Edgenuity®

Warm-Up | Solving with the Distributive Property

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Lesson Question

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Lesson Goals

Apply the distributive property to solve one-variable [____] equations.

→ **Verify** and **explain** the steps in this process.

Use the [____] property to solve real-world problems.

W2K

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

____ verify

____ evaluate

____ properties of equality

____ distributive property

A. the rules that allow you to balance, manipulate, and solve equations

B. the property stating that the product of a factor times a given quantity containing a sum or difference is equal to the sum of the products of that factor times each addend within the quantity

C. to determine the value of

D. to apply what is known to confirm an expected result

How to Solve an Equation Using the Distributive Property

PROCEDURE

1. Use the [   ] **property** to remove parentheses.

2. Use the subtraction or addition **property of equality** to isolate the [   ] term.

3. Use the multiplication or [   ] property of equality to isolate the variable.

$$-6(2x - 5) = 6$$

$$-6(2x) - (-6)(\boxed{}) = 6$$

$$-12x - (-30) = 6$$

$$-12x + 30 = 6$$

$$-30 \quad -30$$

$$\frac{-12x}{-12} = \frac{-24}{-12}$$

$$x = \boxed{}$$

Identifying the Steps

Use the steps to solve the equation. Determine which properties justified each step.

$$4(3x - 5) = -50$$

Step 1: $\boxed{} - 20 = -50$ Distributive property

Step 2: $12x = \boxed{}$

$\boxed{}$ the variable term by adding 20 to both sides.

$\boxed{}$ property of equality

Step 3: $x = -2.5$ Divide both sides by 12.

Division property of equality

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Verifying a Solution

EXAMPLE

Look at the steps and at the solution.

$$10(a - 4) = 90$$

$$10a - \boxed{} = 90 \qquad \text{Distributive property}$$

$$+ 40 \qquad\qquad + 40 \qquad \text{Inverse property of } \boxed{}$$

$$\frac{10a}{10} = \frac{130}{10} \qquad \text{Inverse property of } \boxed{}$$

$$a = \boxed{}$$

Verify the answer using $\boxed{}$.

$$10(a - 4) = 90$$

$$10(13 - 4) = 90$$

$$10(9) = 90$$

$$\boxed{} = 90$$

It's a balanced equation, so we know our solution is correct.

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Representing a Real-World Scenario

REAL-WORLD CONNECTION

Janice is building a fence around a rectangular garden in her backyard. The area of the garden will be 240 square feet. The width of the garden is x feet shorter than its length, which is 20 feet. How many feet of fencing does Janice need?

Draw a picture:

$20 - x$

20
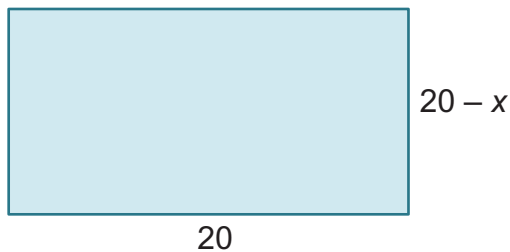
Write an equation:

$A = \boxed{}$

$240 = \boxed{} (20 - x)$

The above equation models the situation given in the word problem.

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Solving a Real-World Linear Equation

EXAMPLE

Janice's Rectangular Garden

$\boxed{}$ ft

$A = \boxed{}$

$$240 = 20(20 - x)$$

20 − x ft
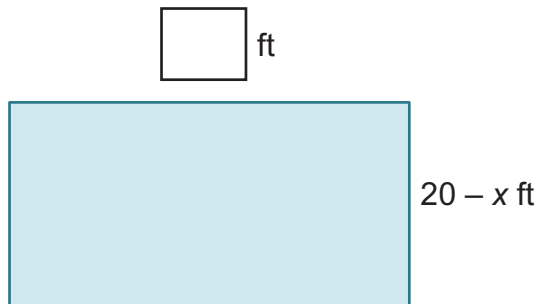
Simplify and solve the equation.

$$240 = 20(20) - \boxed{}$$

$$240 = 400 - 20x$$

$$-400 \quad -400$$

$$\frac{-160}{-20} = \frac{-20x}{\boxed{}}$$

$$8 = x$$

$$x = 8$$

Evaluate to find the width of the garden.

$$20 - \boxed{} = 12 \text{ ft}$$

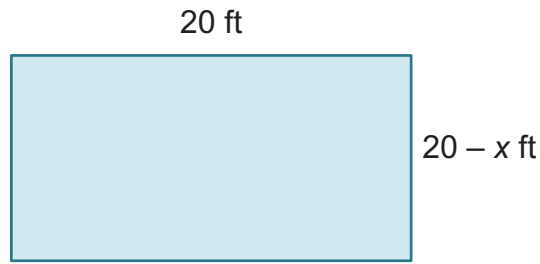So the width of our garden is $\boxed{}$ feet.

Instruction | Solving with the Distributive Property

Verifying the Real-World Scenario

Janice's Rectangular Garden

20 ft

20 − x ft

$A = lw$

$240 = 20(20 - x)$

$240 = 20\left(20 - \boxed{}\right)$

$x = 8$; width = 12 ft; length = 20 ft

$240 = \boxed{} \cdot 12$

$240 = 240$

The other way to verify it is just multiply out the length and width of the rectangle.

$240 = \boxed{} \cdot 20$

$240 = 240$

How much fencing does Janice need?

$P = \boxed{} + 2w$

$P = 2(20) + 2(12)$

$= 40 + 24$

$= 64$ ft

Janice needs to go and buy $\boxed{}$ feet of fencing.

Summary | Solving with the Distributive Property

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Lesson Question	How do you solve linear equations using the distributive property?

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Answer

Use this space to write any questions or thoughts about this lesson.