Combining like terms

• Simplify a polynomial before solving!

$$1x^4 + 1x^3 + 1x^2 + 7x^1 + 1x^0$$ missing terms? extra terms?

{ If you have a term with this, they can be combined. }

$$1x^4 + 7x^3 + 7x^2 + 1x^2 + 1x^1 + 1x^0$$
$$7x^4 + 1x^3 + 2x^2 + 1x^1 + 1x^0$$

IT'S CALLED

combining like terms

variable parts —> fruit! For example,

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

$2🍎 + 4🍐 + 3🍐 + 5🍌$

🍎🍎 + 🍐🍐🍐🍐 + 🍐🍐🍐🍐 + 🍌🍌🍌🍌🍌 = 🍎🍎 + 🍐🍐🍐🍐🍐🍐🍐🍐 + 🍌🍌🍌🍌🍌

$2🍎 + 7🍐 + 5🍌$

x^2 & x^3

YOU CANNOT COMBINE!

🍎 + 🍐 =

? 🥤 ?

x^4 & x^4

YOU CAN COMBINE!

let's play a game...

LIKE OR NOT LIKE

$2x$

✓ The variable of both are the same.

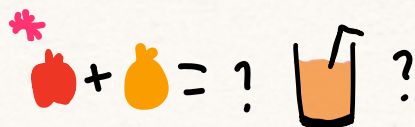$5x$

$3x$

$4x$

NO! * The variables are different.

$5y$

* 🍎 + 🍐 ≠ 🍎🍎

$2x^2$

✓ variable is the same.

$-5x^2$

$-7x^2$

$4x^2$

NO! The variable * is different.

$6x^3$

* 🍎 + 🍐 = ? 🥤 ?

$-5xy$

✓ variables are the same *

$3xy$

$8yx$

* multiplication can be flopped, so xy and yx are equal.

Now, let's practice with polynomials.

$$x^2 + 6x - x + 10 \rightarrow x^2 + 5x + 10$$

fully simplified

$$16 - 2x^3 + 4x - 10 \rightarrow 6 - 2x^3 + 4x$$

fully simplified

Let's try a harder one!

$$3x^2 + 10 - 3x + 5x^2 - 4 + x \rightarrow 8x^2 + -2x + 6$$

fully simplified