

Math 7 - Unit 2b

Day 10 - Solving Multi-Step Equations by using the Distributive Property

Lesson Objectives:

- I can solve multi-step equations by using the distributive property.
- I know how to show work when solving equations.

Steps for Solving Equations

Step #0 Simplify each side of the equation

- 0a Distributive Property
0b Combine Like Terms
0c *Coming Next Year*

Step #1 Get rid of the constant

Step #2 Get rid of the coefficient

The **distributive property** states that to multiply a sum or difference by a number, multiply each term inside the parentheses by the number outside the parentheses.

$$a(b + c) = ab + ac$$

$$a(b - c) = ab - ac$$

Model each equation on your algebra mat. Then sketch a picture in your notes.

Algebra mat representation of $3(x - 4) = 12$. The mat shows 3 groups of $(x - 4)$, which are 3 x tiles and 12 -1 tiles. The equation is modeled as $3(x - 4) = 12$.

Handwritten work:

$$3(x - 4) = 12$$

$$3x - 12 = 12$$

$$+12 \quad +12$$

$$3x = 24$$

$$\div 3 \quad \div 3$$

$$x = 8$$

Properties used: Distributive Prop. (=), Addition Prop. (=), Division Prop. (=)

Don't forget to check your work!

Model each equation on your algebra mat. Then sketch a picture in your notes.

Algebra mat representation of $-6 = 2(7 - x)$. The mat shows 2 groups of $(7 - x)$, which are 2 7 tiles and 2 $-x$ tiles. The equation is modeled as $-6 = 2(7 - x)$.

Handwritten work:

$$-6 = 2(7 - x)$$

$$-6 = 14 - 2x$$

$$-14 \quad -14$$

$$-20 = -2x$$

$$\div -2 \quad \div -2$$

$$10 = x$$

Properties used: Distributive Prop. (=), Subtraction Prop. (=), Division Prop. (=)

Don't forget to check your work!

Handwritten work for $3(g - 3) = 6$:

$$3(g - 3) = 6$$

$$3g - 9 = 6$$

$$+9 \quad +9$$

$$3g = 15$$

$$\div 3 \quad \div 3$$

$$g = 5$$

Properties used: distributive property, addition prop., division property

Handwritten work for $5(2c + 7) = 80$:

$$5(2c + 7) = 80$$

$$10c + 35 = 80$$

$$-35 \quad -35$$

$$10c = 45$$

$$\div 10 \quad \div 10$$

$$c = 4.5$$

Properties used: distributive prop., subtraction prop., division prop.

Handwritten work for $32 = 4(x + 9)$:

$$32 = 4(x + 9)$$

$$32 = 4x + 36$$

$$-36 \quad -36$$

$$-4 = 4x$$

$$\div 4 \quad \div 4$$

$$-1 = x$$

Properties used: distributive property, subtraction property, division property

Handwritten work for $7(g - 4) = 3$:

$$7(g - 4) = 3$$

$$7g - 28 = 3$$

$$+28 \quad +28$$

$$7g = 31$$

$$\div 7 \quad \div 7$$

$$g = \frac{31}{7}$$

Properties used: distributive property, addition property, division property

Homework

Solving Multi-Step Equations using the Distributive Property WKS

* Individual Think Time *



What to do if you get stuck...

1. **Reread the problem.** Did you write it down correctly?
2. **Reread your notes.** Is there a problem similar that we did together in class?
3. **Find a problem similar in your book.** Try this one to see if it helps.
4. **Skip the problem until the end of Individual Think Time.** Then ask an "educated" question of a neighbor or Mrs. Call.

Today we're working by...

