U3:L3 Subtracting Polynomials

To subtract polynomials, we must also match __like terms__.

We must remember __integer rules__ and apply them to properly work with positive and negative numbers.
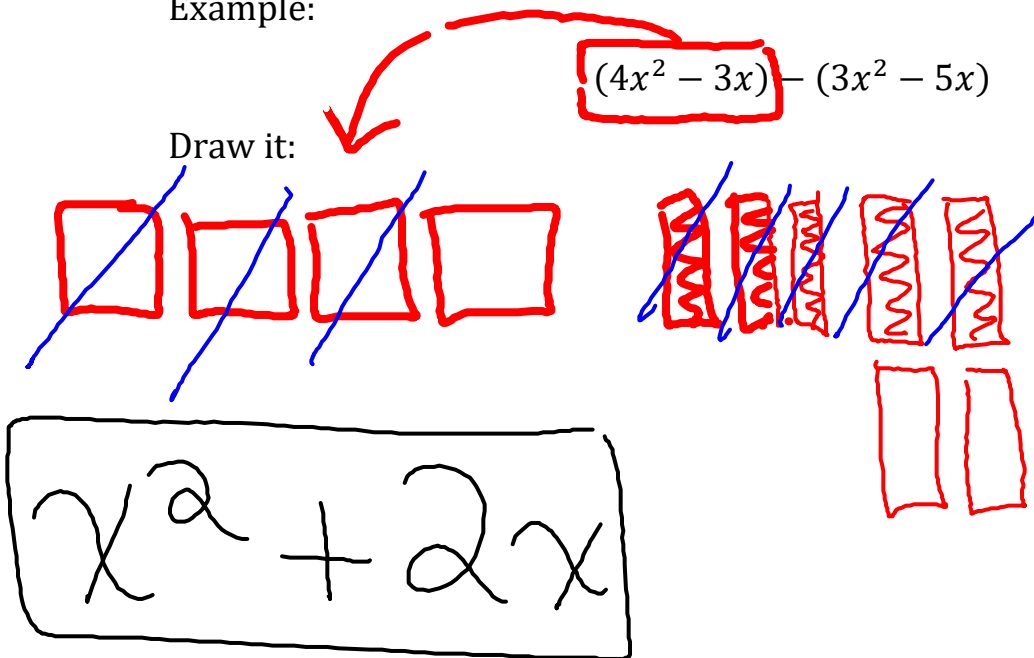
***Remember, when working with integers, we can always add __zero pairs__.

Example:

$$(4x^2 - 3x) - (3x^2 - 5x)$$

Draw it:

$$x^2 + 2x$$

The difference between adding and subtracting polynomials is that when we subtract, we must distribute the __negative sign__ to the entire polynomial. (in order to drop bracket)

Example:

$$(4x^2 - 3x) - (3x^2 - 5x)$$

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

$$4x^2 \quad -3x \quad -3x^2 \quad +5x$$

$$4x^2 - 3x^2 \quad -3x + 5x$$

$$x^2 + 2x$$

Examples:

$(2 + 6x^2) - (7 - 3x^2)$

$2 + 6x^2 - 7 + 3x^2$

$6x^2 + 3x^2 + 2 - 7$

$\boxed{9x^2 - 5}$

$(5 - 6w^2) - (3 - w^2)$

$5 - 6w^2 - 3 + w^2$

$-6w^2 + w^2 + 5 - 3$

$\boxed{-5w^2 + 2}$

$(-6x^2 + 5x + 2) - (4x^2 + 5 - 2x)$

$-6x^2 + 5x + 2 - 4x^2 - 5 + 2x$

$-6x^2 - 4x^2 + 5x + 2x + 2 - 5$

$-10x^2 + 7x - 3$

Adding and Subtracting Polynomials with Fractions

Examples:

Add the following polynomials:

$$-\frac{1}{6}cd^3 \quad , \quad \frac{2}{7}+\frac{1}{3}cd^3 \longrightarrow \frac{-1}{6}cd^3 + \frac{2}{7} + \frac{1}{3}cd^3$$

$$\frac{-1}{6}cd^3 + \frac{1}{3}cd^3 + \frac{2}{7}$$

$$-\frac{1}{6}cd^3 + \frac{2}{6}cd^3 + \frac{2}{7} \longrightarrow \boxed{\frac{1}{6}cd^3 + \frac{2}{7}}$$

Find the difference:

$$\left(-\frac{3}{5}k^2\right) - \left(-\frac{2}{5}k^6\right)$$

$$\boxed{-\frac{3}{5}k^2 + \frac{2}{5}k^6}$$

OR

$$(-2w^5) - \frac{2}{3}w^5$$

$$\frac{-6}{3}w^5 - \frac{2}{3}w^5 \qquad \boxed{\frac{-8}{3}w^5} \qquad \boxed{-2\frac{2}{3}w^5}$$