12.3 Solving Equations with Variables on Both Sides

p. 686   1-11-18

Feb 9-9:42 AM

Group the terms with variables on one side of the equal sign, and simplify.

A. 60 − 4*y* = 8*y*

$60 - 4y = 8y$

$60 - 4y + 4y = 8y + 4y$ *Add 4y to both sides.*

$60 = 12y$ *Simplify.*

B. −5*b* + 72 = −2*b*

$-5b + 72 = -2b$

$-5b + 5b + 72 = -2b + 5b$ *Add 5b to both sides.*

$72 = 3b$ *Simplify.*

Feb 9-9:45 AM

Group the terms with variables on one side of the equal sign, and simplify.

A. 40 − 2*y* = 6*y*

B. −8*b* + 24 = −5*b*

Feb 9-9:46 AM

Solve. $77 = 22 + 55$

$$7c = 2c + 55$$
$$\underline{-2c \quad -2c}$$
$$\frac{5c}{5} = \frac{55}{5}$$
$$\boxed{c = 11}$$

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Solve.

$$49 - 3m = 4m + 14$$
$$\underline{+3m \quad +3m}$$
$$49 = 7m + 14$$
$$\underline{-14 \qquad -14}$$
$$\frac{35}{7} = \frac{7m}{7}$$
$$\boxed{m = 5}$$

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$$\frac{2}{5}x = \frac{1}{5}x - 12$$
$$-\frac{1}{5}x \quad -\frac{1}{5}x$$
$$\frac{1}{5}x \div \frac{1}{5} = -12 \div \frac{1}{5}$$
$$\frac{-12 \cdot 5}{1 \cdot 1}$$
$$\boxed{x = -60}$$

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Solve.

$$8f = 3f + 65$$

$$\underline{-3f \quad -3f}$$

$$\frac{5f}{5} = \frac{65}{5}$$

$$\boxed{f = 13}$$

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Solve.

$$54 - 3q = 6q + 9$$

$$\underline{+3q \quad +3q}$$

$$54 = 9q + 9$$

$$\underline{-9 \qquad -9}$$

$$\frac{45}{9} = \frac{9q}{9}$$

$$5 = q$$

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Solve.

$$\frac{2}{3}w = \frac{1}{3}w - 9$$

$$-\frac{1}{3}w \quad -\frac{1}{3}w \qquad 3 \cdot \frac{w}{3} = -9 \cdot 3$$

$$\frac{1}{3}w = -9 \div \frac{1}{3}$$

$$\div \frac{1}{3} \qquad \frac{-9}{1} \cdot \frac{3}{1}$$

$$\boxed{w = -27}$$

Feb 9-9:48 AM