7th Grade Remote Learning Lesson 9: 2-Step Equations

Solve the algebraic equation with variables on the same side of the equation.

Example

$2x - 3 = 5$

$$\begin{aligned} 2x - 3 &= 5 \\ 2x - 3 + 3 &= 5 + 3 && \text{Add 3 to both sides.} \\ 2x &= 8 && \text{Simplify.} \\ 2x \div 2 &= 8 \div 2 && \text{Divide both sides by 2.} \\ x &= 4 && \text{Simplify.} \end{aligned}$$

$x =$ 4 gives the solution of the equation $2x - 3 = 5$.

Check: Substitute the value of $x = 4$ into the original equation.

$$\begin{aligned} 2x - 3 &= 2 \cdot 4 - 3 \\ &= 5 \end{aligned}$$

When $x =$ 4, the equation $2x - 3 = 5$ is true.

$x =$ 4 gives the solution.

Solve each equation with variables on the same side.

1. $4 - 12x = 20$

2. $-5y - 5 = 10$

Solve the algebraic equation with variables on the same side of the equation.

$\frac{2}{5}x + \frac{1}{2} = 2$

Method 1

Solve by balancing the equation.

$$\begin{aligned} \frac{2}{5}x + \frac{1}{2} &= 2 \\ \frac{2}{5}x + \frac{1}{2} - \frac{1}{2} &= 2 - \frac{1}{2} && \text{Subtract } \tfrac{1}{2} \text{ from both sides.} \\ \frac{2}{5}x &= \frac{3}{2} && \text{Simplify.} \\ \frac{5}{2} \cdot \left(\frac{2}{5}x\right) &= \frac{5}{2} \cdot \left(\frac{3}{2}\right) && \text{Multiply both sides by } \tfrac{5}{2}\text{, which is the reciprocal of the coefficient } \tfrac{2}{5}. \\ x &= \frac{15}{4} && \text{Simplify.} \end{aligned}$$

Solve each equation with variables on the same side.

1. $\frac{2}{5}x + \frac{1}{10} = \frac{1}{5}$

2. $\frac{1}{8} - \frac{2}{3}w = \frac{3}{4}$

TWO-STEP EQUATIONS 2

Directions: Using the digits 1 to 9 at most one time each, fill in the boxes to find the largest (or smallest) possible values for x.

$$\square x - \square = \square$$

More Practice: That Quiz