

UNIT 1: SIMPLIFY EXPRESSIONS

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Objectives: I can combine like terms to simplify variable expressions.

Combining Like Terms

In an expression, the **terms** are the elements separated by the plus or minus sign. A **coefficient** is the number being multiplied by a variable.

There are three terms below!

3a is a term.	b is a term.	-5 is a term.
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3 is the coefficient
a is the variable

3a + b + -5

3 terms!

-5 is a constant b/c there is no variable beside it.

Subtraction! - change to "add the opposite"

Like terms have the same variable(s).

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

2x and 4x are like terms.

3y and -5y are like terms.

You can add like terms by adding their coefficients.

$$2x + 4x = 6x$$

and

$$3y + (-5y) = -2y$$

So you can simplify $2x + 3y + 4x - 5y = 6x - 2y$

$$2x + 3y + 4x + (-5y) = 6x - 2y$$

Practice

Problem 1. $2x + 3y + 1z$

- What number is the coefficient of x? $\frac{2}{1}$
- What number is the coefficient of y? $\frac{3}{1}$
- What number is the coefficient of z? $\frac{1}{1}$

$$5x + (-4y) + (-z)$$

Problem 2. $5x - 4y - z$ (hint: change the subtraction to plus the opposite)

- What number is the coefficient of x? $\frac{5}{1}$
- What number is the coefficient of y? $\frac{-4}{1}$
- What number is the coefficient of z? $\frac{-1}{1}$

Problem 3. Add like terms.

a) $5x + 2x = 8x$

b) $6x + (-2x) = 4x$

c) $5x + 1x = 6x$

d) $5x + (-x) = 4x$

e) $-4x + 5x = x$

f) $4x - 5x = -x$

g) $-5x - 3x = -8x$

h) $-x - x = -2x$

i) $-7x - (-7x) = 0$

j) $-3x - 4 + 2x + 6 = -x + 2$

k) $x - 2 - 4x - 5 = -3x + (-7) = x + (-2) + (-4x) + (-5)$

l) $5x + y - 2x + 3z = 2x + y + 3z$

m) $3x - y - 8x + 2y = -5x + y$

n) $4x + y + (-2x) + 3z = 2x + y + 3z$

o) $3x + (-y) + (-8x) + 2y = -5x + y$

Typically, you do not write the coefficients 1 or -1.

$$1x = x$$

$$-1x = -x$$
