Algebra 1
Workbook Solutions

Like terms

krista king
M A T H

ADDING AND SUBTRACTING LIKE TERMS

■ 1. Give an example of like terms.

Solution:

There are many correct answers. Some examples include

$3x^2$ and $-5x^2$

$-x^3$ and $2x^3$

To be like terms, they must have the same letter and exponent. Some examples of terms that are not like terms are

x^2 and x^4

t^2 and y^2

■ 2. Simplify the expression.

$-x + 6x - 8x + 3x$

Solution:

All of these terms have the same exponent, so we add the coefficients together.

$$(-1 + 6 - 8 + 3)x$$

$$0x$$

$$0$$

3. What stays the same when adding or subtracting like terms?

Solution:

The exponent and the variable stay the same when adding and subtracting like terms. The coefficient is what changes.

4. Simplify the expression.

$$x + 2x^2 - y - 5x^2 + 7y - 4x$$

Solution:

We start by grouping terms together that have the same variable and exponent. Then we simplify the coefficient.

$$(1 - 4)x + (2 - 5)x^2 + (-1 + 7)y$$

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

MULTIPLYING AND DIVIDING LIKE TERMS

■ 1. Simplify the expression.

$$\frac{x^2(-x + 3x^3 + 2x^2)}{x^3}$$

Solution:

First we'll simplify the x^2 in the numerator with the x^3 in the denominator.

$$\frac{-x + 3x^3 + 2x^2}{x}$$

Since every term in the numerator has an x, which is the expression in the denominator, divide every term on top by x, and simplify.

$$\frac{-x}{x} + \frac{3x^3}{x} + \frac{2x^2}{x}$$

$$-1 + 3x^2 + 2x$$

■ 2. Simplify the expression.

$$\frac{(2x + 1)(x^2 - x - 4)}{2x}$$

Solution:

First expand the numerator.

$$\frac{2x^3 - 2x^2 - 8x + x^2 - x - 4}{2x}$$

Then combine like terms in the numerator.

$$\frac{2x^3 - x^2 - 9x - 4}{2x}$$

Finally, divide every term by $2x$ and simplify.

$$\frac{2x^3}{2x} - \frac{x^2}{2x} - \frac{9x}{2x} - \frac{4}{2x}$$

$$x^2 - \frac{x}{2} - \frac{9}{2} - \frac{2}{x}$$

▨ 3. Simplify the expression.

$$\frac{6x^a}{3x^b}$$

Solution:

Using rules of exponents, we can write the quotient as

$$\frac{6}{3}x^{a-b}$$

$2x^{a-b}$

■ 4. Simplify the expression.

$3x^a \cdot 5x^b$

Solution:

Using rules of exponents, we can write the product as

$3 \cdot 5x^{a+b}$

$15x^{a+b}$