

Day 3 - Adding/Subtracting Polynomials

When adding, use the following steps to add polynomials:

- Line up like terms
- Add
- Make sure final answer is in standard form

a. $(4x^2 + 2x + 8) + (8x^2 + 3x + 1)$

$$\begin{array}{r} 4x^2 + 2x + 8 \\ + 8x^2 + 3x + 1 \\ \hline 12x^2 + 5x + 9 \end{array}$$

b. $(-2x + 5) + (-4x^2 + 6x + 9)$

$$\begin{array}{r} 0 - 2x + 5 \\ + -4x^2 + 6x + 9 \\ \hline -4x^2 + 4x + 14 \end{array}$$

c. $(5 - 2xy + x^2 + 7) + (3x^2 + 7 - 4xy)$

$$\begin{array}{r} (-2xy + x^2 + 12) + (3x^2 + 7 - 4xy) \\ 1x^2 - 2xy + 12 \\ + 3x^2 - 4xy + 7 \\ \hline 4x^2 - 6xy + 19 \end{array}$$

d. $(2x^3 + x^2 - 5) + (2x + x^3)$

$$\begin{array}{r} 2x^3 + x^2 + 0 - 5 \\ + 1x^3 + 0 + 2x + 0 \\ \hline 3x^3 + x^2 + 2x - 5 \end{array}$$

Application: Find an expression that represents the perimeter of the house.

What does it mean to find the perimeter of an object?

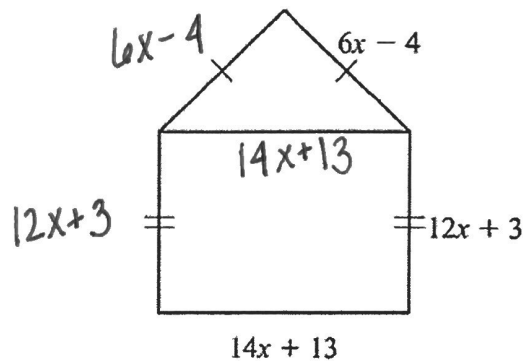
distance around the outside of the shape

$$P \text{ of } \triangle = a + b + c$$

$$P \text{ of } \square = L + L + W + W$$

Perimeter of the house:

$$\begin{array}{r} 6x - 4 \\ 6x - 4 \\ 12x + 3 \\ 12x + 3 \\ 14x + 13 \\ + 14x + 13 \\ \hline 64x + 24 \end{array}$$



Subtracting Polynomials

Subtracting polynomials is similar to adding polynomials except we have to take care of the minus sign first. Subtracting polynomials require the following steps:

- Change the subtraction sign to addition and distribute the negative sign to every term in the 2nd polynomial.
- Line up like terms
- Add (Make sure final answer is in standard form)

a. $(7x^2 - 2x + 1) - (-3x^2 + 4x - 7)$
 $(7x^2 - 2x + 1) + (3x^2 - 4x + 7)$

$$\begin{array}{r} 7x^2 - 2x + 1 \\ + 3x^2 - 4x + 7 \\ \hline 10x^2 - 6x + 8 \end{array}$$

b. $(3x^2 + 5x) - (4x^2 + 7x - 1)$
 $(3x^2 + 5x) + (-4x^2 - 7x + 1)$

$$\begin{array}{r} 3x^2 + 5x + 0 \\ + -4x^2 - 7x + 1 \\ \hline -1x^2 - 2x + 1 \end{array}$$

c. $(5x^3 - 4x + 8) - (-2 + 3x)$
 $(5x^3 - 4x + 8) + (2 - 3x)$

$$\begin{array}{r} 5x^3 - 4x + 8 \\ + 0 - 3x + 2 \\ \hline 5x^3 - 7x + 10 \end{array}$$

d. $(3 - 5x + 3x^2) - (-x + 2x^2 - 4)$
 $(3 - 5x + 3x^2) + (x - 2x^2 + 4)$

$$\begin{array}{r} 3x^2 - 5x + 3 \\ + -2x^2 + 1x + 4 \\ \hline 1x^2 - 4x + 7 \end{array}$$

Remove e. $(8xy + x^3 - 6) - (-10xy + 7 - 2x^3 + 5x^2)$
 $(8xy + x^3 - 6) + (10xy - 7 + 2x^3 - 5x^2)$

f. $(-7x^2 + 8x - 4) - (2 - 14x^2)$
 $(-7x^2 + 8x - 4) + (-2 + 14x^2)$

Application: It costs Margo a processing fee of \$3 to rent a storage unit, plus \$17 per month to keep her belongings in the unit. Her friend Carissa wants to store a box of her belongings in Margo's storage unit and tells her that she will pay Margo \$1 towards the processing fee and \$3 for every month that she keeps the box in storage.

a. Write an expression in standard form that represents how much Margo will pay if Carissa contributes.

$$\$3 + \$17x - \$1 + \$3x \Rightarrow (3 + 17x) - (1 + 3x)$$

$$(3 + 17x) + (-1 - 3x) = \frac{-3x - 1}{14x + 2}$$

b. Determine how much Margo will pay if she uses the storage unit for 6 months.

$$14x + 2$$

$$14(6) + 2 = 84 + 2 = 86$$