

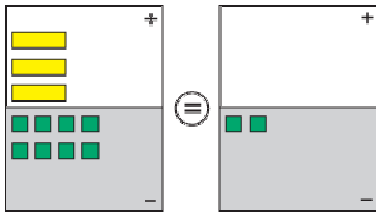
Lesson 2-5

Example 1

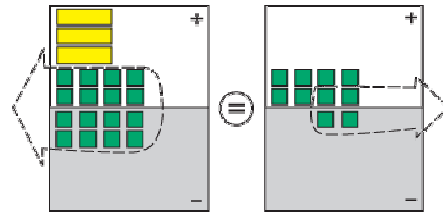
MODELING Solve $3x - 8 = -2$. Along with using Algeblocks, explain and represent each step algebraically.

Solution

Use Algeblocks to represent the equation.

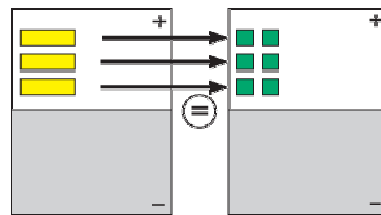


Add +8 to each side.



Separate into 3 groups.

The solution is $x = 2$.



Example 2

Solve $2x + 3 = 3x - 7$. Check the solution.

Solution

$$\begin{aligned}
 2x + 3 &= 3x - 7 \\
 2x + 3 + (-3x) &= 3x + (-3x) - 7 \\
 -x + 3 &= -7 \\
 -x + 3 + (-3) &= -7 + (-3) \\
 -x &= -10 \\
 (-1)(-x) &= (-1)(-10) \\
 x &= 10
 \end{aligned}$$

Add -3x to each side.

Add -3 to each side.

Multiply each side by -1.

The solution is 10.

Check

$$\begin{aligned}
 2x + 3 &= 3x - 7 \\
 2(10) + 3 &= 3(10) - 7 \\
 20 + 3 &= 30 - 7 \\
 23 &= 23 \quad \checkmark
 \end{aligned}$$

Example 3

Solve $4(2x + 3) = -24 + 4$. Check the solution.

Solution

$$4(2x + 3) = -24 + 4$$

Apply the Distributive Property.

$$8x + 12 = -20$$

$$8x + 12 + (-12) = -20 + (-12)$$

Add -12 to each side.

$$8x = -32$$

$$1\frac{1}{8}28x = 1\frac{1}{8}2(-32)$$

Multiply each side by $\frac{1}{8}$.

$$x = -4$$

Check Be sure to follow the order of operations.

$$4(2x + 3) = -24 + 4$$

$$4(2(-4) + 3) = -20$$

$$4(-8 + 3) = -20$$

$$4(-5) = -20$$

$$-20 = -20 \quad \checkmark$$

Example 4

ADVERTISING A local newspaper sells all classified ads for the same price. Larger boxed ads cost \$22.95. Julian bought 4 classified ads and one boxed ad. If the total for the ads was \$89.95, what was the price of each classified ad?

Solution

Let a represent the price of each classified ad.

$$4a + 22.95 = 89.95$$

$$4a + 22.95 + (-22.95) = 89.95 + (-22.95)$$

$$4a = 67$$

$$1\frac{1}{4}24a = 1\frac{1}{4}267$$

$$a = 16.75$$

Check 4 classified ads = $4(\$16.75)$: \$67.00

1 larger ad: \$22.95

Total: \$89.95 \checkmark

Each classified ad costs \$16.75.