**Math Signal Words**

Often working on word problems is a difficult task because a student doesn’t know how to translate the words in the problem into mathematical symbols. The following examples may help.

**Words that Signal Addition:**

And, Made Larger, More Than, In Addition, Sum, In Excess, Added to, Plus, Add, Greater, Increased by, Raised by

Examples:
1. Thirty-five and eighty-six are what?
   Translation: $35 + 86 = (?)$

2. Three hundred sixteen increased by eight is what amount?
   Translation: $316 + 8 = (?)$

3. Ellen has sixteen candy bars to sell. If this amount is raised by twenty, how many will she have?
   Translation: $16 + 20 = (?)$

**Words that Signal Subtraction:**

Decreased by, Subtract, Difference, From, Made Smaller by, Diminished by, Reduce, Less than, Minus, Take Away

Examples:
1. Eighty-nine is how much less than one hundred forty-seven?
   Translation: $147 - 89 = (?)$

2. Seventy-six decreased by sixteen is what?
   Translation: $76 - 16 = (?)$

3. Find the difference between 19 and 62.
   Translation: $62 - 19 = (?)$

4. Tommy has two hundred fifty-three baseball cards. If his collection is made smaller by thirty cards, how many will he have?
   Translation: $253 - 30 = (?)$
Words that Signal Multiplication:
(The answer to a multiplication problem is called a product.)

Product, Multiplied by, Times as much, Of, Times, Doubled, tripled, etc., Percent of, Interest on.

Examples:
1. Susan runs around her block six times every day. If the distance around the block is \( \frac{1}{2} (.5) \) of a mile, how many miles a day does she run?
   Translation: \( \frac{1}{2} \times 6 = (?) \)

2. Seventeen tripled equals what?
   Translation: \( 17 \times 3 = (?) \)

3. What is the product of twenty, six, and sixteen?
   Translation: \( (?) = 20 \times 6 \times 16 \)

4. What is 37\% of 500?
   Translation: \( (?) = .37 \times 500 \)

Words that Signal Division:
(The answer to a division problem is called a quotient. The number being divided is called a dividend and the number doing the dividing is called the divisor.)

Per, Quotient, Go(es) into, How many, Divided by, Contained in

Examples:
1. How many times does 11 go into 121?
   Translation: \( 121 \div 11 = (?) \) or \( \frac{121}{11} \)

2. What is the quotient with a dividend of forty-four and the divisor of 4?
   Translation: \( 4 \div 44 = (?) \) or \( \frac{44}{4} \)

3. How many gallons of oil are contained in 400 quarts? (Note: 4 quarts = a gallon)
   Translation: \( 400 \div 4 = (?) \) or \( \frac{400}{4} \)

Words that Signal Equality:

Is, Will be, Equal, Was, Results

Examples:
1. How many of the 18 jobs will be left after reducing them by half?
   Translation: \( 18 - \frac{18}{2} = (?) \)
2. Seven percent of forty is what?  
Translation: \(.07 \times 40 = (?)\)

**Words that Signal Inequality:**

- Greater than \(>\)
- Greater than or equal to \(\geq\)
- Less than \(<\)
- Less than or equal to \(\leq\)

**Examples:**

1. Four plus a number is greater than seven.  
   Translation: \(4 + X > 7\)
2. Fourteen divided by a number is less than or equal to two.  
   Translation: \(\frac{14}{X} \leq 2\)

**Quantity is Signaled by ( )**

**Example:**

1. Four times the quantity seven plus \(X\) is equal to 40.  
   Translation: \(4 \times (7 + X) = 40\)

**Translating English Words into Algebraic Expressions.**

- Ten more than \(X\) = \(X + 10\)
- A number added to 5 = \(5 + X\)
- A number increased by 13 = \(X + 13\)
- 5 less than \(10 = 10 - 5\)
- A number decreased by 7 = \(X - 7\)
- Difference between \(X\) and 3 = \(X - 3\)
- Twice a number = \(2X\)
- Ten percent of \(X\) = \(.10X\)
- Ten times \(X\) = \(10X\)
- Quotient of \(X\) and 3 = \(3X\)
- The product of 2 times a number is 10 = \(2X = 10\)
- 5 times the sum of \(X\) and 2 = \(5 \times (X + 2)\)
- 7 is greater than \(X\) = \(7 > X\)
- The sum of \(5X\) and 10 is equal to the product of \(X\) and 15 = \(5X + 10 = 15X\)
- Ten subtracted from 10 times a number is that number plus 5 = \(10X - 10 = X + 5\)
- The sum of two consecutive integers = \((X) + (X + 1)\)
- The sum of two consecutive odd integers = \((X) + (X + 2)\)
- The sum of two consecutive even integers = \((X) + (X + 2)\)