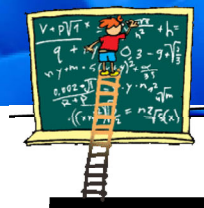
PRINCIPLES - LESSON 2C
COMBINING LIKE TERMS



TERMS: parts of an algebraic expression separated by plus or minus signs

For our purposes, we will include the sign to the left with each term.

$6x^2 + 4x - 10$

3 TERMS

$6x^2$ $+ 4x$ $- 10$

TERMS: $+ 6x^2$

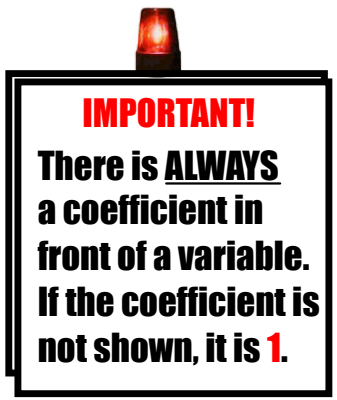
$+ 4x$

$- 10$

Note: If there is no sign to the left, the term is positive.

ALGEBRA VOCABULARY

the number in front of a variable = coefficient



$6x^2$ → the coefficient of $6x^2$ is 6.

$4y$ → the coefficient of $4y$ is 4.

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a term that does not contain a variable = constant

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

-8 is a constant in the expression above.

COEFFICIENTS & CONSTANTS

Write the coefficient of each term.

ex1) $-8n^4$ The coefficient of this term is -8.

ex2) $1x^5y^7$ The coefficient of this term is 1.

ex3) $-1m^6$ The coefficient of this term is -1.

Write the constant from each expression.

ex4) $x^2 + 7 - 3x$

The constant in this expression is 7.

ex5) $-4 + 3n^3 - 2n^2 + 8n$

The constant in this expression is -4.

ex6) $4r^2 + 11r$

There is no constant in this expression.

LIKE & UNLIKE TERMS

Examples of LIKE terms:

$5a$ & a

$3m^2$ & $-6m^2$

$-7x^2y^3$ & $-2x^2y^3$

Examples of UNLIKE terms:

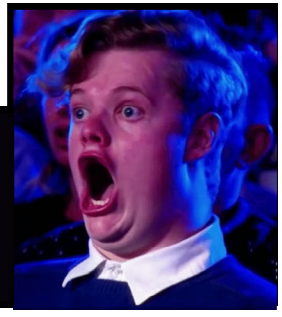
$4a$ & $4b$

$2m^2$ & $3m$

$7x^2y^3$ & $2x^3y^2$

LIKE TERMS: terms that have exactly the same variables and exponents

A SHOCKING FACT: terms that are not like are called UNLIKE TERMS



LIKE & UNLIKE TERMS

List the terms and state whether they are like or unlike.

ex7) $8n^3 - 2n^3$

$+8n^3$

$-2n^3$

These are like terms.

ex8) $3d + 6$

$+3d$

$+6$

These are unlike terms.

ex9) $1m - 3m$

$+1m$

$-3m$

These are like terms.

ex10) $-6a^2b + 3ab^2$

$-6a^2b$

$+3ab^2$

These are unlike terms.

COMBINING LIKE TERMS

As part of simplifying an algebraic expression, like terms must be combined into one term. This is done by simply adding (or subtracting) the coefficients of each like term and keeping the variables the same.

Unlike terms can NEVER be combined.

Simplify.

ex11) $3x + 9x$

$= 12x$

ex12) $8c + 4c^3 - 7c + 2c^3$

$= 1c + 6c^3$

THE DISTRIBUTIVE PROPERTY

Recall:

The Distributive Property

We use the distributive property to get rid of grouping when we cannot combine like terms inside parenthesis.

to distribute = to deliver or pass out

The Distributive Property is a way to remove grouping symbols

We distribute a number outside of parenthesis to each number inside parenthesis. After we distribute, the parenthesis are gone.

Simplify.

ex13) $5(4x - 5)$ Distribute the 5.

$= 20x - 25$

ex14) $-3(2y - 7z - 1)$ Distribute the -3

$= -6y + 21z + 3$

SIMPLIFYING EXPRESSIONS INVOLVING LIKE TERMS

Simplify.

ex15) $9 + 7y - 3z + 5y - 5z - 3$

$= 6 + 12y - 8z$

ex16) $5x^2y^4 + 3x^4y^2$

These are unlike terms. We can't simplify this expression any further.

ex17) $8d + 3(2d - 3) + 15$

$= 8d + 6d - 9 + 15$

$= 14d + 6$

ex18) $4xy + 5yx$

The commutative property says that $yx = xy$.

$= 4xy + 5xy$

$= 9xy$

SIMPLIFYING EXPRESSIONS INVOLVING LIKE TERMS

Simplify.

ex19) $3r - 2(r - 1)$

$= 3r - 2r + 2$

$= r + 2$

ex20) $(2x + 3) - (4x - 8)$

$= 2x + 3 - 4x + 8$

$= -2x + 11$