

Name: _____

Date: _____

Aim: How can we simplify algebraic expressions using properties?

Do Now

Simplify each expression by combining like-terms.

1. $2x + 2x + 2x + 2x + 2x =$

2. $8x + 8x + 8x =$

Is there another way to write the expressions in the Do Now and still get the same result?

3. $5(7w)$

4. $6(3y)$

Which property allows you to simplify these expressions?

Examples: Simplify

1. $2(3x)$

2. $3(4w)$

3. $-5(6m)$

4. $(-3)(-8d)(-2)$

5. $\frac{1}{2}(12x)$

6. $3(x + 4)$

Why is $3(x + 4)$ different?

Distributive Property

$$a(b + c) =$$

$$a(b - c) =$$

Simplify each expression using the Distributive Property

1. $5(x + 10)$

2. $2(3x + 5)$

3. $3(x - 6)$

4. $-2(x + 7)$

5. $-3(x - 4)$

6. $-(4x - 5)$

7. $-2(3x)$

8. $3(2x) - 5(2x)$

9. $3(x + 6) + 2(4x)$

Extra Practice

1. $4(5x)$

2. $-2(3x)$

3. $2(x + 8)$

4. $4(2x + 1)$

5. $3(2x) - 5(2x)$

6. $2(4x) - (3x + 1)$

7. $4(k + 10) + k$

8. $6(p - 6) + 9p$

9. $\frac{1}{2}(20m + 40) + \frac{1}{2}m$

10. $-7.6s - 1.5(8s - 20)$

Write the property that justifies each step below.

$$\begin{aligned} 1.) \quad & 2(3a + 4) + 6 \\ & 6a + 8 + 6 \quad \underline{\hspace{2cm}} \\ & 6a + (8 + 6) \quad \underline{\hspace{2cm}} \\ & 6a + 14 \end{aligned}$$

$$\begin{aligned} 2.) \quad & 5 + (7x + 3) + (-7x) \\ & 5 + (3 + 7x) + (-7x) \quad \underline{\hspace{2cm}} \\ & (5 + 3) + [7x + (-7x)] \quad \underline{\hspace{2cm}} \\ & 8 + 0 \quad \underline{\hspace{2cm}} \\ & 8 \end{aligned}$$

$$\begin{aligned} 3.) \quad & 10(3q - 2) + 20 \\ & 10(3q) + 10(-2) + 20 \quad \underline{\hspace{2cm}} \\ & 30q + (-20) + 20 \\ & 30q + [(-20) + 20] \quad \underline{\hspace{2cm}} \\ & 30q + 0 \quad \underline{\hspace{2cm}} \\ & 30q \quad \underline{\hspace{2cm}} \end{aligned}$$



We must use the _____ in our expressions before _____.