

Name: _____

Date: _____

AIM: How do we solve equations by simplifying?

Simplify each expression:

a) $3x + 2x$
 $5x$

b) $(-5h) + 6(-8h) - 12$
 $-13h - 6$

c) $9(x - 5)$
 $9x - 45$

d.) $-2(c + 5)$
 $-2c - 10$

Practice with Simplifying Equations

<p>Example 1: $4x + 6x + 8 = 58$ $10x + \cancel{8} = 58$ $\quad \quad \quad \cancel{-8} \quad \quad \quad \cancel{-8}$ <hr/> $10x = \frac{50}{10}$ $x = 5$</p>	<p>Check: $4x + 6x + 8 = 58$ $4(5) + 6(5) + 8 = 58$ $20 + 30 + 8 = 58$ $58 + 8 = 58$ $58 = 58 \checkmark$</p>
<p>Example 2: $3r - 2 + 2r + 6 = 24$ $5r + \cancel{4} = 24$ $\quad \quad \quad \cancel{-4} \quad \quad \quad \cancel{-4}$ <hr/> $5r = \frac{20}{5}$ $r = 4$</p>	<p>Check: $3r - 2 + 2r + 6 = 24$ $3(4) - 2 + 2(4) + 6 = 24$ $12 - 2 + 8 + 6 = 24$ $10 + 8 + 6 = 24$ $24 = 24 \checkmark$</p>
<p>Example 3: $3n - 8 + 5n = 16$ $8n - \cancel{8} = 16$ $\quad \quad \quad \cancel{+8} \quad \quad \quad \cancel{+8}$ <hr/> $8n = \frac{24}{8}$ $n = 3$</p>	<p>Check: $3n - 8 + 5n = 16$ $3(3) - 8 + 5(3) = 16$ $9 - 8 + 15 = 16$ $1 + 15 = 16$ $16 = 16 \checkmark$</p>
<p>Example 4: $3(a + 2) = 42$ $3a + \cancel{6} = 42$ $\quad \quad \quad \cancel{-6} \quad \quad \quad \cancel{-6}$ <hr/> $3a = \frac{36}{3}$ $a = 12$</p>	<p>Check: $3(a + 2) = 42$ $3(12 + 2) = 42$ $3(14) = 42$ $42 = 42 \checkmark$</p>
<p>Example 5: $4(x + 1) = 20$ $4x + \cancel{4} = 20$ $\quad \quad \quad \cancel{-4} \quad \quad \quad \cancel{-4}$ <hr/> $4x = \frac{16}{4}$ $x = 4$</p>	<p>Check: $4(x + 1) = 20$ $4(4 + 1) = 20$ $4(5) = 20$ $20 = 20 \checkmark$</p>
<p>Example 6: $5(m - 3) + 3m = -7$ $5m - 15 + 3m = -7$ $8m - \cancel{15} = -7$ $\quad \quad \quad \cancel{+15} \quad \quad \quad \cancel{+15}$ <hr/> $8m = \frac{8}{8}$ $m = 1$</p>	<p>Check: $5(m - 3) + 3m = -7$ $5(1 - 3) + 3(1) = -7$ $5(-2) + 3 = -7$ $-10 + 3 = -7$ $-7 = -7 \checkmark$</p>

Find the mistake!



$$3(4) + 2) + (2) = 10$$

$$3(6x + 2) = 10$$

$$\frac{18x + 6}{6} = 10$$

$$\frac{18x}{18} = \frac{4}{18}$$

$$x = \frac{4}{18} = \frac{2}{9}$$

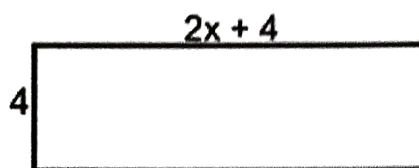
Explain the mistake that was made

The student combined before distributing.

The rectangle below has a length represented by $2x + 4$ units and a width of 4 units. The area is 48 square units.

- (a) Write an equation to represent the Area.

$$4(2x + 4) = 48$$



- (b) Solve to find the value of x.

$$4(2x + 4) = 48$$

$$8x + 16 = 48$$

$$\frac{8x}{8} = \frac{32}{8}$$

$$x = 4$$

- (c) What is the length of the rectangle?

$$\frac{2(4) + 4}{8 + 4}$$

12 units

$$-12 + 9d + 18 - d = 70$$

$$\frac{8d + 6}{-6 - 6} = 70$$

$$\frac{8d}{8} = \frac{64}{8}$$

$$d = 8$$

$$3(2j - 4) + j = 30$$

$$6j - 12 + j = 30$$

$$\frac{7j - 12}{+12 + 12} = 30$$

$$\frac{7j}{7} = \frac{42}{7}$$

$$j = 6$$

$$6n + 10 - n - 20 = 65$$

$$\frac{5n - 10}{+10 + 10} = 65$$

$$\frac{5n}{5} = \frac{75}{5}$$

$$n = 15$$

$$5x + 34 + 3x - 10 = -32$$

$$\frac{8x + 24}{-24 - 24} = -32$$

$$\frac{8x}{8} = \frac{-56}{8}$$

$$x = -7$$