

Simplifying Expressions (Adding and Subtracting)

Like Terms - numbers that have the same variable and exponent attached

$$-5x^2, 3x^2$$

$$\begin{aligned} -5x^2 + 3x^2 \\ \boxed{-2x^2} \end{aligned}$$

$$8y, 4y$$

$$\begin{aligned} 8y + 4y \\ \boxed{12y} \end{aligned}$$

$$18x^2y, -3x^2y$$

$$\begin{aligned} 18x^2y + -3x^2y \\ \boxed{15x^2y} \end{aligned}$$

$$7, -15$$

$$\begin{aligned} 7 + -15 \\ \boxed{-8} \end{aligned}$$

Directions: Simplify each expression.

$$1. 16y - 3y = \boxed{13y}$$

$$2. 9 + n - 1 - 7n$$

$$\begin{aligned} 9 + 1n - 1 - 7n \\ = \quad = \quad = \quad = \end{aligned}$$

$$\begin{aligned} +1n - 7n &= -6n \\ 9 - 1 &= 8 \end{aligned}$$

$$\boxed{-6n + 8}$$

$$3. 8x - 5x + 5 - x - 2$$

$$\underline{8x} - \underline{5x} + \underline{5} - \underline{1x} - \underline{2}$$

$$\begin{aligned} 8x - 5x - 1x &= 2x \\ 5 - 2 &= 3 \end{aligned}$$

$$\boxed{2x + 3}$$

$$4. (3a - 4b) + (-8a + 6b)$$

$$\underline{3a} - \underline{4b} + \underline{-8a} + \underline{6b}$$

$$3a + -8a = -5a$$

$$-4b + 6b = 2b$$

$$\boxed{-5a + 2b}$$

$$5. 7x - (3 + 2x)$$

$$7x - 1(3 + 2x)$$

$$\underline{7x} - \underline{3} - \underline{2x}$$

$$7x - 2x = 5x$$

$$\boxed{5x - 3}$$

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

$$(-4x - 2y) - 1(3x + 2y)$$

$$\underline{-4x} - \underline{2y} - \underline{3x} - \underline{2y}$$

$$-4x + \ominus 3x = -4x + -3x = -7x$$

$$-2y + \ominus 2y = -2y + -2y = -4y$$

$$\boxed{-7x - 4y}$$

$$7. (9 - 4x^2) - (-1 + 8x^2) + 4(7 - x^2)$$

$$(9 - 4x^2) - 1(-1 + 8x^2) + 4(7 - x^2)$$

$$\underline{9} - \underline{4x^2} + \underline{1} - \underline{8x^2} + \underline{28} - \underline{4x^2}$$

$$-4x^2 - 8x^2 - 4x^2 = -16x^2$$

$$-4 + \oplus 8 = -4 + +8 = -12 + \oplus 4$$

$$= -12 + +4$$

$$= -16$$

$$9 + 1 + 28 = 38$$

$$\boxed{-16x^2 + 38}$$

$$8. (x - y) - (-x - y)$$

$$(1x - 1y) - 1(-1x - 1y)$$

$$\underline{1x} - \underline{1y} + \underline{1x} + \underline{1y}$$

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

$$-1y + 1y = 0y = 0$$

$$\boxed{2x}$$

9. $x - (2 - 3x) + 1$

$$1x - 1(2 - 3x) + 1$$
$$\underline{1x} - \underline{2} + \underline{3x} + \underline{1}$$

$$1x + 3x = 4x$$

$$-2 + 1 = -1$$

$$\boxed{4x - 1}$$

10. $\left(\frac{x}{2} - 1\right) - \left(\frac{x}{3} + 2\right)$

$$\left(\frac{1}{2}x - 1\right) - 1\left(\frac{1}{3}x + 2\right)$$

$$\underline{\frac{1}{2}x} - 1 - \underline{\frac{1}{3}x} - \underline{2}$$

$$\frac{1}{2}x - \frac{1}{3}x = \frac{1}{6}x$$

$$-1 + \textcircled{+}2 = -1 + -2 = -3$$

$$\boxed{\frac{1}{6}x - 3}$$

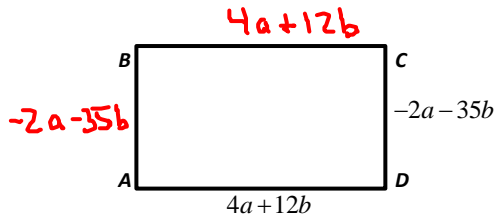
$$\frac{3 \cdot 1}{3 \cdot 2} - \frac{1 \cdot 2}{3 \cdot 2} = \frac{3}{6} - \frac{2}{6}$$

$$\text{LCD: } 6 = \frac{3 - 2}{6}$$

$$2: 2 \cdot 4 \textcircled{6} = \frac{1}{6}$$

Directions: Find the perimeter of each.

11. ABCD is a rectangle



$$P = 2(4a + 12b) + 2(-2a - 35b)$$

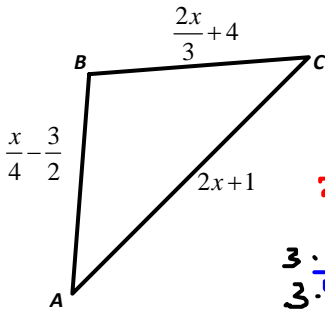
$$= \underline{8a} + \underline{24b} - \underline{4a} - \underline{70b}$$

$$8a - 4a = 4a$$

$$24b - 70b = -46b$$

$$P = 4a - 46b$$

12.



$$P = \underline{\frac{1}{4}x} - \underline{\frac{3}{2}} + \underline{\frac{2}{3}x} + \underline{4} + \underline{2x} + \underline{1}$$

$$\frac{1}{4}x + \frac{2}{3}x + 2x = \frac{35}{12}x$$

$$\frac{3 \cdot 1}{3 \cdot 4} \cdot \frac{4}{4} - \frac{2}{3} + \frac{2 \cdot 12}{1 \cdot 12} = \frac{3}{12} + \frac{8}{12} + \frac{24}{12}$$

$$LCD = 12 \quad = \frac{3 + 8 + 24}{12} = \frac{35}{12}$$

4: 4, 8, 12

3: 3, 6, 9, 12

$$-\frac{3}{2} + \frac{2 \cdot 4}{2 \cdot 1} + \frac{1 \cdot 2}{1 \cdot 2} = -\frac{3}{2} + \frac{8}{2} + \frac{2}{2} = \frac{-3 + 8 + 2}{2}$$

LCD = 2

$$= \frac{7}{2}$$

$$P = \frac{35}{12}x + \frac{7}{2}$$