

Lesson 16

Foundations of College Algebra

Solving Problems Involving Direct Translation

Examples

1. The sum of twice a number and 7 is equal to the sum of the number and 6. Find the number.
2. If the difference of a number and 4 is doubled, the result is $\frac{1}{4}$ less the number. Find the number.

Solve Problems Involving Relationships Among Unknown Quantities

Examples

1. In the 2016 Summer Olympics, the U.S. team won 20 more gold medals than the Chinese team. If the total number of gold medals won by both teams was 72, find the number of gold medals won by both teams.
2. A professional carpet cleaning service charges \$30 plus \$25.50 per hour to come to your home. If your total bill from this company is \$119.25 before taxes, how many hours were you charged?
3. The largest meteorite in the world is the Hoba West, located in Namibia. Its weight is 3 times the weight of the Armanty meteorite, located in Outer Mongolia. If the sum of their weights is 88 tons, find the weight of each.

Solve Problems Involving Consecutive Integers

Example

The left and right page numbers of an open book are two consecutive integers whose sum is 469. Find these page numbers.

Use Formulas to Solve Problems

Definition - Formulas

- A **formula** is a known relationship among quantities.
- Many formulas are given as equations.

Examples

Substitute the given values into each formula and solve for the unknown variable.

1. $S = 4lw + 2wh$, $s = 102$, $l = 7$, $w = 3$.

2. $A = \frac{1}{2}h(B - b)$, $A = 60$, $B = 7$, $b = 3$

Solve a Formula or Equation for One of Its Variables

How To - Solve a Formula for a Variables

1. Multiply on both sides to clear the equation of fractions if they appear.
2. Use the distributive property to remove parentheses if they appear.
3. Simplify each side of the equation by combining like terms.
4. Get all terms containing the specified variable on one side and all other terms on the other side by using the addition property of equality.
5. Get the specified variable alone by using the multiplication property of equality.

Examples

Solve each formula for the specified variable.

1. $3x + y = 7$ for y

2. $A = P + PRT$ for T .