

Lesson Summary

We work backward to solve an algebraic equation. For example, to find the value of the variable in the equation $6x - 8 = 40$:

1. Use the addition property of equality to add the opposite of -8 to each side of the equation to arrive at $6x - 8 + 8 = 40 + 8$.
2. Use the additive inverse property to show that $-8 + 8 = 0$; thus, $6x + 0 = 48$.
3. Use the additive identity property to arrive at $6x = 48$.
4. Then use the multiplication property of equality to multiply both sides of the equation by $\frac{1}{6}$ to get:
$$\left(\frac{1}{6}\right)6x = \left(\frac{1}{6}\right)48.$$
5. Then use the multiplicative inverse property to show that $\frac{1}{6}(6) = 1$; thus, $1x = 8$.
6. Use the multiplicative identity property to arrive at $x = 8$.

Problem Set

For each problem below, explain the steps in finding the value of the variable. Then find the value of the variable, showing each step. Write if-then statements to justify each step in solving the equation.

1. $7(m + 5) = 21$
2. $-2v + 9 = 25$
3. $\frac{1}{3}y - 18 = 2$
4. $6 - 8p = 38$
5. $15 = 5k - 13$