



MONEY PROBLEMS for Elementary Algebra I

You have \$725. Some of the money is in 5 dollar bills and some of it is in 20 dollar bills. There are five more twenties than fives. How many bills of each kind do you have?

There are six steps that may be used to solve a money problem:

1. What money is being used?
2. Organize the information.
3. Set up value for each bundle of money.
4. Form a value equation.
5. Solve the equation.
6. Check the results

Example

You have \$725. Some of the money is in 5 dollar bills and some of it is in 20 dollar bills. There are five more twenties than fives. How many bills of each kind do you have?

1. What money is being used?

In this problem we are dealing with 5 dollar bills and 20 dollar bills. The total value of the money is \$725.

2. Organize the information.

We are told that there are five more twenties than fives, but we don't know how many 5 dollar bills that we have. The number of 5 dollar bills is unknown, so call this "x".

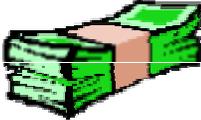
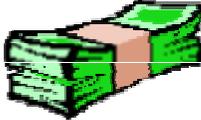
There are five more twenties than fives. "Five more" means to add 5 to the number of five dollar bills we have. Thus the number of twenty dollar bills is " $5 + x$ ".

3. Set up value for each bundle of money.

If there are "x" five dollar bills and each bill is worth \$5, then the value of the bundle of fives is found by multiplying \$5 and x. Hence "5x" is the value of the bundle of fives.

There are "5 + x" twenty dollar bills. Multiply \$20 and "5 + x" to get the value of the twenties. "20(5 + x)" is the value of the bundle of twenties.

4. Form a value equation.

			
	\$5 bundle	\$20 bundle	Total all bundles
Number of bills	x	5 + x	
Value of bundle	5(x)	20(5+x)	\$725

The \$5 bundle added to the \$20 bundle produces \$725 in money.

$$(\text{\$5 bundle}) + (\text{\$20 bundle}) = \$725$$

$$5(x) + 20(5 + x) = 725$$

5. Solve the equation.

$$5(x) + 20(5 + x) = 725$$

$$5(x) + 20(5) + 20(x) = 725$$

$$5x + 100 + 20x = 725$$

$$25x + 100 = 725$$

$$25x + 100 - 100 = 725 - 100$$

$$25x = 625$$

$$\frac{25x}{25} = \frac{625}{25}$$

$$x = 25$$

Thus there are 25 five dollar bills and $25 + 5 = 30$ twenty dollar bills.

6. Check the results

Since $x = 25$, is it true that $5(x) + 20(5 + x) = 725$?

$$5(25) + 20(5 + 25) =? 725$$

$$5(25) + 20(30) =? 725$$

$$125 + 600 =? 725$$

$$725 = 725$$

The answer checks.