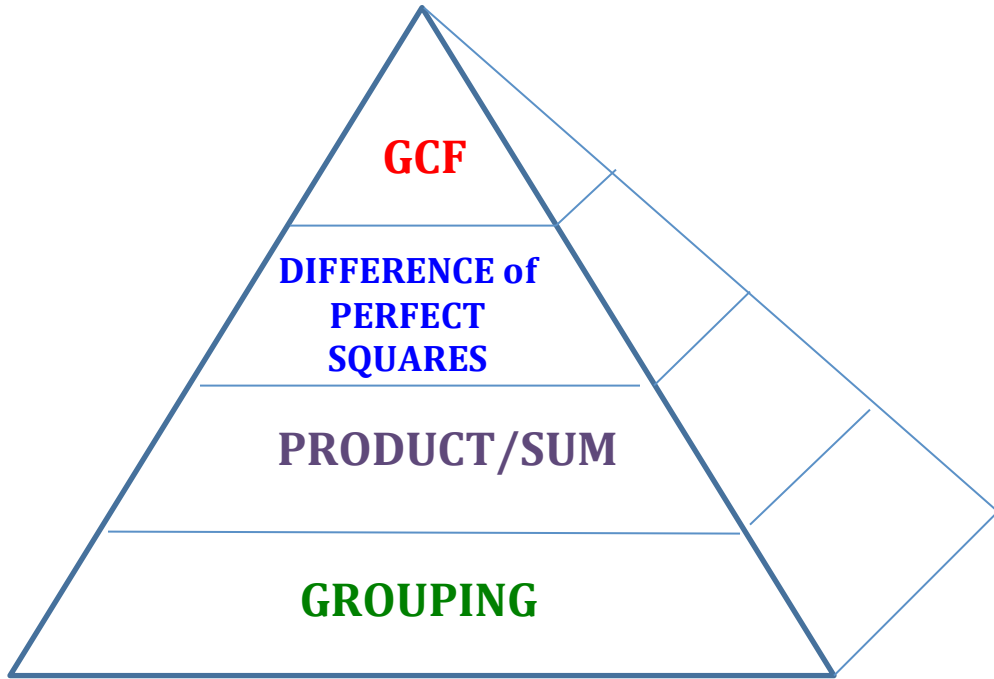


In Common Core Geometry, it is important to remember how to factor, solve quadratic equations, and simplify radicals.

After you read the summary on pages 1 – 2 please answer the eight questions that begin on page 3 in the space provided. Show all work.

THE FACTORING PYRAMID



➤ **FACTORING**

Examples and Solutions:

Factor Completely: $2x^2 - 50$
 $2(x^2 - 25)$ GCF: 2
 $2(x + 5)(x - 5)$ Difference of Perfect Squares

Factor Completely: $2a^2 - 10a - 28$
 $2(a^2 - 5a - 14)$ GCF: 2
 $2(a - 7)(a + 2)$ Product/Sum Product: -14 $(-7)(+2) = -14$
 Sum: -5 $-7 + (+2) = -5$

➤ **Solving Quadratic Equations by Factoring**

1. The equation should be set equal to zero.
2. Factor the polynomial
3. Set each factor equal to zero and solve

Examples and Solutions:

Find the solution set of the equation $x^2 - 6x = 0$.

$$x(x - 6) = 0 \quad \text{GCF: } x$$

$$x = 0 \text{ or } x - 6 = 0 \quad \text{Set each factor equal to zero}$$

$$x = 0 \text{ or } x = 6 \quad \text{Solve each equation}$$

Find the solution set for the equation $x^2 - 5x = 6$.

$$x^2 - 5x - 6 = 0 \quad \text{Subtract 6 from both sides to set equation equal to zero}$$

$$(x - 6)(x + 1) = 0 \quad \text{Factor: Product/Sum}$$

$$x - 6 = 0 \text{ or } x + 1 = 0 \quad \text{Set each factor equal to zero}$$

$$x = 6 \text{ or } x = -1 \quad \text{Solve each equation}$$

Solve: $(x - 3)(x + 3) = 6x - 14$

$$x^2 - 9 = 6x - 14 \quad \text{FOIL out } (x - 3)(x + 3)$$

$$x^2 - 9 - 6x + 14 = 0 \quad \text{Set equation equal to zero.}$$

$$x^2 - 6x + 5 = 0 \quad \text{Combine Like Terms.}$$

$$(x - 5)(x - 1) = 0 \quad \text{Factor: Product/Sum}$$

$$x - 5 = 0 \text{ or } x - 1 = 0 \quad \text{Set each factor equal to zero}$$

$$x = 5 \text{ or } x = 1 \quad \text{Solve each equation}$$

➤ **Simplifying Radicals**

- Express $7\sqrt{90}$ in simplest radical form.

$$7\sqrt{9 \cdot 10}$$

$$7 \cdot \sqrt{9} \cdot \sqrt{10}$$

$$7 \cdot 3\sqrt{10}$$

$$21\sqrt{10}$$

- Express $\sqrt{128}$ in simplest radical form.

$$\sqrt{64 \cdot 2}$$

$$\sqrt{64} \cdot \sqrt{2}$$

$$8\sqrt{2}$$

EXAMPLES

❖ *FACTORING*

1 Factor: $ab^2 - ab$

2 Factor: $x^2 - 10x + 21$

3 Factor: $a^2 - a - 2$

❖ **SOLVE EACH QUADRATIC EQUATION BY FACTORING:**

4 Find the solution set of the equation $x^2 - 5x = 0$.

5 Solve the equation $x^2 - 2x - 15 = 0$.

6 Find the solutions of $x^2 = 16x - 28$.

❖ **SIMPLIFYING RADICALS**

7. When $\sqrt{72}$ is expressed in simplest $a\sqrt{b}$ form, what is the value of a ?

8. Theo determined that the correct length of the hypotenuse of the right triangle in the accompanying diagram is $\sqrt{20}$. Fiona found the length of the hypotenuse to be $2\sqrt{5}$. Is Fiona's answer also correct? *Justify your answer.*

