**Translating mathematical words into symbols:**

**Translate into a mathematical expression:**

The sum of a number and 7 \_\_\_\_\_\_\_\_\_\_ Twice a number \_\_\_\_\_\_\_\_\_\_

6 more than a number \_\_\_\_\_\_\_\_\_\_ The product of 5 and a number \_\_\_\_\_\_\_\_\_\_

3 plus a number \_\_\_\_\_\_\_\_\_\_ The quotient of 8 and a number \_\_\_\_\_\_\_\_\_\_

A number increased by 5 \_\_\_\_\_\_\_\_\_\_ A number divided by 13 \_\_\_\_\_\_\_\_\_\_

2 less than a number \_\_\_\_\_\_\_\_\_\_ The ratio of a number and 10 \_\_\_\_\_\_\_\_\_\_

12 minus a number \_\_\_\_\_\_\_\_\_\_

A number decreased by 12 \_\_\_\_\_\_\_\_\_\_

The difference between a number and 5 \_\_\_\_\_\_\_\_\_\_

5 subtracted from a number \_\_\_\_\_\_\_\_\_\_

16 times a number \_\_\_\_\_\_\_\_\_\_

One half of a number \_\_\_\_\_\_\_\_\_\_

33% of a number \_\_\_\_\_\_\_\_\_\_

**Tips for solving applied problems (word problems):**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EXAMPLE: Solve for the unknown number**

If two is added to five times a number, then the result is equal to five more than 4 times a number. What is the number?

**EXAMPLE: Solve for the unknown number**

If two is subtracted from a number and that difference is tripled, the result is six more than the number. What is the number?

**EXAMPLE: Find the unknown quantities**

Bon Jovi and Bruce Springsteen had two of the top grossing concert tours of 2008 and together they generated $415.3 million in tickets sales. Bruce took in $6.1 million less than Bon Jovi, so how much money did each group take in?

**EXAMPLE: Find the unknown quantities**

In 2009, the US Senate had a total of 98 Democrats and Republicans. There were 18 fewer Republicans than Democrats. How many of each party were in the senate?

**EXAMPLE: distance, rate, and time**

A train leaves Nashville traveling north at 85 km per hour. At the same time, another train leaves Nashville traveling south at 95 km per hour. How long will it take until the two trains are 315 km apart?

**EXAMPLE: Mixture problems: Investing Money**

John earned $12,000 last year from one of his jobs. He invested part of that money in a bond with a 3% interest rate. The rest of the money he invested in a CD at a 4% interest rate. He earned $440 back from his investments. How much money was invested at each interest rate?

**EXAMPLE: Mixture problems: Chemicals**

In a Chemistry class, 12 liters of a 12% alcohol concentration solution must be mixed with a 20% alcohol solution to achieve a mixture that is 14% alcohol concentration solution. How many liters of the 20% solution must be mixed to get the final solution?

**EXAMPLE: Mixture problems: Diluting with water**

How much water must be added to 3 gallons of 4% insecticide to reduce the concentration to a 3% mixture?

**EXAMPLE: Mixture problems: Coins**

Mike has a lot of coins in his car. He has 44 coins consisting of pennies, dimes, and quarters. The number of pennies equals the number of dimes. The total amount of money the coins are worth is $4.37, so how many of each coin does Mike have?