U3:L2 Adding Polynomials

Like terms are terms that have the same **variable** with the same value of **exponent** for each variable.

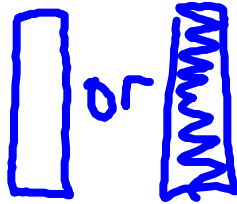Underline the terms that are like terms:

a) <u>–3x</u>, <u>x</u>, $7x^2$, 2y, <u>12x</u>   **All □ or 〰**

b) $7xy^3$, $-5x^3y$, $-y^3x$, $5xy^2$ **NONE**

Polynomials are **simplified**, if...

■ There is only 1 term per degree

■ No terms with a 0 coefficient

Simplify: **if ⊕ you can drop brackets**

$(5x + 1 + 3x + 7)$

$5x + 1 + 3x + 7$

$5x + 3x + 1 + 7$

$\boxed{8x + 8}$

$-3x + 3 + 4x + 2$

$-3x + 4x + 3 + 2$

$+1x + 5$ → $\boxed{x + 5}$

Color coordinate like terms

$(8a^2 + 2a - 3) + (-5a^2 + 4a + 7)$
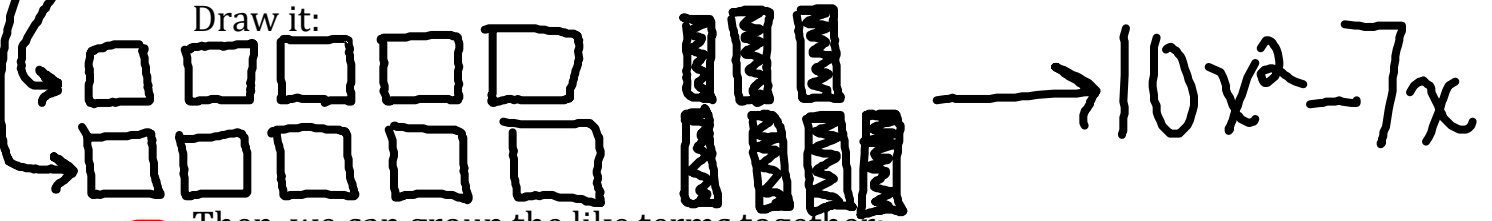
$8a^2 + 2a - 3 - 5a^2 + 4a + 7$

$8a^2 - 5a^2 + 2a + 4a - 3 + 7$

$\boxed{3a^2 + 6a + 4}$

When we add polynomials together, we write each in brackets:

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

Draw it:

$\rightarrow 10x^2 - 7x$

Then, we can group the like terms together:

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

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

And finally, combine the like terms:

$10x^2 - 7x$

Try another…

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

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

Group the like terms together:

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

And finally, combine the like terms:

$-2x^2 + 5x - 1$

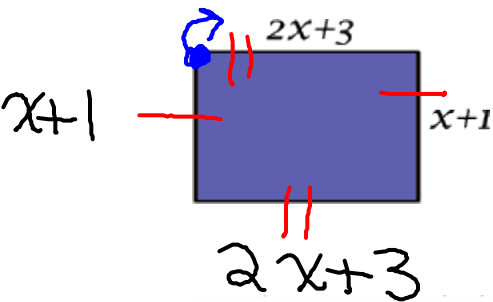Another strategy, is to align the like terms **vertically** to add:

$$(7s + 14) + (-6s^2 + 10s - 2)$$

Show your work:

$$7s + 14$$
$$+ \; -6s^2 + 10s - 2$$
$$\overline{-6s^2 + 17s + 12}$$

ORdeR In "standard form"

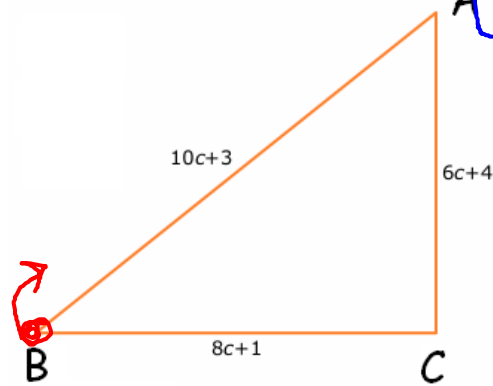You can add polynomials from shape perimeters too…

2x+3
x+1
x+1
2x+3

$$P = \text{all sides added}$$
$$P = (2x+3) + (x+1) + (2x+3) + (x+1)$$
$$P = 2x+3+x+1+2x+3+x+1$$
$$P = 2x+x+2x+x + 3+1+3+1$$
$$P = 6x + 8$$

A
10c+3
6c+4
8c+1
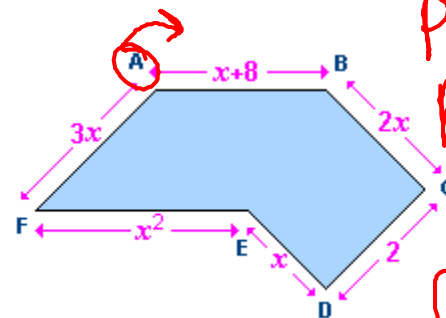B   C

$$P = (10c+3) + (6c+4) + (8c+1)$$
$$P = 10c+3+6c+4+8c+1$$
$$P = 10c+6c+8c + 3+4+1$$
$$P = 24c + 8$$

A — x+8 → B
3x
2x
F — x² → E
x
2
D

$$P = (x+8) + (2x) + (2) + (x) + (x^2) + (3x)$$
$$P = x+8+2x+2+x+x^2+3x$$
$$P = x^2 + x+2x+x+3x + 8+2$$
$$P = x^2 + 7x + 10$$