

Intro to college math: Chapter 2.1  
Solving Basic Equations

1. Solve the following equation:  $z + \frac{1}{2} = -\frac{3}{4}$

$$\begin{array}{r} z + \frac{1}{2} = -\frac{3}{4} \\ -\frac{1}{2} \quad -\frac{1}{2} \\ \hline z = \boxed{-\frac{5}{4}} \end{array}$$

\* Now we want the variable on one side and the numbers on the other side.

\* To move the number from one side to the other, do the opposite. (if a +, then subtract; if a - then add)

2. Solve the following equation:  $p - 14 = -5$

$$\begin{array}{r} p - 14 = -5 \\ +14 \quad +14 \\ \hline p = \boxed{9} \end{array}$$

\* Now we want the variable on one side and the numbers on the other side.

\* To move the number from one side to the other, do the opposite. (if a +, then subtract; if a - then add)

3. Solve:  $-3y = 12$

$$\begin{array}{r} -3y = 12 \\ \underline{-3} \quad \underline{-3} \\ y = \boxed{-4} \end{array}$$

\* Now we want the variable on one side and the numbers on the other side.

\* To move the number that is right beside a variable, we do the opposite. So since this is multiplication, we will do division.

4. Solve.  $-2x = -18$

$$\frac{-2x}{-2} = \frac{-18}{-2}$$

$$x = \boxed{9}$$

\* Now we want the variable on one side and the numbers on the other side.

\* To move the number that is right beside a variable, we do the opposite. So since this is multiplication, we will do division.

\* Remember:  $\frac{(-)}{(-)} = (+)$

5. Solve the following equation for the variable using the multiplication property of equality.  $\frac{x}{10} = -7$

\* You can solve this a couple of ways.

$$10 \cdot \frac{x}{10} = -7 \cdot 10 \quad \leftarrow \text{multiply each side by denominator}$$

$$\frac{10x}{10} = -70$$

$$x = \boxed{-70}$$

-OR-

$$\frac{x}{10} = \frac{-7}{1} \quad \leftarrow \text{cross multiply}$$

$$x = \boxed{-70}$$

6. Solve the equation for the variable using the multiplication property of equality.  $\frac{b}{-10} = 10$

$$-10 \cdot \frac{b}{-10} = 10 \cdot -10 \quad \leftarrow \text{multiply both sides by denominator}$$

$$\frac{-10b}{-10} = -100$$

$$b = \boxed{-100}$$

OR →

$$\frac{b}{-10} = \frac{10}{1} \quad \leftarrow \text{cross multiply}$$

$$b = \boxed{-100}$$

7. Solve the equation for the variable using the multiplication property of equality.

$$\frac{2}{5} z = 12$$

$$5 \cdot \frac{2}{5} z = 12 \cdot 5 \quad \leftarrow \text{multiply both sides by denominator}$$

$$\frac{\cancel{5} \cdot 2 z}{\cancel{5}} = 60$$

$$\frac{2 z}{2} = \frac{60}{2}$$

$$z = \boxed{30}$$

OR  $\rightarrow$

$$\frac{\frac{2}{5} z}{\frac{2}{5}} = \frac{12}{\frac{2}{5}}$$

$$z = \boxed{30}$$

$\leftarrow$  divide both sides by number next to variable

8. Solve the equation for the variable using the multiplication property of equality.

$$-\frac{3}{4} = \frac{1}{12} b$$

$$\frac{-\frac{3}{4}}{\frac{1}{12}} = \frac{\frac{1}{12} b}{\frac{1}{12}}$$

$$\boxed{-9} = b$$

$\leftarrow$  Divide both sides by number beside the variable.