

**Unit 6.2 Adding & Subtracting Polynomials** \*Combining Like Terms\*

**Adding and Subtracting Polynomials**

- 1.) When adding polynomials → Combine like terms. (adding the coefficients)  
 - Like Terms: are terms that have the exact same variable(s) and exponents.
- 2.) When subtracting polynomials → Change all the signs in the 2<sup>nd</sup> polynomial. (use the distributive property)
- 3.) Make sure you've collected all like terms and polynomial is in STANDARD FORM

**Example 1:** Simplify each problem. Make sure your answer is in STANDARD FORM.

Stack Method or vertical method

a.) 
$$\begin{array}{r} w^2 + w - 4 \\ + 7w^2 - 4w + 8 \\ \hline \end{array}$$

$$8w^2 - 3w + 4$$

(Quadratic Trinomial)

b.) 
$$\begin{array}{r} 6c - 5 \\ - (4c - 9) \\ \hline \end{array}$$

$$2c - 14$$

(Linear Binomial)

c.) 
$$\begin{array}{r} 7h^2 + 4h - 8 \\ - (3h^2 + 2h - 10) \\ \hline \end{array}$$

$$4h^2 + 6h - 18$$

(Quadratic Trinomial)

d.) 
$$(4x^2 + 6x + 7) + (1 + 2x^2 - 9x)$$
  

$$4x^2 + 2x^2 + 6x - 9x + 7 + 1$$

$$6x^2 - 3x + 8$$

(Quadratic Trinomial)

e.) 
$$(2x^3 + 5x^2 - 3x) - (x^3 + 8x^2 - 11)$$
  

$$2x^3 - x^3 + 5x^2 + 8x^2 - 3x - 11$$

$$x^3 + 13x^2 - 3x - 11$$

(Cubic 4-term polynomial)

f.) 
$$(7a^3 - a + 3a^2) + (8a^2 - 3a - 4)$$
  

$$7a^3 + 3a^2 + 8a^2 - a - 3a - 4$$

$$7a^3 + 11a^2 - 4a - 4$$

(Cubic 4-term polynomial)

g.) 
$$(-7z^3 + 3z - 1) + (6z^2 + z + 4)$$
  

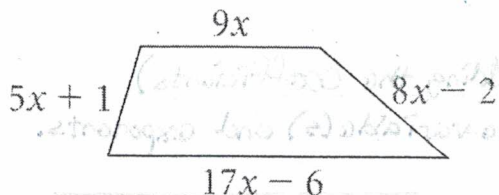
$$-7z^3 + 6z^2 + 3z - z - 1 + 4$$

$$-7z^3 + 6z^2 + 2z - 5$$

(Cubic 4-term polynomial)

\* To Find the Perimeter of a polygon, ADD ALL the sides.

h.) Find the perimeter of the figure:



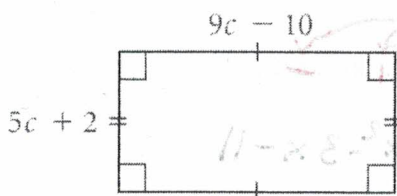
$$P = (5x + 1) + (9x) + (8x - 2) + (17x - 6)$$

$$= 5x + 9x + 8x + 17x + 1 - 2 - 6$$

$$P = 39x - 7$$

The perimeter of the figure is 39x - 7 units.

j.) Find the perimeter of the figure:



$$P = 2(5c + 2) + 2(9c - 10)$$

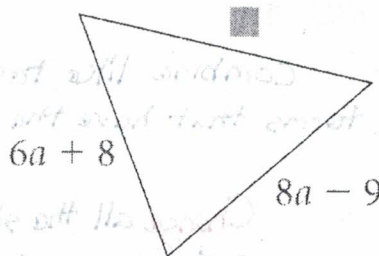
$$= 10c + 4 + 18c - 20$$

$$= 10c + 18c + 4 - 20$$

$$= 28c - 16$$

The perimeter of the figure is 28c - 16 units.

i.) Find the missing length given the perimeter = 23a - 7



$$P = 6a + 8 + 8a - 9 + \blacksquare$$

$$23a - 7 = 6a + 8 + 8a - 9 + \blacksquare$$

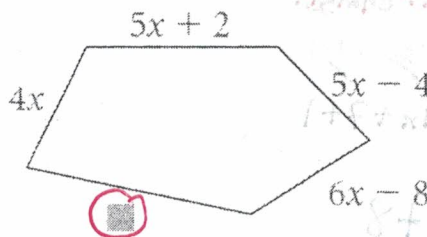
$$23a - 7 = 14a - 1 + \blacksquare$$

$$\begin{array}{r} -14a \\ \hline 9a - 7 = -1 + \blacksquare \end{array}$$

$$\begin{array}{r} +1 \\ \hline 9a - 6 = \blacksquare \end{array}$$

← solving for NOT "a"

k.) Find the missing length given the perimeter: Perimeter = 25x + 8



$$P = 4x + 5x + 2 + 5x - 4 + 6x - 8 + \blacksquare$$

$$25x + 8 = 4x + 5x + 5x + 6x + 2 - 4 - 8 + \blacksquare$$

$$25x + 8 = 20x - 10 + \blacksquare$$

$$\begin{array}{r} -20x \\ \hline 5x + 8 = -10 + \blacksquare \end{array}$$

$$\begin{array}{r} +10 \\ \hline 5x + 18 = \blacksquare \end{array}$$