

# Factoring Completely

For most factoring problems you will need to first factor out a GCF and then perform the proper factoring technique. Look at the following examples to see the **two-step process**.

$$3x^2 - 12x - 15 = 3(x^2 - 4x - 5) \\ = 3(x - 5)(x + 1)$$

$$5x^2 - 40 = 5(x^2 - 9) \\ = 5(x - 3)(x + 3)$$

Again, the most important thing and most difficult is to remember what factoring process to use. Nonetheless, the **first step is always to look for a GCF!!!!**

Factor Completely

1.  $3x^2 + 6x - 24$

$$3(x^2 + 2x - 8) \quad \begin{array}{r} 8 \\ 1, 8 \\ 2, 4 \end{array} \\ \boxed{3(x + 4)(x - 2)}$$

2.  $2x^2 - 50$

$$2(x^2 - 25) \\ \boxed{2(x + 5)(x - 5)}$$

3.  $12x^2 - 12y^2$

$$12(x^2 - y^2) \\ \boxed{12(x + y)(x - y)}$$

4.  $5x^2 - 20x - 60$

$$5(x^2 - 4x - 12) \quad \begin{array}{r} 12 \\ 1, 12 \\ 2, 6 \\ 3, 4 \end{array} \\ \boxed{5(x + 2)(x - 6)}$$

5.  $x^4 - 10x^3 - 24x^2$

$$x^2(x^2 - 10x - 24) \quad \begin{array}{r} 24 \\ 1, 24 \\ 2, 12 \\ 3, 8 \\ 4, 6 \end{array} \\ \boxed{x^2(x + 2)(x - 12)}$$

6.  $18x^2 - 8$

$$2(9x^2 - 4) \\ \boxed{2(3x - 2)(3x + 2)}$$

Factoring Completely Practice

Name \_\_\_\_\_

Factor Completely

1.  $10x^2 - 90$

2.  $2x^2 - 6x - 20$

3.  $4x^2 - 49$

4.  $x^2 - 2x + 1$

5.  $10a^6 - 4a^2 + 8a$

6.  $6x^2 + 60x - 66$

7.  $x^2 - 196$

8.  $3x^2 + 27$

9.  $x^3 + 5x^2 - 36x$

10.  $7a^2 - 28b^2$