the set-up of each graph or visual is provided for reference; however, it is only one example and students are expected to do more than simply set up a graph or visual on the AP Macroeconomics Exam. As the AP Economics Skills outline, students must be able to demonstrate their understanding of specific economic situations on accurately labeled graphs (e.g., via properly labeled and placed points and curves) and demonstrate the effect of changes on accurately labeled graphs or visuals (e.g., via properly labeled shifts in curves, new quantities and/or prices, and arrows indicating the direction of change). Students must also be able to interpret and manipulate provided graphs and visuals representing different economic situations. To access past AP Exam questions and formative practice questions that use graphs or visual representations, teachers can visit the AP Question Bank on [AP Classroom](#) and filter questions by stimulus, skill, topic, and other criteria.

## Draw and Analyze Provided Graphs and Visuals

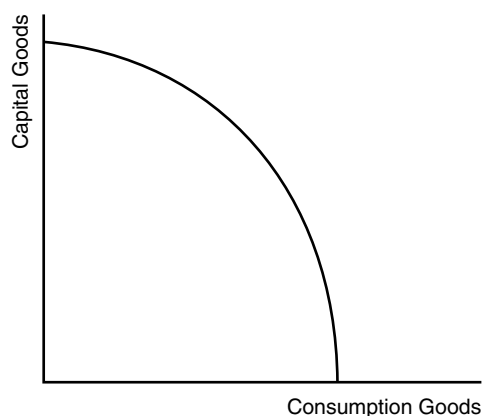
The following graphs and visuals are relevant in the context of both the multiple-choice and free-response sections of the AP Macroeconomics exam. This means that students should be able to answer questions about a provided graph or visual of each of the following models and be able to draw a graph or visual themselves using each of the following models.

### THE PRODUCTION POSSIBILITIES CURVE MODEL

*Associated Learning Objectives*

**MOD-1.B** **MKT-1.A** **MKT-1.B** **MOD-2.F** **MOD-1.C** **POL-4.A**

*Example*

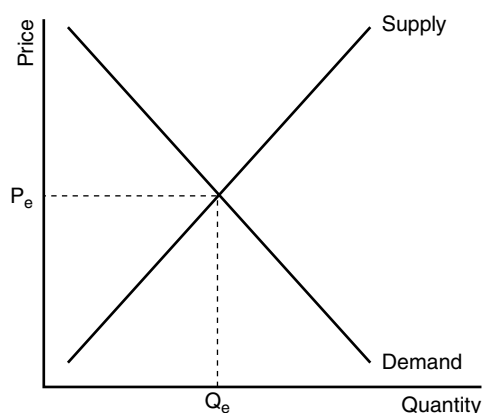


### DEMAND AND SUPPLY

*Associated Learning Objectives*

**MKT-2.A** **MKT-2.B** **MKT-2.C** **MKT-2.D** **MKT-2.E** **MKT-2.F** **MKT-2.G**

*Example*

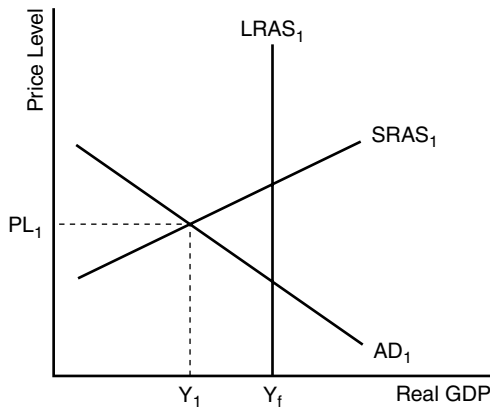


## THE AGGREGATE DEMAND-AGGREGATE SUPPLY (AD-AS) MODEL

Associated Learning Objectives

**MEA-2.A** **MOD-2.A** **MOD-2.C** **MOD-2.D** **MOD-2.E** **MOD-2.F** **MOD-2.G** **MOD-2.H** **MOD-2.I** **POL-1.A** **POL-1.D** **POL-1.F**  
**POL-3.A** **MEA-2.B** **MOD-1.C** **POL-4.A** **MKT-5.F**

Example



## BALANCE SHEETS (T-ACCOUNTS)

Associated Learning Objectives

**POL-2.A** **POL-1.D**

Example

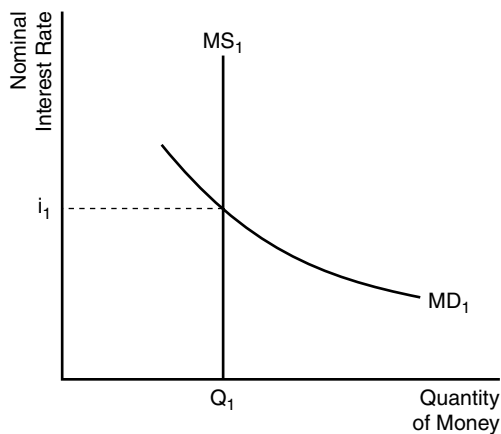
Bank A			
Assets		Liabilities	
Required reserves	\$10,000	Demand deposits	\$100,000
Excess reserves	\$5,000		
Loans	\$85,000	Owner's equity	\$0

## THE MONEY MARKET

Associated Learning Objectives

**MKT-3.A** **MKT-3.B** **MKT-3.C** **MKT-3.D** **POL-1.D** **POL-1.F**

Example



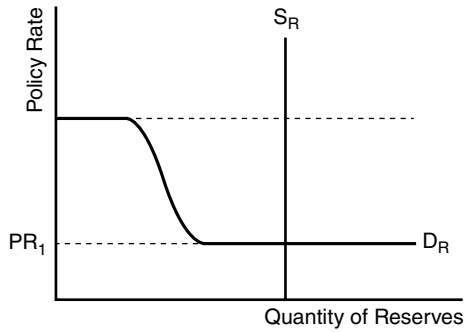


## THE RESERVE MARKET

Associated Learning Objectives

**POL-1.D** **POL-1.F**

Example

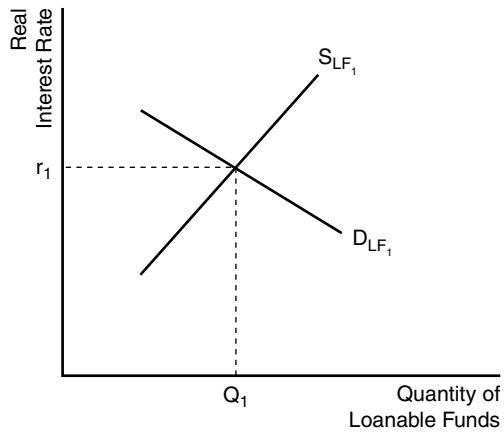


## THE LOANABLE FUNDS MARKET

Associated Learning Objectives

**MKT-4.A** **MKT-4.C** **MKT-4.D** **MKT-4.E** **POL-3.C** **MKT-5.G**

Example

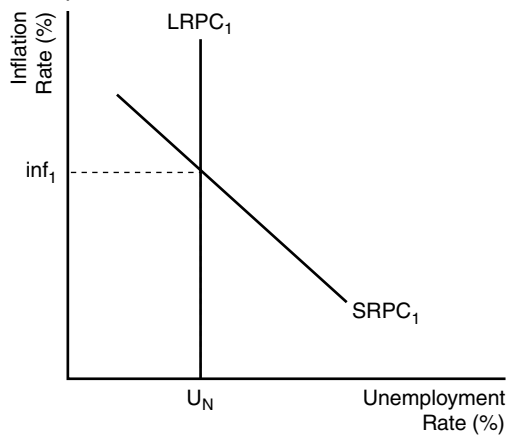


## THE PHILLIPS CURVE MODEL

Associated Learning Objectives

**MEA-2.A** **MOD-3.A** **MOD-3.B** **POL-3.A**

Example

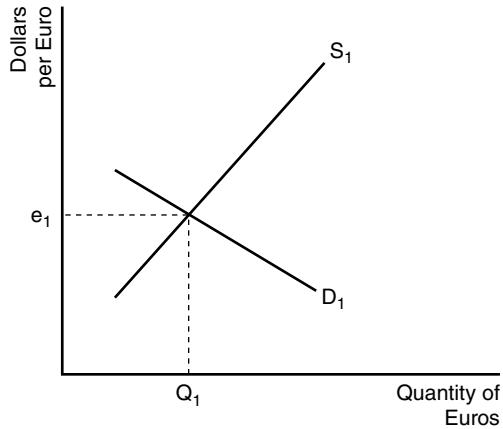


## THE FOREIGN EXCHANGE MARKET

Associated Learning Objectives

**MKT-5.B** **MKT-5.C** **MKT-5.D** **MKT-5.E** **MKT-5.F** **MKT-5.G**

Example



## Analyze Provided Graphs and Visuals

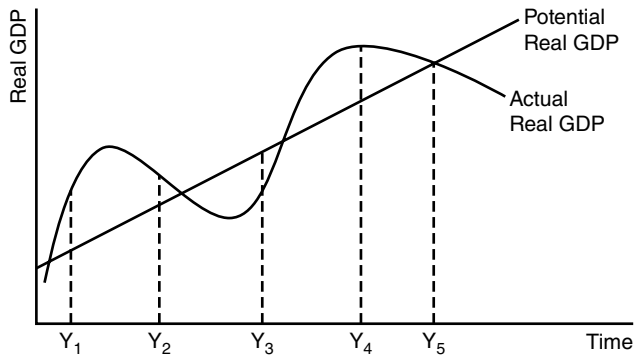
Students will not be expected to draw the following graphs and visuals themselves on the free-response section of the AP Macroeconomics Exam, but students should be prepared to answer multiple-choice questions in which the following graphs and visuals are provided or referenced.

### BUSINESS CYCLE GRAPH

Associated Learning Objectives

**MEA-2.A**

Example

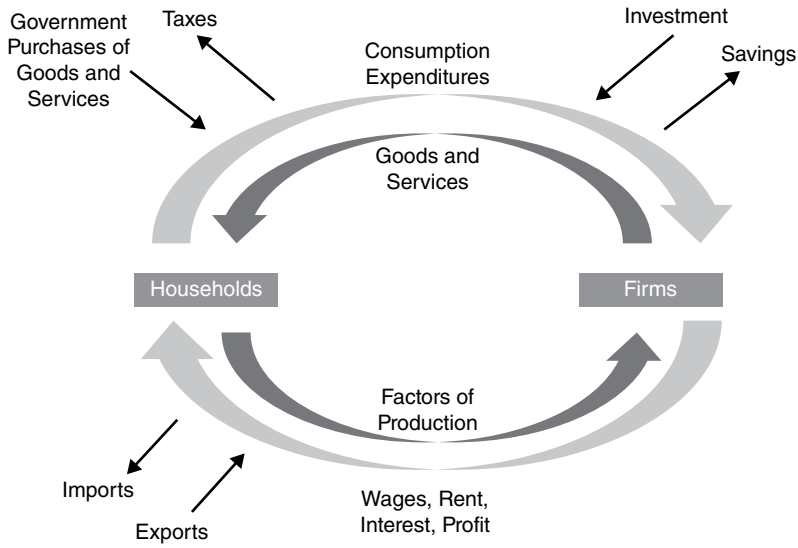


## THE CIRCULAR FLOW MODEL

Associated Learning Objectives

**MEA-1.A**

Example



## THE AGGREGATE PRODUCTION FUNCTION

Associated Learning Objectives

**MEA-2.B POL-4.A**

Example

