ALGEBRAIC EQUATIONS

What are algebraic equations?

Algebraic equations are **mathematical equations that contain a letter or variable, which represents a number.**

To solve an algebraic equation**, inverse operations** are used. Inverse operations are performing the opposite operation to what is being performed in the equation. The inverse operation of addition is subtraction and the inverse operation of subtraction is addition. Multiplication and division are the inverse operations of each other.

There are different types of algebraic equations. A **one-step algebraic equation** means that only one operation needs to be performed in order to solve the equation. A **two-step algebraic equation** means that two steps are needed in order to solve the equation.

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the rate, r, are
given, the

How to use algebraic equations:

- Algebraic equations are solved using the inverse operations. To solve the equation n - 52 = 38, look to see what operation is being performed in the problem, subtraction. The inverse operation of subtraction is addition. **The problem can be solved using the inverse operation** of addition as the example shows:

$$\begin{array}{r} n - 52 = 38 \\ +\ 52 \quad +52 \\ \hline \mathbf{n} \quad\quad \mathbf{= 90} \end{array}$$

Since 52 was subtracted in the initial problem, it will be added with inverse operations. The rule when dealing with equations is whatever is done to one side of the equation must be done to the other side. So

52 is added to 38 on the other side of the equal sign. When both sides are added, the 52's on the left side of the equation cancel out, leaving only the n. On the right side of the equation, 38 and 52 are added, giving the answer of 90. Therefore n = 90. This is a **one-step equation**.

- Look at the **two-step equation** below and how to solve it.

$$3n + 12 = 27$$
$$-12 \quad -12$$
$$\frac{3n}{3} = \frac{15}{3}$$
$$\mathbf{n = 5}$$

In this equation, 12 is subtracted first from both sides. This because the variable needs to be alone before it can be solved. Now the equation is 3n = 15. Since the 3 is multiplied by n, division must be used in orc , the result is n

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  Whe on is used to sc two others, use inverse operations to solve.

Try this!

1. Solve the following:

n - 4 = 16

56 + n = 134

n + 98 = 207

2n - 6 = 12

4n - 36 = 144

5n + 75 = 110

2. Solve f

P = $

P = $5000, r = 4%, t = 1 year

3. Solve for the missing variable, I = P·r·t:

I = $500, r = 8%, t = 2 years

I = $50, P = $2000, t = 1 year