

3.1 Putting it all together: Simplifying Expressions

1. Multiply/Distributive Property
2. Combine like terms (CLT) - add or subtract coefficients
3. Rewrite so terms w/variables are first (alpha order)
4. Constants last
 - no double signs
 - don't write coefficients 1

Examples:

$$1. \quad -4 + 7(2 - 3m)$$

$$\begin{array}{r} -4 + 14 - 21m \\ \hline -21m + 10 \end{array}$$

$$2. \quad 3(6 + 7n) - 5n$$

$$\begin{array}{r} 18 + 21n - 5n \\ \hline 16n + 18 \end{array}$$

$$3. \quad 10 - 5(9n - 9)$$

$$\begin{array}{r} 10 - 45n + 45 \\ \hline -45n + 55 \end{array}$$

$$4. \quad 8a + 10(6a - 1)$$

$$\begin{array}{r} 8a + 60a - 10 \\ \hline 68a - 10 \end{array}$$

$$5. \quad 9p - 3(5p + 2) + 6$$

$$\begin{array}{r} 9p - 15p - 6 + 6 \\ \hline -6p \end{array}$$

$$6. \quad -10(1 - 9x) + 6(x - 10)$$

$$\begin{array}{r} -10 + 90x + 6x - 60 \\ \hline 96x - 70 \end{array}$$

$$7. \quad -3(10b + 10) + 5(b + 2)$$

$$\begin{array}{r} -30b - 30 + 5b + 10 \\ \hline -25b - 20 \end{array}$$

$$8. \quad 4.2v - 5 - 6.5v$$

$$\begin{array}{r} -2.3v - 5 \\ \hline \frac{6.5}{-4.2} \end{array}$$

$$9. \quad 7.5x + 2.75x + 2 - 4x - 5$$

$$\begin{array}{r} 7.5 \\ + 2.75 \\ + 2 \\ - 4 \\ \hline 6.25x - 3 \end{array}$$

$$10. \quad -2(-5q) + (-72)(q)$$

$$\begin{array}{r} 10q - 72q \\ \hline -62q \end{array}$$

Find the **perimeter** and **area** of each rectangle: ↳ add all sides ↳ lw

$$1.) \begin{array}{c} \boxed{5} \\ \boxed{6+y} \end{array} \quad \begin{array}{c} P \\ \begin{array}{r} 6+y \\ 6+y \\ \hline 5 \\ \hline 2y+22 \end{array} \\ \boxed{2y+22} \end{array} \quad \begin{array}{c} A \\ \begin{array}{r} 5(6+y) \\ 30+5y \\ \hline 5y+30 \end{array} \end{array}$$

$$2.) \begin{array}{c} \boxed{} \quad 12 \\ P-2 \end{array} \quad \begin{array}{c} P \\ \begin{array}{r} P-2 \\ P-2 \\ \hline 12 \\ + \quad 12 \\ \hline 2P+24 \end{array} \end{array} \quad \begin{array}{c} A \\ \begin{array}{r} 12(P-2) \\ \boxed{12P-24} \end{array} \end{array}$$

$$3.) \begin{array}{c} \boxed{} \quad 5 \\ 2h-4 \end{array} \quad \begin{array}{c} 2h-4 \\ 2h-4 \\ \hline 5 \\ + \quad 5 \\ \hline 4h+2 \end{array} \quad \begin{array}{c} A \\ \begin{array}{r} 5(2h-4) \\ \boxed{10h-20} \end{array} \end{array}$$

$$4.) \begin{array}{c} \boxed{} \quad 2 \\ 8+2c \end{array} \quad \begin{array}{c} 8+2c \\ 8+2c \\ \hline 2 \\ \hline 20+4c \end{array} \quad \begin{array}{c} P \\ \begin{array}{r} 2(8+2c) \\ 16+4c \\ \boxed{4c+16} \end{array} \end{array}$$

$$5.) \begin{array}{c} \boxed{} \quad 6 \\ 4x-3 \end{array} \quad \begin{array}{c} 4x-3 \\ 4x-3 \\ \hline b \\ \hline 8x+6 \end{array} \quad \begin{array}{c} A \\ \begin{array}{r} 6(4x-3) \\ \boxed{24x-18} \end{array} \end{array}$$

Reteaching 2-3 Simplifying Variable Expressions



Simplify $5n + (-n - 4)(-2)$.

$$\begin{aligned} 5n + (-n - 4)(-2) \\ = 5n + (-n)(-2) - 4(-2) \\ = 5n + 2n + 8 \\ = (5 + 2)n + 8 \\ = 7n + 8 \end{aligned}$$

Use the distributive property.

Multiply. Think of $-4(-2)$ as $+(-4)(-2)$.

Use distributive property to combine like terms.

Add.

Complete each equation.

1. $9a - 7a + 5$

$2a + 5$

2. $5k - 4 - 8k$

$-3k - 4$

Reteaching

Simplify each expression.

3. $12a + 4 - 10a$

$2a + 4$

4. $7 + x - 7x$

$-6x + 7$

5. $2(n - 4) + 3$

$2n - 5$

6. $-3(a + 5) + 9$

$-3a - 6$

7. $5(2y + 1) - 7y$

$3y + 5$

8. $2(4 - 3t) - (-3) + 2t$

$-4t + 11$

9. $8c + 5(c - 3)$

$13c - 15$

10. $-2(-4 - 3s)$

$6s + 8$

11. $q(-3) + 3(2 + q)$

$4q$

12. $(3 + k)(-4) - 5k$

$-9k - 12$

13. $(-3)(1 - 2n) + 2(n + 4)$

$8n + 5$

14. $9p - 3(5p + 2) + 6$

$-6p$