4-4 Solving Equations Using Multiplication and/or Division

Two major ideas:

1. Get the variable by itself by "undoing" any operations.
2. Keep the equation balanced.

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Remember:

Solve: $x + 3 = 12$

$-3 \quad -3$

$x = 9$

$9+3=12$ ✓

$x - 3 = 12$

$+3 \quad +3$

$x = 15$

$15-3=12$ ✓

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Ex. 1 Solve:

$\frac{3x}{3} = \frac{12}{3}$

$x = 4$

$3 \cdot 4 = 12$ ✓

$x \div 3 = 12$

$\times 3 \quad \times 3$

$x = 36$

$36 \div 3 = 12$ ✓

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Ex. 2 Solve:

$\frac{7w}{7} = \frac{161}{7}$

$w = 23$

$\frac{4x}{4} = \frac{-56}{4}$

$x = -14$

$4 \cdot -14 = 56$ ✓

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Ex. 3 Solve:

$y \div -5 = -12$

$\times -5 \quad \times -5$

$y = 60$

$4 \cdot \frac{x}{4} = -8 \cdot 4$

$y = -32$

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Ex. 4 Esteban spent \$112 on boxes of baseball cards. He paid \$14 per box. Write and solve an equation to find how many boxes of cards Esteban bought.

$14 \cdot b = 112$

$b = \frac{112}{14}$

$b = 8$ boxes

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Ex. 5 Solve

$2x + 5x + x = 48$

$\frac{8x}{8} = \frac{48}{8}$

$x = 6$

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Ex. 6 Solve:

$\frac{3}{4}x = 6$ .75

$\div \frac{3}{4}$ $\div \frac{3}{4}$

$x = 8$

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