

# The Fed's Toolbox

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## Standards and Benchmarks (see page 36)

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## Lesson Description

In this lesson, students learn that the Federal Reserve System (the Fed) uses its monetary policy tools to influence the level of reserves in the banking system. Students participate in a simulation to demonstrate how the Fed uses open market operations to achieve its dual mandate of price stability and maximum employment. Students also learn about other monetary tools: the discount rate, reserve requirements, and interest on reserves, a recent monetary policy tool. Finally, students apply their knowledge of monetary policy to suggest possible Federal Reserve policy responses to proposed economic conditions.

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## Compelling Question

What tools does the Federal Reserve System have at its disposal?

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## Grade Level

9-12

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## Concepts

- Bank reserves
- Discount rate
- Dual mandate
- Federal funds rate
- Federal Reserve System
- Interest
- Interest on reserves
- Interest rate
- Monetary policy
- Open market operations
- Reserve requirements

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## Objectives

Students will be able to

- identify monetary policy tools available to the Federal Reserve System;
  - describe the relationship between bank reserves, interest rates, and the economic goals of maximum employment and price stability;
  - describe the key components of the Federal Reserve's dual mandate;
  - identify the ways in which monetary policy tools can be used to achieve economic objectives; and
  - analyze policy strategies given economic conditions.
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## Time Required

60-75 minutes

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## Materials

- Handout 1, one copy for each student
  - Handout 2, one copy on red paper (color is optional) cut apart
  - Handout 3, one copy on green paper (color is optional) cut apart
  - Handout 4, one copy on yellow paper (color is optional) cut apart
  - Handout 5, one copy cut apart
  - Handout 6, one copy cut apart
  - Handout 7, one copy for the treasurer in the role play
  - Handout 8, one copy for each student
  - Visuals 1 to 8 or the Fed's Toolbox PowerPoint Slides 1 to 8
  - Red and green colored pencils for each student
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## Procedure

1. Begin the lesson by asking students the following questions:
  - Do you have a savings account? (*Answers will vary.*)
  - How about a checking account? (*Answers will vary.*)
  - What do banks do with the money you deposit? (*Answers will vary.*)
2. Tell the students that today they will learn more about banks and that some of them will act as bankers during the lesson. Tell students that two of the most important functions of a bank are to accept deposits and make loans. When consumers and businesses

make deposits, these deposits create **bank reserves**. A bank must have reserves in order to make loans.

3. Display *Visual/Slide 1: Vocabulary* and distribute *Handout 1: Vocab Note-Taking Guide* as a note-taking organizer for students. Tell students they are to complete Handout 1 throughout the lesson using information from the next two slides and class discussion. Specifically, they are to define the terms in their own words. Explain the following:
  - Bank reserves are created when a bank accepts deposits.
  - Specifically, bank reserves are the sum of cash banks hold in their vaults and the deposits they maintain with Federal Reserve Banks.
  - The Federal Reserve requires banks to keep a fraction of deposits in reserve. These are called **required reserves**.
  - Reserves in excess of a bank's required reserves balance are called **excess reserves**. The amount of excess reserves a bank has available determines how many loans it can make.
4. Banks make loans to earn profits. Banks pay depositors **interest** for their deposits and lend to borrowers at a higher **interest rate** with the expectation of earning profit. Ask the students the following questions:
  - What would happen if a bank wanted to make a loan but did not have enough excess reserves to do so? (*Answers will vary.*)
5. Display *Visual/Slide 2: Vocabulary* and read the definitions and then explain the following:
  - Banks might want to make a loan they think will be profitable. If they do not have enough excess reserves to make the loan, they can choose to borrow excess reserves from another bank in the federal funds market.
  - The **federal funds market** is the market in which banks can borrow or lend reserves, allowing banks temporarily short of their required reserves to borrow from banks that have excess reserves.
  - As with any loan, the price the borrower pays is an *interest rate*. The interest rate that banks pay for short-term loans from other banks is the **federal funds rate**.
  - In addition to borrowing from other banks, banks can also borrow reserves from the **Federal Reserve System**, which is also called the Federal Reserve or simply the Fed.
  - The Federal Reserve System is the **central bank** system of the United States.
  - The Fed serves as the "bankers' bank" for U.S. banks.
6. Display *Visual/Slide 3: Monetary Policy Tools* and explain the following about the first two **monetary policy** tools (the other two are discussed later in the lesson):

- Monetary policy consists of the actions of a central bank to influence the cost and availability of money and credit to achieve the national economic goals. As just noted, our central bank is the Federal Reserve.
- The **discount rate** is a monetary policy tool of the Fed. The discount rate is the interest rate charged by the Federal Reserve to banks for loans. The Fed is known as the “lender of last resort” because banks can borrow from the Fed when other funding sources might not be available.
- By changing the discount rate, the Federal Reserve can influence other interest rates—for this reason, the discount rate is regarded as a “tool” the Federal Reserve uses as part of its monetary policy actions to influence the economy.
- The federal funds rate is usually lower than the discount rate, so it is in banks’ financial interests to borrow from other banks instead of the Fed.

*Teacher note: While the Federal Reserve offers other types of loans from the discount window, the term “discount rate” usually refers to the interest rate charged for primary credit. All discount window loans are fully secured; that is, banks provide collateral in the form of securities in order to receive a loan from the Fed.*

7. Explain to students that interest rates (like other prices) fluctuate. One factor affecting the price of a good is its supply. Ask the following:
  - If the demand for apples were to stay the same, but the number of apples that growers had available doubled, what would happen to the price of apples all else being equal? (*The price would decrease.*)
  - If the demand for apples were to stay the same, but the supply of apples were reduced by half, what would happen to the price of apples all else being equal? (*The price would increase.*)
8. Explain to students that what works for apples also works for bank reserves. Explain the following:
  - If the supply of reserves increases and all else stays the same, interest rates will decrease. If the supply of reserves decreases and all else stays the same, interest rates will increase.
  - The Federal Reserve uses **open market operations** to influence the supply of reserves, and thereby influence the price of borrowing money—the interest rate. More specifically, open market operations are the buying and selling of government securities by the Federal Reserve through primary dealers in order to influence the supply of reserves in the banking system. Open market operations are an important monetary policy tool.
9. Explain that the class will participate in a simulation to demonstrate how the Fed uses open market operations to influence the economy through interest rates.

10. Display *Visual/Slide 4: Classroom Layout* as a guide. Prepare for the simulation as follows:
  - Explain that all transactions during the simulation will begin with the Fed.
  - Select one student to serve as the treasurer. Give this student *Handout 7: Treasurer Balance Sheet* to calculate balances and help keep the balance sheet for the class. This student will also use *Visual/Slide 5: Banking System Balance Sheet* to display the tallied information to the class.
  - Select three students to play the roles of **primary dealers**.
  - Select six students to play the roles of investors, who will buy and sell securities through the primary dealers. Give each investor one government securities slip (from *Handout 2: Government Securities*) and an investor balance sheet (from *Handout 5: Investor and Federal Reserve Balance Sheets*).
  - Select six students to play the roles of banks. Give each bank a bank balance sheet (from *Handout 6: Bank Balance Sheets*) and 2 deposit slips (from *Handout 4: Deposit Slips*) that will serve as receipts for money deposited in the bank. Tell the bankers that a deposit is not to be recorded on the balance sheet until the investor is given a receipt—a deposit slip—for the deposit. After a deposit slip is given, the deposit is to be recorded as a liability on the bank balance sheet because the money is owed by the bank to the depositor.
  - The Federal Reserve (played by the teacher) needs 6 money/reserves slips (from *Handout 3: Money/Reserves*) and the Federal Reserve portfolio tracker (from *Handout 5: Investor and Federal Reserve Balance Sheets*).
  - Arrange the players into four single lines (see *Visual/Slide 4: Classroom Layout*): commercial bankers, investors, primary dealers, and the Fed).
  
11. Proceed with the simulation as follows:
  - Ask the bankers if they have any funds to lend. (*No, they have no funds.*) Tell them this represents the fact that the banks do not have the excess reserves necessary to make more loans.
  - Ask the treasurer to record (1) the initial total value of government securities held by investors and (2) the total value of securities held by the Federal Reserve and then post these numbers on *Visual/Slide 5* (or the classroom whiteboard) for the class to view:

<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$60,000	\$0	\$60,000
End of round 1			
End of round 2			

<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			

<b>Federal Reserve Portfolio Tracker</b>	<b>Government securities</b>
Initial	\$0
End of round 1	
End of round 2	

12. Tell the class that you represent the Federal Reserve System and you have a portfolio of government securities and money/reserves. You will conduct open market operations to influence the level of bank reserves, and therefore influence interest rates. Explain that the Federal Reserve will buy \$60,000 in government securities. Each security is worth \$10,000. Complete the transactions using the following steps:
- The Federal Reserve gives each primary dealer \$20,000 money/reserves slips and tells each dealer to buy one \$10,000 security from the portfolios of two investors. The primary dealers pay the investors with the money/reserves slips from the Federal Reserve.
  - The primary dealers deliver the securities to the Federal Reserve.
  - The investors turn to a banker and make a deposit. Each banker chosen gives the investor a deposit slip for the deposit of money/reserves.
  - All participants update their balance sheets with the changes and report the totals to the treasurer. The treasurer updates Visual/Slide 5 with the new totals:

Investor Balance Sheet	Assets (Securities)	Assets (Deposits)	Total assets (Securities + Deposits)
Initial	\$60,000	\$0	\$60,000
End of round 1	\$0	\$60,000	\$60,000
End of round 2			

Bank Balance Sheet	Assets (Money/Reserves)	Liabilities (Deposits)	Net assets (Assets – Liabilities)
Initial	\$0	\$0	\$0
End of round 1	\$60,000	\$60,000	\$0
End of round 2			

Federal Reserve Portfolio Tracker	Government securities
Initial	\$0
End of round 1	\$60,000
End of round 2	

13. Discuss the transactions with the following statements and questions:

- Notice that banks and investors have assets, something valuable that is owned with the expectation it will provide benefits in the future. In this example, a bank's assets include the loans it has made to customers and its reserves. For investors, assets include bank deposits and financial investments such as government securities.
- Typically a liability is money owed, or debt. In this case, the deposits banks hold are liabilities because they ultimately must be repaid to depositors.
- What happened to the level of reserves (the assets) in the banking system? (*The level of reserves in this banking system increased by \$60,000; the level of reserves increased by \$10,000 for each bank.*)
- What happened to the amount of liabilities at the banks (deposits for which they issued slips)? (*Liabilities [deposits owed to investors] increased by \$60,000 for the group, \$10,000 for each bank.*)

14. Redisplay *Visual/Slide 3: Monetary Policy Tools*. Remind students that the Federal Reserve has **reserve requirements** that require banks to hold a percentage of their deposits—either as cash in their vaults or on deposit at a Federal Reserve Bank. Discuss the following:
- Say the required reserves ratio is 10 percent. What amount must the banks as a group hold in reserve? (*\$6,000*)
  - How much is available for banks to loan to their customers? (*\$54,000*)
  - Imagine the Federal Reserve raised the required reserves ratio from 10 percent to 20 percent. What amount would banks then be required to keep in reserve? (*\$12,000*)
  - What amount would there be in excess reserves? (*\$48,000*)
  - So, the smaller amount of excess reserves available would likely reduce banks' ability to lend to customers and to other banks. This could lead to an increase in interest rates.
15. Explain to students that one way the Federal Reserve can influence the economy is by adjusting the amount of deposits banks must keep as required reserves. For this reason, changing reserve requirements is one of the monetary policy tools the Fed has available to influence the economy. Discuss the following:
- What happened to the investors' balance sheet? (*For the group, securities decreased by \$60,000 but deposits [assets for investors] increased by \$60,000, so the total remained the same. For each individual investor, securities decreased by \$10,000, but deposits increased by \$10,000.*)
  - What happened to the value of government securities on the Federal Reserve's balance sheet? (*Government securities increased by \$60,000.*)
16. Display *Visual/Slide 6: Expansionary Policy*. Use the following questions to discuss the impact of using open market operations to buy government securities:
- What happened to the level of reserves in the banking system after the Fed purchased government securities? (*The level of reserves increased.*) Note that some of the new reserves must be held as required reserves and the remaining are excess reserves.
  - What likely happens to interest rates when more excess reserves are available for loans in the banking system? (*With an increase in supply, interest rates will likely decrease.*)
  - If interest rates are lowered, how will consumers and businesses likely respond? (*Consumers will likely borrow more money to purchase goods and services. Businesses will likely borrow more money to expand.*)
  - If consumers buy more goods and services, how will producers likely respond? (*Producers will likely increase production of goods and services.*)



- How will an increase in production likely affect employment? (*As producers produce more goods and services, they will likely need additional workers; thus, employment will likely increase, which means the unemployment rate will likely decrease.*)
  - Where does the Fed get the reserves it uses to buy government securities? (*Because the Federal Reserve is the nation's monetary authority, the Fed can create the reserves necessary to accomplish its policy goals. The Fed can put new reserves into the system at will.*)
  - To summarize, how will lower interest rates impact production, employment, and inflation? (*Production and employment will likely increase, which may increase inflationary pressures over time.*)
17. Explain to the students that the Federal Reserve might find it necessary to improve economic conditions by using open market operations to decrease the level of reserves in the banking system. In this round of the simulation, the Federal Reserve will sell six government securities, each worth \$10,000, for a total sale of \$60,000. Complete the transactions using the following steps:
- The Federal Reserve gives each primary dealer two securities worth a total of \$20,000 and tells each primary dealer to sell one \$10,000 security to each of two investors.
  - The investors withdraw money from their banks by returning the deposit slips and receiving money/reserves slips.
  - The investors pay the primary dealers with the money/reserves slips.
  - The primary dealers pay the Federal Reserve with the money/reserves slips from the investors.
  - All participants update their balance sheets with the changes and report the new totals to the treasurer. The treasurer updates Visual/Slide 5 with the new totals:

Investor Balance Sheet	Assets (Securities)	Assets (Deposits)	Total assets (Securities + Deposits)
Initial	\$60,000	\$0	\$60,000
End of round 1	\$0	\$60,000	\$60,000
End of round 2	\$60,000	\$0	\$60,000

Bank Balance Sheet	Assets (Money/Reserves)	Liabilities (Deposits)	Net assets (Assets – Liabilities)
Initial	\$0	\$0	\$0
End of round 1	\$60,000	\$60,000	\$0
End of round 2	\$0	\$0	\$0

Federal Reserve Portfolio Tracker	Government securities
Initial	\$0
End of round 1	\$60,000
End of round 2	\$0

18. Discuss the transactions using the following questions:

- Where did the investors get the money/reserves needed to complete the transactions? (*They withdrew deposits they had at the banks.*)
- What happened to the level of money/reserves in the banking system? (*The level of reserves decreased by \$60,000, \$10,000 for each bank.*)
- How did the balance sheet for the banking system change as a result of the transactions? (*Both sides of the balance sheet decreased when deposits (liabilities) and money/reserves (assets) were distributed to the investors.*)
- What happened to the investors' balance sheet? (*For the group, securities increased by \$60,000, but deposits decreased by \$60,000, so the total remained the same. For each individual investor, securities increased by \$10,000, but deposits decreased by \$10,000.*)
- What happened to the Federal Reserve's balance sheet? (*The amount of government securities decreased by \$60,000.*)

19. Display *Visual/Slide 7: Contractionary Policy*. Use the following questions to discuss the impact of using open market operations to sell government securities:
- What happened to the level of reserves in the banking system after the Federal Reserve sold government securities? (*The level of reserves decreased.*)
  - What likely happens to interest rates when there are fewer excess reserves available for loans in the banking system? (*Interest rates will likely increase.*)
  - If interest rates are raised, how will consumers and businesses likely respond? (*Consumers and business will likely borrow less money and purchase fewer goods and services.*)
  - If consumers purchase fewer goods and services, how will producers likely respond? (*Producers will likely decrease their production of goods and services.*)
  - How will a decrease in production likely affect employment? (*As producers produce fewer goods and services, they will likely need fewer workers. Thus, employment will likely decrease, which means the unemployment rate will likely increase.*)
  - To summarize, how will higher interest rates likely affect production, employment, and inflation? (*Production and employment will likely decrease, decreasing inflationary pressure over time.*)
20. Display *Visual/Slide 8: Dual Mandate*. Explain to students that as the central bank of the United States, the Federal Reserve System is charged by Congress to work toward **price stability** and **maximum employment**. These two objectives are known as the **dual mandate** of monetary policy. Discuss the following:
- One objective of the dual mandate is price stability—a low and stable rate of inflation maintained over an extended period of time. The Fed has a longer-run goal of 2 percent inflation. Inflation might bounce around a bit, but over longer periods, the Fed believes it should average about 2 percent.
  - Display the FRED (Federal Reserve Economic Data) inflation graph (as measured by the consumer price index) at <http://research.stlouisfed.org/fred2/graph/?g=qby>.
  - What is the current inflation rate? (*Determine answer accuracy by checking the graph.*)
  - What is the general trend of the inflation rate? (*The inflation rate has moved around over time, but seems to trend between 1 and 3 percent.*)
  - Explain that economists sometimes define inflation as too much money chasing too few goods. Or, they say that inflation is caused when the money supply grows at a faster rate than the economy's ability to produce goods and services.
  - Given the Fed's ability to influence the level of reserves in the banking system, how do you think the Fed can provide price stability? (*Answers will vary.*)
  - During periods of high inflation, the Fed can sell government securities to reduce the reserves in the banking system. This will likely increase the federal funds rate

and other interest rates, and ultimately influence the willingness of people to borrow to purchase goods and services. Over time, increased interest rates will reduce the rate of inflation.

- The other objective of the dual mandate is maximum employment. The Fed does not have a specific unemployment goal, but it does regularly publish its forecast for the longer-run rate of unemployment. (See Federal Open Market Committee statements and economic projections at <http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm>.)
- From your experience in the simulation, how do you think the Fed can influence employment? (*The Fed can buy government securities to increase the level of reserves in the banking system. An increase in reserves will decrease the federal funds rate and ultimately influence the willingness of people to borrow to purchase goods and services. Over time, increased purchasing can increase employment and, thus, will most likely reduce the unemployment rate.*)

*Teacher note: Monetary policy can be effective at influencing employment in the short run, but in the long run, maximum employment is determined by the characteristics of the labor market that are nonmonetary in nature. As such, the Federal Reserve does not have a specific goal for the unemployment rate.*

21. Explain to the students that open market operations are the most-used tool in the Fed's monetary policy toolbox. Open market operations are usually carried out and measured in terms of the federal funds rate. For example, during periods of high inflation, the Federal Reserve might announce an increase in its target for the federal funds rate and then sell government securities. As the supply of reserves in the banking system decreases, the federal funds rate increases and moves toward the target rate. Alternatively, during recessions when unemployment is high, the Federal Reserve might announce a decrease in the federal funds rate target and then buy government securities. As the supply of reserves in the banking system increases, the federal funds rate decreases and moves toward the target rate. Discuss the following:
  - Does the Fed set the federal funds rate? (*No.*)
  - How does the Fed influence the federal funds rate? (*It announces a target for the federal funds rate and then uses open market operations to change the supply of reserves in the banking system to hit the target.*)
  - Does the Fed set the discount rate, the rate banks pay to borrow reserves from the Fed? (*Yes, the Fed sets the discount rate.*)
  - Is the discount rate usually higher or lower than the federal funds rate? (*The discount rate is usually higher.*)
22. Remind students that the Federal Reserve has four primary tools it can use to conduct monetary policy. The simulation demonstrates open market operations, the most important tool the Federal Reserve uses to influence the economy. However, the Federal

Reserve can also change the reserve requirement and the discount rate, mentioned earlier, to influence the economy. Although the Fed is able to change the reserve requirement, it seldom does. In fact, the last time the Fed changed the reserve requirement was 1992.

23. Redisplay Visual/Slide 3 and tell the students the Fed has fairly recently added a tool to its toolbox: **interest on reserves**. Interest on reserves is interest paid by the Federal Reserve on required and excess reserves held by banks at Federal Reserve Banks. While many central banks around the world paid interest on reserves for some time, this was a new tool for the Fed. Explain the following:
- Since 2008, the Federal Reserve has paid interest on reserve balances held at a Federal Reserve Bank. Both required and excess reserves can earn interest.
  - Banks can choose to either hold reserves on deposit at a Federal Reserve Bank and earn interest or use their excess reserves to make loans to businesses and individuals and charge interest.
  - The Federal Reserve can influence banks' decisions to hold reserves at the Fed or lend to customers by increasing or decreasing the interest rate paid on excess reserves.
24. Discuss contractionary monetary policy with the following questions:
- What would likely happen to the incentive for banks to lend money if the Federal Reserve were to increase the interest rate it pays on reserves? (*Banks would likely keep more money in excess reserves, reducing the amount they lend.*)
  - If banks were to lend less money, what would likely happen to the level of economic activity? (*Less bank lending would likely reduce the level of economic activity.*)
  - Why might the Fed want to reduce lending by banks? (*To reduce inflationary pressures*)
  - What part of the dual mandate might be the goal of this policy? (*Price stability*)
  - Would increasing the interest rate on reserves be expansionary or contractionary monetary policy? (*Contractionary*)
25. Discuss expansionary monetary policy with the following questions:
- What would happen to the incentive for banks to lend money if the Federal Reserve were to decrease the interest rate it pays on reserves? (*Banks would likely lend more money and keep fewer excess reserves.*)
  - If banks were to lend more money, what would likely to happen to the level of economic activity? (*More bank lending would likely increase the level of economic activity.*)
  - Why might the Fed engage in this policy? (*To stimulate economic expansion.*)

- What part of the dual mandate might be the short-run goal of this policy? (*Maximum employment*)
- Would decreasing the interest rate on reserves be expansionary or contractionary monetary policy? (*Expansionary*)

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## Closure

26. Use the activity and discussion questions below to review key information. Tell the students you are going to read headlines pertaining to monetary policy and they will answer questions with a thumbs-up or a thumbs-down.

### Headline: Unemployment Soars While Deflation Fears Grow

- Based on the headline, give a thumbs-up if the Federal Reserve should conduct expansionary policy or a thumbs-down if it should conduct contractionary monetary policy. (*Expansionary/thumbs-up*)
- Give a thumbs-up if the Fed should buy government securities or a thumbs-down if it should sell them. (*Buy/thumbs-up*)
- For each of the following scenarios, give a thumbs-up to signify an increase or a thumbs-down to signify a decrease.
  - If the Fed buys government securities, will the level of reserves in the banking system increase or decrease? (*Increase/thumbs-up*)
  - Will the federal funds rate likely increase or decrease? (*Decrease/thumbs-down*)
  - Will other interest rates likely increase or decrease? (*Decrease/thumbs-down*)
  - Will the quantity of new consumer and business loans likely increase or decrease? (*Increase/thumbs-up*)
  - Will new production of goods and services likely increase or decrease? (*Increase/thumbs-up*)
  - Will employment likely increase or decrease? (*Increase/thumbs-up*)
  - Will inflation likely increase or decrease? (*Increase/thumbs-up*)

### Headline: Prices Rising: Inflation Worries Grow

- Based on the headline, give a thumbs-up if the Federal Reserve should conduct expansionary or a thumbs-down if it should conduct contractionary monetary policy. (*Contractionary/thumbs-down*)
- Give a thumbs-up if Fed should buy government securities or a thumbs-down if it should sell them? (*Sell/thumbs-down*)
- For each of the following variables, give a thumbs-up to signify an increase or a thumbs-down to signify a decrease.

- If the Fed sells government securities, will the level of reserves in the banking system increase or decrease? (*Decrease/thumbs-down*)
  - Will the federal funds rate likely increase or decrease? (*Increase/thumbs-up*)
  - Will other interest rates likely increase or decrease? (*Increase/thumbs-up*)
  - Will the quantity of new consumer and business loans likely increase or decrease? (*Decrease/thumbs-down*)
  - Will new production of goods and services likely increase or decrease? (*Decrease/thumbs-down*)
  - Will employment likely increase or decrease? (*Decrease/thumbs-down*)
  - Will inflation likely increase or decrease? (*Decrease/thumbs-down*)
27. Distribute a copy of *Handout 8: The Flow of Money/Reserves* and a red and green colored pencil to each student. Review the directions with the students. After students have finished the activity, debrief using *Activity 8: The Flow of Money/Reserves—Answer Key* as a guide.

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## Assessment

28. Use the following optional assessment items: (1) multiple-choice questions to help prepare a unit or final test and/or (2) the constructed-response essay question.

### Multiple-Choice Questions

1. What is the name of the market in which banks can borrow or lend reserves, allowing banks temporarily short of their required reserves to borrow from banks that have excess reserves?
  - a. The bank reserve market
  - b. The federal funds market**
  - c. The excess reserves market
  - d. The required reserves market
  
2. Last week the Second Bank of Middleville borrowed reserves from the Federal Reserve's discount window. For the use of this money, the Second Bank of Middleville will now be required to pay which of the following rates?
  - a. The reserve rate
  - b. The discount rate**
  - c. The federal funds rate
  - d. The monetary rate

3. Assume the Second Bank of Middleville has \$100,000 in total deposits and has a required reserves ratio of 15 percent. How much does the Second Bank of Middleville have in excess reserves?
- a. \$15,000
  - b. \$85,000**
  - c. \$100,000
  - d. \$150,000
4. If the Federal Reserve purchases a total of \$50,000 in government securities through two different primary dealers, what will happen to the level of money/reserves in the banking system?
- a. Money/reserves will increase by \$50,000.**
  - b. Money/reserves will increase by \$100,000.
  - c. Money/reserves will decrease by \$50,000.
  - d. Money/reserves will decrease by \$100,000.

### Constructed Response Essay Question

Imagine you are a Federal Reserve economist. You are preparing a memo and policy suggestions for the president of your Reserve Bank, who will help decide the direction of future policy.

Examine “Current State of the Economy” below and make a policy recommendation: Should the Federal Reserve pursue expansionary or contractionary monetary policy? Make sure you describe which of the monetary tools might be used and the reasons for your recommendation. Identify how each of the four monetary policy tools could be used to pursue the policy recommendation. Recommend which policy tool you believe should be used. Specifically, describe how use of open market operations will influence the level of reserves in the banking system, the federal funds rate, interest rates in general, and economic activity. Conclude by describing how the policy will help fulfill the Fed’s dual mandate.

#### Current State of the Economy

The inflation rate has been climbing; the most recent data show an inflation rate of 3.5 percent. Employers are starting to complain that they are having a difficult time finding qualified workers to fill positions and are having to raise wages and benefits to lure workers from other businesses. In the past year, the unemployment rate has fallen from 6 percent to 4.5 percent. Finally, economic growth seems to be picking up steam, with the growth rate (as measured by real gross domestic product [GDP]) increasing from 3 percent last year to 4.5 percent this year (the economy’s long-run growth rate trends at about 3 percent per year).



Essays should include the following information:

- *Contractionary monetary policy is advised*
- *Each of the tools that might be used for contractionary policy:*
  - *Open market operations could be used to sell government securities.*
  - *The discount rate could be increased.*
  - *Reserve requirements could be increased.*
  - *The interest rate paid on reserves could be increased.*
- *Open market operations are the most-used tool in the Fed's toolbox and a likely choice.*
- *Selling government securities decreases the amount of reserves in the banking system, which will likely increase the federal funds rate and other interest rates.*
- *Higher interest rates would likely discourage spending, which would reduce production and employment over time.*
- *A decrease in economic activity would decrease the economic growth rate over time.*
- *A decrease in demand for goods and services would likely decrease the inflation rate over time.*
- *This policy action would help fulfill the Fed's dual mandate by moving the inflation rate back toward its longer-run goal of 2 percent.*

**Visual 1: Vocabulary****Bank reserves**

The sum of cash that banks hold in their vaults and the deposits they maintain with Federal Reserve Banks.

**Required reserves**

Funds that a depository institution must hold in reserve against specified deposits as vault cash or deposits with Federal Reserve Banks.

**Excess reserves**

The amount of funds held by a depository institution in its account at a Federal Reserve Bank in excess of its required reserve balance.

**Interest**

The price of using someone else's money.

**Interest rate**

The percentage of the amount of a loan that is charged for the loan.

**Visual 2: Vocabulary****Federal funds market**

The market in which banks can borrow or lend reserves, allowing banks temporarily short of their required reserves to borrow from banks that have excess reserves.

**Federal funds rate**

The interest rate at which a depository institution lends funds that are immediately available to another depository institution overnight.

**Federal Reserve System**

The central bank system of the United States.

**Central bank**

An institution that oversees and regulates the banking system and quantity of money in the economy.

**Visual 3: Monetary Policy Tools****Monetary policy**

The actions of a central bank to influence the cost and availability of money and credit to achieve the national economic goals.

- **Discount rate**

The interest rate charged by the Federal Reserve to banks for loans obtained through the Fed's discount window.

- **Open market operations**

The buying and selling of government securities through primary dealers by the Federal Reserve in order to influence the money supply.

- **Reserve requirements**

Funds that banks must hold in cash, either in their vaults or on deposit at a Federal Reserve Bank.

- **Interest on reserves**

Interest paid by the Federal Reserve on required and excess reserves held by banks at Federal Reserve Banks.

**Visual 4: Classroom Layout****Federal Reserve  
(teacher)**

The Federal Reserve starts with \$60,000 money/reserves and the Federal Reserve Portfolio Tracker.

**Primary dealers  
(3 students)**

**Primary dealers:** Banks approved to buy and sell government securities from the Federal Reserve.

**Investors  
(6 students)**

Each investor starts with a \$10,000 government security and an investor balance sheet.

**Banks  
(6 students)**

Each bank starts with two deposit slips.

The treasurer (1 student) uses the banking system balance sheet.

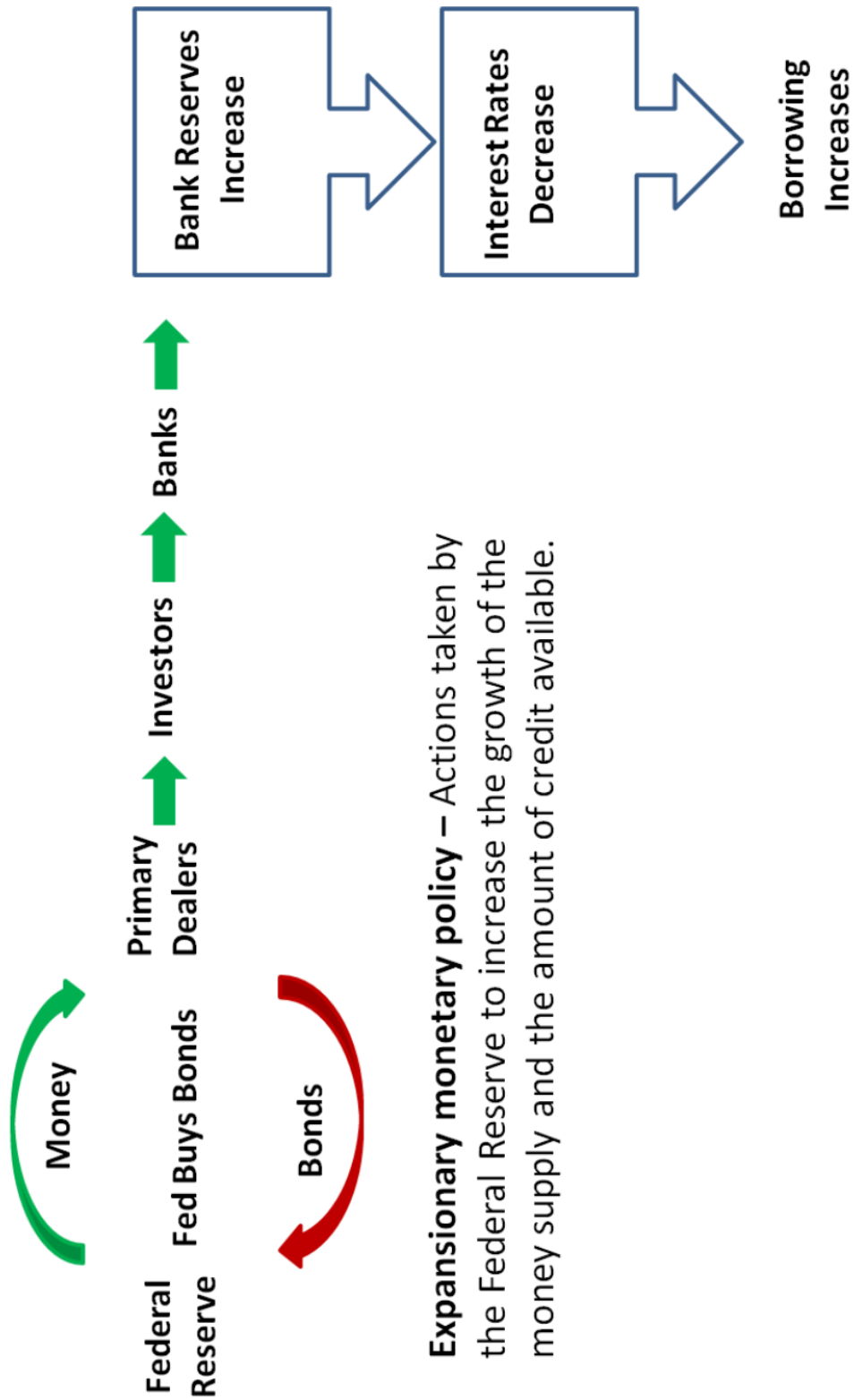
### Visual 5: Banking System Balance Sheets

<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial			
End of round 1			
End of round 2			

<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial			
End of round 1			
End of round 2			

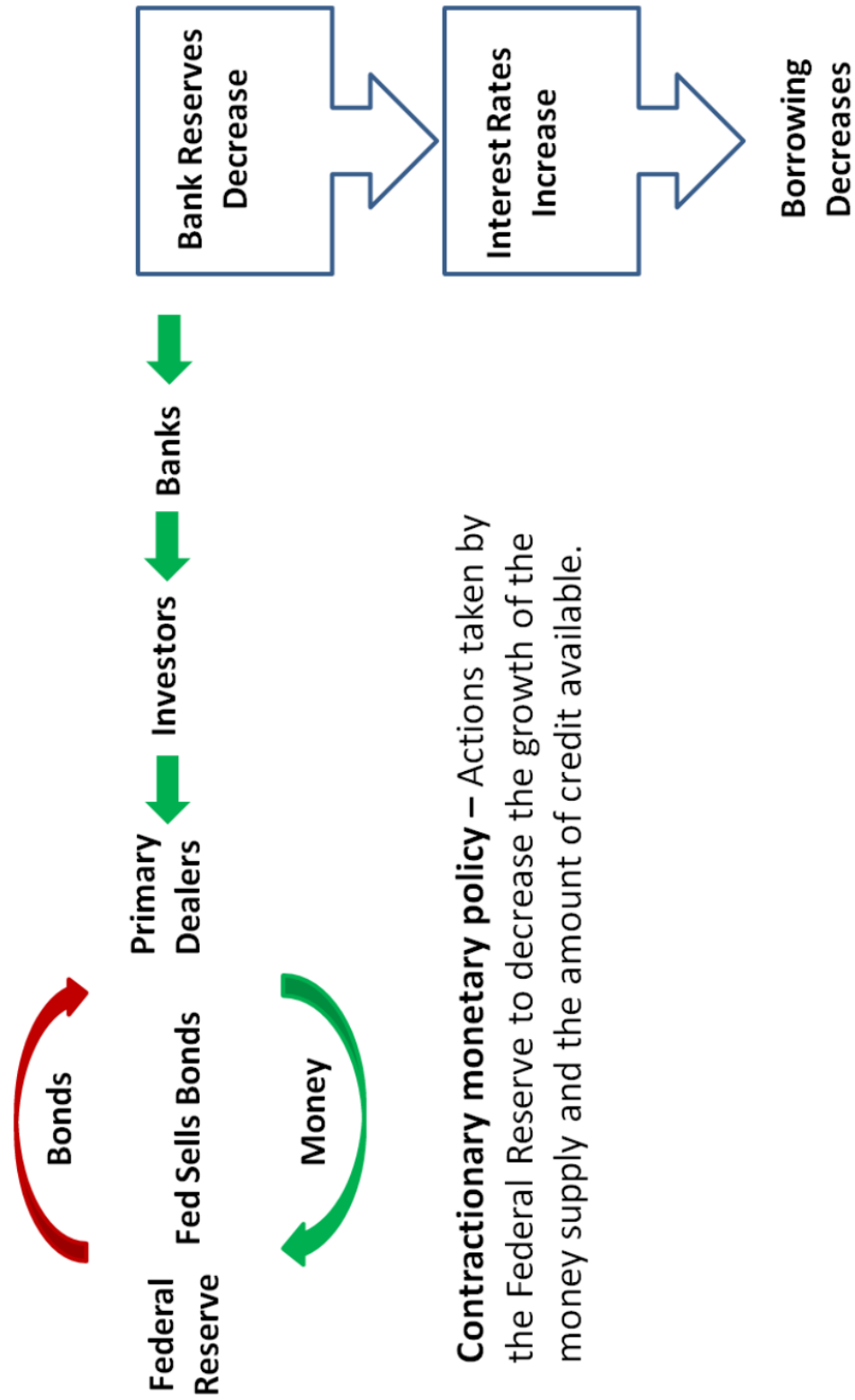
<b>Federal Reserve Portfolio Tracker</b>	<b>Government securities</b>
Initial	
End of round 1	
End of round 2	

Visual 6: Expansionary Policy



**Expansionary monetary policy** – Actions taken by the Federal Reserve to increase the growth of the money supply and the amount of credit available.

Visual 7: Contractionary Policy



**Contractionary monetary policy** – Actions taken by the Federal Reserve to decrease the growth of the money supply and the amount of credit available.



**Visual 8: Dual Mandate****Dual mandate**

The Federal Reserve's responsibility to use monetary policy to promote maximum employment and price stability.

- **Price stability**

A low and stable rate of inflation maintained over an extended period of time. The Fed has a longer-run goal of 2 percent inflation.

- **Maximum employment**

The Fed does not have a specific unemployment target, but it does regularly publish its forecast for the longer-run rate of unemployment.

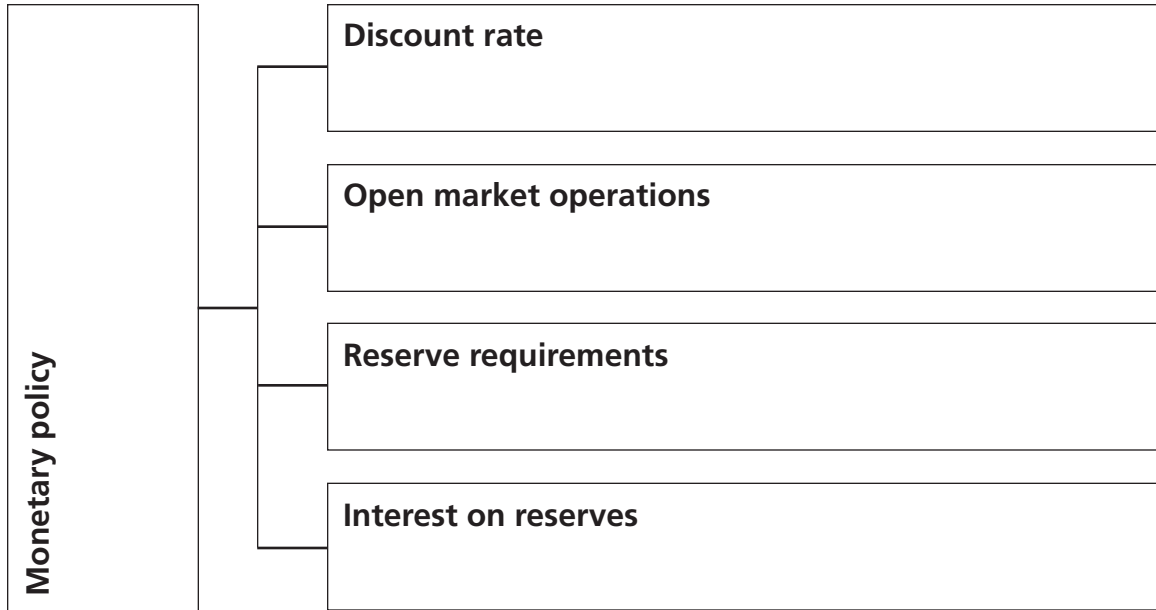
**Handout 1: Vocab Note Taking Guide (page 1 of 2)**

Use information from the visuals and classroom discussion to define the following terms in your own words.

<b>Bank reserves</b>
<b>Required reserves</b>
<b>Excess reserves</b>
<b>Interest</b>
<b>Interest rate</b>
<b>Federal funds market</b>
<b>Federal funds rate</b>
<b>Federal Reserve System</b>
<b>Central bank</b>

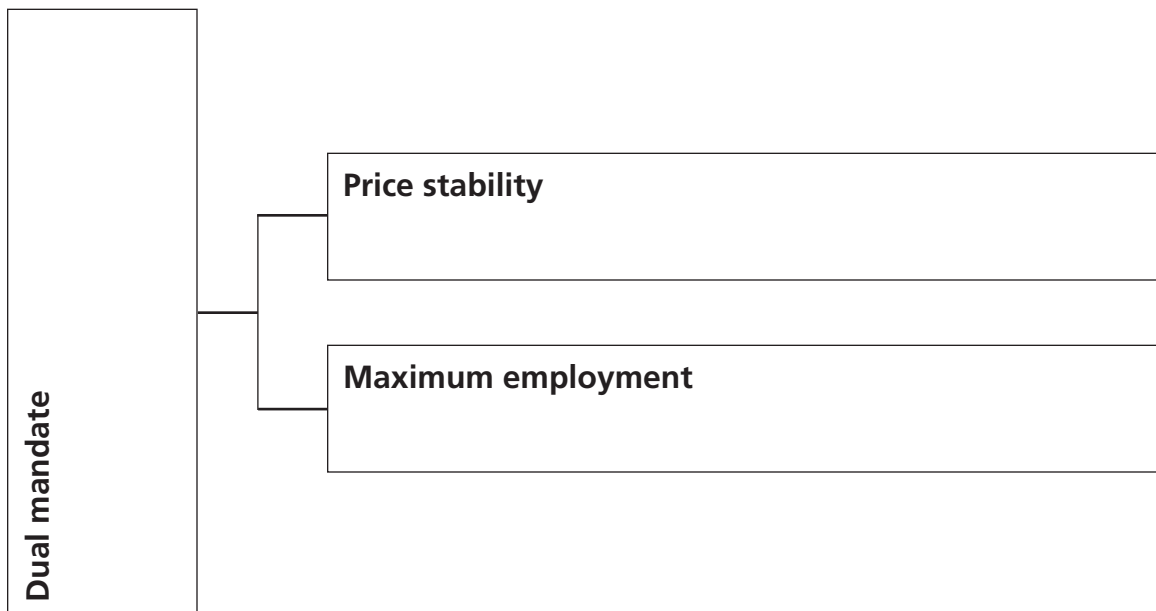
**Handout 1: Vocab Note Taking Guide (page 2 of 2)**

After the simulation, use information from the visuals and classroom discussion to define each of the following terms in your own words.



**Expansionary monetary policy**

**Contractionary monetary policy**



Handout 2: Government Securities (Optional: copy on red paper.)

\$10,000 GOVERNMENT SECURITY

\$10,000 GOVERNMENT SECURITY

\$10,000 GOVERNMENT SECURITY

\$10,000 GOVERNMENT SECURITY

\$10,000 GOVERNMENT SECURITY

\$10,000 GOVERNMENT SECURITY

Handout 3: Money/Reserves (Optional: Copy on green paper.)

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

\$10,000 MONEY/BANK RESERVES

Handout 4: Deposit Slips (Optional: Copy on yellow paper.)

\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT
\$10,000 DEPOSIT	\$10,000 DEPOSIT

## Handout 5: Investor and Federal Reserve Balance Sheets

<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$10,000	\$0	\$10,000
End of round 1			
End of round 2			
<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$10,000	\$0	\$10,000
End of round 1			
End of round 2			
<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$10,000	\$0	\$10,000
End of round 1			
End of round 2			
<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$10,000	\$0	\$10,000
End of round 1			
End of round 2			
<b>Investor Balance Sheet</b>	<b>Assets (Securities)</b>	<b>Assets (Deposits)</b>	<b>Total assets (Securities + Deposits)</b>
Initial	\$10,000	\$0	\$10,000
End of round 1			
End of round 2			

<b>Federal Reserve Portfolio Tracker</b>	<b>Government securities</b>
Initial	\$0
End of round 1	
End of round 2	

**Handout 6: Bank Balance Sheets**

<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			
<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			
<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			
<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			
<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			
<b>Bank Balance Sheet</b>	<b>Assets (Money/Reserves)</b>	<b>Liabilities (Deposits)</b>	<b>Net assets (Assets – Liabilities)</b>
Initial	\$0	\$0	\$0
End of round 1			
End of round 2			



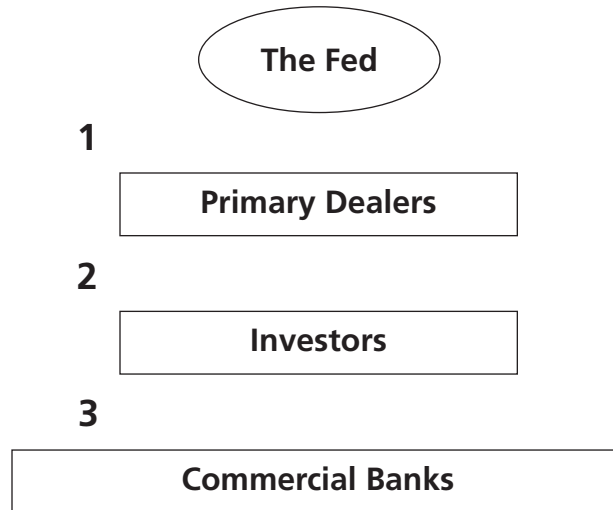
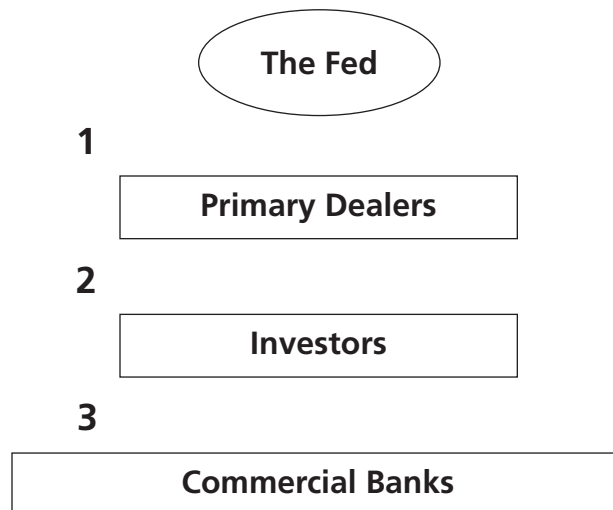
**Handout 7: Treasurer Balance Sheet**

Use the following worksheet to calculate totals for investors and banks. Transfer answers in shaded cells to Visual/Slide 5. Ask your teacher for the Federal Reserve balance.

<b>Round 1</b>	<b>Securities</b>		<b>Deposits</b>			
Investor #1						
Investor #2						
Investor #3						
Investor #4						
Investor #5						
Investor #6						
<b>Total</b>		Plus (+)		Equals (=)		(Total assets)
<b>Round 1</b>	<b>Securities</b>		<b>Deposits</b>			
Bank #1						
Bank #2						
Bank #3						
Bank #4						
Bank #5						
Bank #6						
<b>Total</b>		Minus (-)		Equals (=)		(Net assets)
<b>Round 2</b>	<b>Securities</b>		<b>Deposits</b>			
Investor #1						
Investor #2						
Investor #3						
Investor #4						
Investor #5						
Investor #6						
<b>Total</b>		Plus (+)		Equals (=)		(Total assets)
<b>Round 2</b>	<b>Securities</b>		<b>Deposits</b>			
Bank #1						
Bank #2						
Bank #3						
Bank #4						
Bank #5						
Bank #6						
<b>Total</b>		Minus (-)		Equals (=)		(Net assets)

**Handout 8: The Flow of Money/Reserves**

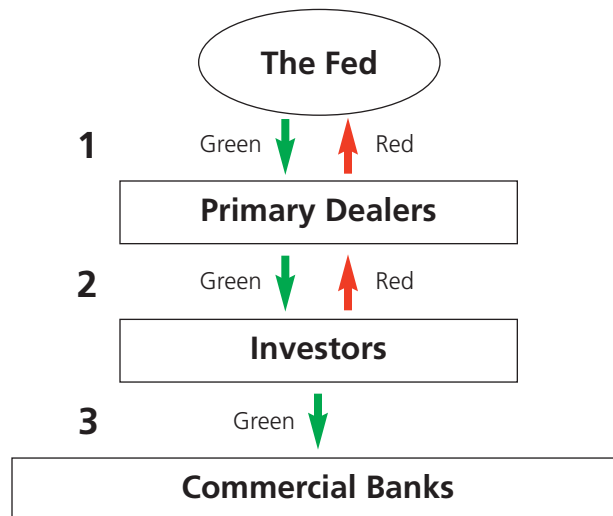
Beside each number, use colored pencils to draw arrows that illustrate the flow of money reserves (green) and government securities (red) when the Federal Reserve uses the policy noted.

**Expansionary Monetary Policy****Contractionary Monetary Policy**

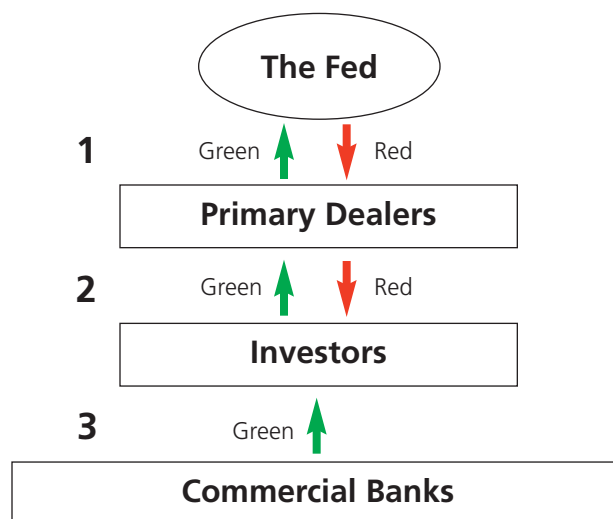
## Handout 8: The Flow of Money/Reserves—Answer Key

Beside each number, use colored pencils to draw arrows that illustrate the flow of money reserves (green) and government securities (red) when the Federal Reserve uses the policy noted.

### Expansionary Monetary Policy



### Contractionary Monetary Policy



## Standards and Benchmarks

### Voluntary National Content Standards in Economics

**Standard 20:** Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output, and prices.

- **Benchmark 7, Grade 12:** Monetary policies are decisions by the Federal Reserve System that lead to changes in the supply of money, short-term interest rates, and the availability of credit. Changes in the growth rate of the money supply can influence overall levels of spending, employment, and prices in the economy by inducing changes in the levels of personal and business investment spending.
- **Benchmark 8, Grade 12:** The Federal Reserve System's major monetary policy tool is open market purchases or sales of government securities, which affects the money supply and short-term interest rates. Other policy tools used by the Federal Reserve System include making loans to banks (and charging a rate of interest called the discount rate). In emergency situations, the Federal Reserve may make loans to other institutions. The Federal Reserve can also influence monetary conditions by changing depository institutions' reserve requirements.
- **Benchmark 9, Grade 12:** The Federal Reserve targets the level of the federal funds rate, a short-term rate that banks charge one another for the use of excess funds. This target is largely reached by buying and selling existing government securities.
- **Benchmark 10, Grade 12:** The Federal Reserve tends to increase interest rate targets when it feels the economy is growing too rapidly and/or the inflation rate is accelerating. It tends to lower rate targets when it wants to stimulate the short-term growth of the economy.

### Common Core State Standards: Grades 6-12 Literacy in History/Social Studies, Science, and Technical Subjects

#### History/Social Studies

- **Key Ideas and Details**  
CCSS.ELA-Literacy.RH.9-10.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
- **Craft and Structure**  
CCSS.ELA-Literacy.RH.9-10.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
- **Integration of Knowledge and Ideas**  
CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

CCSS.ELA-Literacy.RH.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

### Writing

- **Text Types and Purposes**

CCSS.ELA-Literacy.WHST.9-10.1 Write arguments focused on discipline-specific content.

CCSS.ELA-Literacy.WHST.9-10.1a Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.