

The background features abstract blue geometric shapes, including triangles and polygons, in various shades of blue, creating a modern and dynamic look.

# Day 05:

## 1.3 Like Terms & 1.4 Distributive Property

HW05

# 1.3 Like Terms

SWBAT combine like terms.

Assignments:  
HW05

# Vocabulary Review

- ▶ Variable
  - ▶ A letter that represents a quantity that might change
- ▶ Coefficient
  - ▶ A number multiplied to a variable
- ▶ Term
  - ▶ A number, a variable, or variables and numbers multiplied together
- ▶ Expression
  - ▶ A set of terms (usually) connected by addition
- ▶ Like Terms
  - ▶ Terms with the same variable and exponent on the variable

# Identifying Like Terms

- ▶ Which terms in the following expressions are like terms?

# Combining Like Terms

- ▶ “*Simplify*”: make the expression smaller and easier to read
- ▶ One tool is “*combining like terms*”
  1. Change all subtraction into addition.
  2. Identify like terms.
  3. Rearrange the terms to put the like terms next to each other. (optional)
  4. Add the coefficients of the like terms.

Simplify:

1.  $10x - 13y + 90 - 15 + 3x$

2.  $8x^2 + 2x - 15 - 5x + 4 - x^2$

3.  $4n + 62 - n - 8n + 24$

4.  $-25 - y^2 + 4 + 16y^2 + 7x^2$

5.  $21 - 18 + 3x - 7y - 13x$

Standard Form puts terms in alphabetical order by variable and, within a variable, from biggest exponent to smallest exponent. Constant terms come at the very end.

# Adding and Subtracting Radicals

Adding radicals is similar to adding terms with variables. We have to have *like terms*. When working with radicals, *like terms* means that we have the same radicand.

► Can we add these?

1.  $6\sqrt{5}$  and  $10\sqrt{5}$ ?
2.  $7\sqrt{3}$  and  $-2\sqrt{5}$ ?
3.  $\sqrt{2}$  and  $\sqrt{6}$ ?
4.  $-10\sqrt{4x}$  and  $6\sqrt{4x}$ ?
5.  $\sqrt{5x}$  and  $-4\sqrt{17x}$ ?

# Adding and Subtracting Radicals

- ▶ Step 1: Simplify the radicals.
- ▶ Step 2: Determine if you can add them.
- ▶ Step 3: Add (or subtract) the coefficients.
  - ▶ The radical will remain the same.
- ▶ Example 1:  $3\sqrt{5} - 7\sqrt{5}$
  
- ▶ Example 2:  $-2\sqrt{12} + 7\sqrt{3}$

# Add or subtract the radicals.

1.  $-5\sqrt{6} - 5\sqrt{6}$

2.  $2\sqrt{5} + 4\sqrt{5}$

3.  $-2\sqrt{10} + 4\sqrt{10}$

4.  $-2\sqrt{10} + 2\sqrt{10}$

5.  $-\sqrt{2} - 4\sqrt{2}$

6.  $2\sqrt{8} + 2\sqrt{2}$

7.  $-2\sqrt{160} + 3\sqrt{160}$

8.  $-3\sqrt{6} + 2\sqrt{6}$

9.  $-\sqrt{10} + 3\sqrt{90}$

10.  $5\sqrt{8} + 5\sqrt{200}$

11.  $-\sqrt{2} + 4\sqrt{50}$

12.  $-4\sqrt{6} - 3\sqrt{54}$

13.  $2\sqrt{250} + 2\sqrt{40}$

14.  $-5\sqrt{200} + 5\sqrt{8}$

15.  $2\sqrt{48} + 2\sqrt{75}$

16.  $-2\sqrt{54} - 4\sqrt{6}$

17.  $5\sqrt{6} + 2\sqrt{6}$

18.  $5\sqrt{90} - 4\sqrt{250}$

19.  $3\sqrt{6} - 2\sqrt{6}$

20.  $-5\sqrt{112} - 3\sqrt{175}$



# 1.4 The Distributive Property

SWBAT use the distributive property to simplify expressions.

# Distributive Property

▶ Another tool to help us simplify expressions

▶  $a(b + c) = ab + ac$

▶  $7(3 + 4)$

▶  $18(x + 5) + 3$

1.  $-2(y - 3) - 7$

1.  $3(2x - 7) + 4$

2.  $-(-3x + y) + 3y$

3.  $\sqrt{2}(3 + \sqrt{18}) - \sqrt{2}$

# Simplifying Expressions - More on the Distributive Property

- ▶ When simplifying, remember PEMDAS.
  - ▶ Simplifying square roots counts as *exponents*
  - ▶ The distributive property counts as *multiplying/dividing*
  - ▶ Combining like terms counts as *adding/subtracting*

1.  $-(4x - 90)$

2.  $-6(x - 2)$

3.  $2(3 - n)$

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

5.  $25 + 5x - (5 - 2x)$

6.  $16 - 4(y + 5) + 16y$

7.  $20y^2 - 16y + \frac{1}{2}(6y - 2) - 10y^2$

8.  $11\sqrt{6} - \sqrt{2}(5\sqrt{3} + 4) - \sqrt{8}$

9.  $\sqrt{5}(3x - 1) + \sqrt{20} - x\sqrt{5}$

# Exit Ticket

► Simplify the expressions.

1.  $6 - 6a^2 + 3a + 2a + 2 + 12a^2$

2.  $\sqrt{10}(\sqrt{2} + x) - 15\sqrt{5}$