Name _____ **Date** _____ **Hr** ___

Review of Algebra 1 Factoring
Notes

Lesson #1: Common Monomial Factoring

When two or more numbers are multiplied, the result is a single number. Factoring is the reverse process. In factoring, one begins with a single number and expresses it as a product of two or more numbers. This process also works for polynomials.

Example #1:
Find the GCF (greatest common factor).

1. 4 and 10

2. $36x$ and $45x^2$

3. $7a^4b^2$, $21a^3b$, and $49a^2b^3$

A polynomial that can NOT be factored is called _____.

Example #2:
Tell whether or not the polynomial is prime.

1. $5x + 1$

2. $4m^3 + 5m^2$

Example #3:
Factor the polynomial completely

1. $7y^2 + 3y$

2. $4a^2 - 50a + 10$

3. $39m^3 - 24m^2$

Example #4:
The area of a rectangle is $75t^3 - 60t^2 + 30t$. The width is $15t$. Find the length.

Example #5:
Simplify.

1. $\frac{7st^2+14st-49s^2t}{7st}$

2. $\frac{m^{12}+3m^9-4m^7}{m^5}$

Lesson #2: Factoring Difference of Two Squares

Multiplying Conjugates

Multiply and simplify, then look for a pattern.

1. $(x+3)(x-3)$

2. $(2y+7)(2y-7)$

3. $(3a+5b)(3a-5b)$

What do you notice about the outside and inside terms of the FOIL?

What do you notice about the first and last terms of the FOIL?

Difference of Two Squares Pattern

Look for two perfect squares being subtracted — then it factors as the sum and difference of the square roots

$$a^2 \quad - \quad b^2 \quad = \quad \_\_\_\_\_$$

Factor.

1. $4x^2 - 1$
2. $25x^2 + 81$
3. $25m^2n^2 - 16$

Lesson #3: Factoring Trinomials of the form $ax^2 + bx + c$

Factoring is related to multiplication, a quadratic trinomial can be factored by working backward with the FOIL method, using guess-and-check.

Factor:

a. $x^2 + 14x + 40$

b. $3x^2 - 10x + 3$

c. $6x^2 + 7x - 3$

Factor completely:

a. $2x^3 + 16x^2 + 24x$

b. $3x^3y + 18x^2y + 27xy$

Lesson #4: Solving Quadratic Equations by factoring

Quadratic Equation: $ax^2 + bx + c = 0$

** Zero Product Property

If $a \cdot b = 0$, then $a = 0$ or $b = 0$.

** Example

If $(x + 1)(x - 2) = 0$,

then $x + 1 = 0$ or $x - 2 = 0$

so $x = -1$ or $x = 2$ are the solutions

Solve.

1. $(x - 2)(3x + 1)(x + 5) = 0$

2. $2s(s + 3) = 0$

Factor and solve.

1. $x^2 - 10x + 9 = 0$

2. $x^2 - 9x + 18 = 0$

Set equal to zero. Factor and solve.

1. $x^2 - 16x = 36$

2. $x^2 - 7x = -12$

3. $x^2 = 25$