Problem 1. Match things.

Terms

(a) store of value
(b) fiat money
(c) medium of exchange
(d) unit of account
(e) commodity money

Definitions

(i) the function of money that refers to money's usefulness as an asset
(ii) type of money that has no intrinsic value, but is still used as a means of payment
(iii) function of money that allows the avoidance of the double coincidence of wants problem associated with barter, i.e. facilitates transactions
(iv) function of money that allows prices to be easily expressed according to a standard measure
(v) type of money that has other uses (intrinsic value) besides serving as money

Problem 2. Given the following components of the money supply, find M1 and M2.

currency	3
travelers' checks	1
demand deposits	6
savings deposits	10
small denomination time deposits	30
individual money market mutual funds	50

Problem 3. Abigail withdraws $100 from her savings account and deposits it in her checking account. As a result

(a) M1 remains unchanged, M2 decreases

(b) M1 remains unchanged, M2 increases

(c) M1 decreases, M2 remains unchanged

(d) M1 decreases, M2 decreases

(e) None of the above

The Federal Reserve System

The Federal Reserve System (the Fed) is the central bank of the United States. It has three legal mandates:

- obtain full employment;
- stabilize the price level;
- maintain moderate long-term interest rates.

It consists of three parts:

- **Board of Governors**. Set reserve requirements and discount rates. Seven members, appointed by the President and confirmed by the Senate. Members are required to come from different regions of the country for fair representation of regional interests. The Chair advises the President and is the figurehead of the Fed.
- **Federal Reserve Banks**. Oversee the regional banking system and give discount loans. Twelve regional banks around the country. Part private, part government.
- **Federal Open Market Committee (FOMC)**. Sets the federal funds rate with open market operations. Consists of the Board of Governors and five regional bank presidents have a vote on the FOMC; the New York Fed is a permanent member.

Problem 4. Match even more! Do it!

Terms

(a) discount loan

(b) discount rate

(c) required reserve ratio

(d) open market operations

(e) federal funds loan

(f) federal funds rate

Definitions

(i) money banks borrow from the Fed

(ii) the rate of interest charged on loans made by the Fed discount rate

(iii) a fraction of demand deposits banks are required to keep as reserves

(iv) the Fed's purchases and sales of government bonds

(v) money banks borrow from other banks overnight

(vi) the rate of interest charged on federal funds loans

Reserves and Open Market Operations

Required Reserves. Suppose the required reserve ratio is 10%, and suppose people put a total of $1000 into the bank as demand deposits (i.e. checking accounts). Then the bank must keep 10% of that $1,000, i.e. $100 as reserves. They can loan out the remaining $900 if they want to.

Open Market Operations. When the Fed buys a Treasury bond from a bank, the bank is paid in reserves. These new reserves did not enter the bank as a checking account and therefore the bank can lend out all of it, if they want to. When bank loans out these new reserves, they become part of someone's checking or savings account and therefore money supply increases. *So an open market purchase (usually) increases the money supply.* This is the Federal Reserve's primary tool for adjusting the money supply. An open market sale has the opposite effect.

Problem 5. Match match match match? Match match match match.

Terms

(a) balance sheet

(b) required reserves

(c) excess reserves

(d) fully loaned out

Definitions

(i) statement of assets, liabilities, and net worth

(ii) minimum amount of cash that banks must hold at all times

(iii) the amount of cash that banks might hold in excess of what is required by the Fed

(iv) banks are said to be this when they have no excess reserves

Problem 6. The required reserve ratio is 10%. Assume that the bank is fully loaned out and all deposits are checking. What is the bank's net worth? (It is useful to think of assets as being *uses of funds*; and liabilities + net worth as being *sources of funds*.)

Assets		Liabilities and Net Worth	
Reserves	?	Demand Deposits	300,000,000
Treasury Bonds	5,000,000	Borrowed from Fed	8,000,000
		Borrowed from Banks	7,000,000
Loans	350,000,000	Net Worth	?

Problem 7. Simply stated, ceteris paribus, the money supply will increase when

(a) people work and receive wages and salaries from their employers

(b) people save some wages and salaries and deposit those savings in their banks

(c) people spend some of their wages and salaries on goods and services

(d) banks lend money to people

(e) none of the above

Problem 8. Consider the following bank balance sheet:

Assets		Liabilities and Net Worth	
Reserves	$20,000	Demand Deposits	$150,000
		Other Deposits	$650,000
Treasury Bonds	$30,000	Discount Loans	$20,000
		Interbank Loans	$80,000
Loans	$950,000	Net worth	$100,000

The required reserve ratio is 10 percent. How many excess reserves is the bank holding? (Other deposits consists of savings and time deposits, i.e. M2.)

Problem 9. Consider the following bank balance sheet:

Assets		Liabilities and Net Worth	
Reserves	$20,000	Demand Deposits	$150,000
		Other Deposits	$650,000
Treasury Bonds	$30,000	Discount Loans	$20,000
		Interbank Loans	$80,000
Loans	$950,000	Net worth	$100,000

How much does the bank owe the Federal Reserve? How much to other banks?

Problem 10. Consider the following bank balance sheet:

Assets		Liabilities and Net Worth	
Reserves	$20,000	Demand Deposits	$150,000
		Other Deposits	$650,000
Treasury Bonds	$30,000	Discount Loans	$20,000
		Interbank Loans	$80,000
Loans	$950,000	Net worth	$100,000
Total	$1,000,000	Total	$1,000,000

Suppose the required reserve ratio is 10%. Bank A makes a loan of $15,000 to Ashley by opening a savings account for her and depositing that money in that savings account. Ashley gives that money to Brian who deposits it in Bank B. Update the balance sheet after the loan is made, but *before* the money is transferred to Bank B.

Problem 11. Consider the following bank balance sheet:

Assets		Liabilities and Net Worth	
Reserves	$20,000	Demand Deposits	$150,000
		Other Deposits	$650,000
Treasury Bonds	$30,000	Discount Loans	$20,000
		Interbank Loans	$80,000
Loans	$950,000	Net worth	$100,000
Total	$1,000,000	Total	$1,000,000

Suppose the required reserve ratio is 10%. Bank A makes a loan of $15,000 to Ashley by opening a savings account for her and depositing that money in that savings account. Ashley gives that money to Brian who deposits it in Bank B. Update the balance sheet after the loan is made and after the money is transferred to Bank B, but *before* the Fed extends any necessary loans to Bank A.

Problem 12. Consider the following bank balance sheet:

Assets		Liabilities and Net Worth	
Reserves	$20,000	Demand Deposits	$150,000
		Other Deposits	$650,000
Treasury Bonds	$30,000	Discount Loans	$20,000
		Interbank Loans	$80,000
Loans	$950,000	Net worth	$100,000
Total	$1,000,000	Total	$1,000,000

Suppose the required reserve ratio is 10%. Bank A makes a loan of $15,000 to Ashley by opening a savings account for her and depositing that money in that savings account. Ashley gives that money to Brian who deposits it in Bank B. Update the balance sheet after the loan is made and after the money is transferred to Bank B and after the Fed extends any necessary loans to Bank A.