

Word Problems

Steps:

1. Read the problem carefully.
2. Get rid of clutter
3. Identify key variables (unknowns).
4. Identify units (centimeter, gallons, dollars).
5. Use the text (key words) of the problem to write equations.
6. Solve the equation.
7. Replace variable with its answer to check if equation is correct.

Key Words

| Keyword | Operation | Example | Equation |
|---------------------------------|-----------|---|----------------------|
| Total, Sum | + | The total weight of hammer and nails is 5 lb | $H+N=5$ |
| Difference | - | The difference in weight between Pete and Jim is 15 Kg. The difference word is ambiguous as it does not tell us who is heavier. | $P-J=15$ OR $J-P=15$ |
| Left, Remaining | - | After spending \$5, \$15 is left in the wallet | Original Amount-5=15 |
| Shorter, Fewer, Lesser, Younger | - | Jacob is 10 cm shorter than Sam Careful! Although, the number 10 is mentioned first in the sentence that does not mean that it would come first in the equation. | $S-J=10$ |
| Taller, More, Heavier, Older | + | Ben weighs 20 pounds more than Jason | $B=J+20$ |
| Divided | | The cookies in a jar are divided into 3 equal parts | $C \div 3$ |
| Times, As many | X | The number of girls is 3 times the number of boys | $G=3B$ |
| Twice, Thrice, etc. | X | There are twice as many red marbles as blue marbles in the jar | $R=2B$ |
| Equal | = | The number of chocolate and vanilla candies in the jar is equal | C |

Add

- **Addition:** as in *The team needed the addition of three new players ...*
- **Sum:** as in *The sum of 5, 6, and 8 ...*
- **Total:** as in *The total of the last two games ...*
- **Plus:** as in *Three chairs plus five chairs ...*
- **Increase:** as in *Her pay was increased by \$30*

Subtract

- **Difference:** as in *What is the difference between 8 and 5 ...*
- **Fewer:** as in *There were ten fewer girls than boys ...*
- **Remainder:** as in *What is the remainder when ...* or *How many are left when ...*
- **Less:** as in *A number is six less than another number ...*
- **Reduced:** as in *His allowance was reduced by \$5 ...*
-
- **Decreased:** as in *What number decreased by 7 is 5 ...*
- **Minus:** as in *Seven minus some number is ...*

Multiply

- **Product:** as in *The product of 3 and 6 is ...*
- **Of:** as in *One-half of the people in the room ...*
- **Times:** as in *Six times as many men as women ...*
- **At:** as in *The cost of five yards of material at \$9 a yard is ...*
- **Total:** As in *If you spend \$20 per week on gas, what is the total for a two-week period ...*
- **Twice:** as in *Twice the value of some number ...* (multiplying by 2)

Divide

- **Quotient:** as in *The final quotient is ...*
- **Divided by:** as in *Some number divided by 5 is ...*
- **Divided into:** as in *The coins were divided into groups of ...*
- **Ratio:** as in *What is the ratio of ...*
- **Half:** as in *Half of the cards were ...* (dividing by 2)

Sample 1

Sara and her brother, James, picked fruit Tuesday night. Sara had 15 apples and 12 oranges. How many pieces of fruit does she have?

- Let x = Total Amount of Fruit
- $15 + 12 = x$
- $27 = x$

The answer is then rewritten as a sentence. There are 27 Total Pieces of Fruit.

Sample 2

On Saturday, Ben went shopping. He spent \$42 for shoes. This was \$14 less than twice what he spent for a t-shirt. How much was the t-shirt?

$$2x - 14 = 42$$

$$2x = 42 + 14$$

$$2x = 56$$

$$x = \frac{56}{2}$$

$$x = 28$$

The t-shirt cost \$28

Math Notes

- Forgot the steps for a mathematical concept? Go to:

<http://cannonriverstemschool.org/student-and-parent-resources/mr-schrandt-page>

Sources

- <http://www.algebra.com/algebra/homework/word/>
- <http://www.snapwiz.com/prep/sat/math/Word-Problems-in-Algebra/Basic-Algebra-Word-Problems.html%7Cpage1>
- http://www.cliffsnotes.com/study_guide/Key-Words.topicArticleId-266336,articleId-266334.html