

Solve the following equations and show all steps.

$$1. \begin{array}{r} 2a + 7 = 16 \\ -7 \quad -7 \\ \hline \end{array}$$

$$\frac{2a}{2} = \frac{9}{2}$$

$$\boxed{a = \frac{9}{2}}$$

$$2. \begin{array}{r} \frac{2}{3}y + 6 = 18 \\ -6 \quad -6 \\ \hline \end{array}$$

$$\frac{3}{2} \cdot \frac{2}{3}y = 12 \cdot \frac{3}{2}$$

$$y = \frac{36}{2}$$

$$\boxed{y = 18}$$

$$3. \begin{array}{r} 8 - 2n = 34 \\ -8 \quad -8 \\ \hline \end{array}$$

$$\frac{-2n}{-2} = \frac{26}{-2}$$

$$\boxed{n = -13}$$

$$4. \begin{array}{r} 9x = 4x - 30 \\ -4x \quad -4x \\ \hline \end{array}$$

$$\frac{5x}{5} = \frac{-30}{5}$$

$$\boxed{x = -6}$$

$$5. 2(p - 4) = 2$$

$$\begin{array}{r} 2p - 8 = 2 \\ +8 \quad +8 \\ \hline \end{array}$$

$$\frac{2p}{2} = \frac{10}{2}$$

$$\boxed{p = 5}$$

$$6. \begin{array}{r} w + 5 = 3w - 9 \\ -w \quad -w \\ \hline \end{array}$$

$$5 = 2w - 9$$

$$\begin{array}{r} +9 \quad +9 \\ \hline \end{array}$$

$$\frac{14}{2} = \frac{2w}{2}$$

$$\boxed{7 = w}$$

Solve the following equations and justify your steps.

7.

$$2(x + 10) + 4 = 20$$

Given

$$2(x) + 2(10) + 4 = 20$$

Distributive Property

$$2x + 20 + 4 = 20$$

Simplify

$$2x + 24 = 20$$

Simplify (combine terms)

$$2x + 24 - 24 = 20 - 24$$

Subtraction Property

$$2x = -4$$

Simplify

$$\frac{2x}{2} = \frac{-4}{2}$$

Division Property

$$x = -2$$

Simplify

$$3 - x = -3x - 1$$

$$3 - x + x = -3x + x - 1$$

$$3 = -2x - 1$$

$$3 + 1 = -2x - 1 + 1$$

$$4 = -2x$$

$$\frac{4}{-2} = \frac{-2x}{-2}$$

$$-2 = x$$

$$x = -2$$

Given

Addition Property

Combine like terms

Addition Property

Combine like terms

Division Property

Simplify

Symmetric Property