

1: change subtraction to adding the opposite, then add 9 to both sides

2: Then divide both sides by 5

$$\begin{array}{r|l} 5x - 9 = 31 & \\ +9 & +9 \\ \hline 5x = 40 & \\ \div 5 & \div 5 \\ \hline x = 8 & \end{array}$$

Check your answer.

$$\begin{aligned} 5(8) + -9 &= 31 \\ 40 + -9 &= 31 \\ 31 &= 31 \checkmark \end{aligned}$$

Perform the inverse operations when solving equations.

When checking your solution, use the correct order of operations. [P E M D A S]

Use two-step equations to solve many problems. Write an equation for each and solve.

Five more than 2 times a number is -7.

Equation:

$$\begin{array}{r|l} 5 + 2x = -7 & \\ -5 & -5 \\ \hline 2x = -12 & \\ \div 2 & \div 2 \\ \hline x = -6 & \end{array}$$

Solve

Check

$$\begin{aligned} 5 + 2(-6) &= -7 \\ 5 + -12 &= -7 \\ -7 &= -7 \checkmark \end{aligned}$$

Two diminished by -7 times a number is 51.

Equation:

$$\begin{array}{r|l} 2 + -7x = 51 & \\ -2 & -2 \\ \hline -7x = 49 & \\ \div -7 & \div -7 \\ \hline x = 7 & \end{array}$$

Solve

Check

$$\begin{aligned} 2 + 7(7) &= 51 \\ 2 + 49 &= 51 \\ 51 &= 51 \checkmark \end{aligned}$$

Two meters less than twice length x is 18.

Equation:

$$\begin{array}{r|l} 2x + -6 = 18 & \\ +6 & +6 \\ \hline 2x = 24 & \\ \div 2 & \div 2 \\ \hline x = 12 & \end{array}$$

Solve

Check

$$\begin{aligned} 2(12) - 6 &= 18 \\ 24 - 6 &= 18 \\ 18 &= 18 \checkmark \end{aligned}$$

Practice:

Solve and check each solution.

1. $\frac{r}{10} + 4 = 5$
 ~~$\frac{r}{10} = 1 \cdot 10$~~
 $r = 10$

check
 $\frac{10}{10} + 4 = 5$
 $1 + 4 = 5$
 $5 = 5 \checkmark$

2. $4n + 9 = -9$
 ~~$4n = 0$~~
 $n = 0$

check
 $4 \cdot 0 + 9 = -9$
 $0 + 9 = -9$
 $9 = -9 \checkmark$

3. $\frac{m}{16} + 9 = -8$
 ~~$\frac{m}{16} = 1 \cdot 16$~~
 $m = 16$

check
 $\frac{16}{16} + 9 = -8$
 $1 + 9 = -8$
 $10 = -8$

4. $-4x + 38 = -122$
 ~~$-4x = -160$~~
 $x = 40$

check
 $-4(40) + 38 = -122$
 $-160 + 38 = -122$
 $-122 = -122$

homework:

Solve and check each solution.

1. $4x - 17 = 31$

check

2.

$15 = 2m + 3$

check

3. $\frac{k}{3} + 4 = 8$

check

4.

$7 = 3 + \frac{h}{6}$

check

5. $9n + 18 = 81$

check

6.

$5 = \frac{y}{3} - 9$

check