

Factoring

Warm-up: Multiply the following binomials.

* 1. $(x+2)(x+3)$
 $x^2 + 3x + 2x + 6$
 $x^2 + 5x + 6$

2. $(x+7)(x+3)$
 $x^2 + 3x + 7x + 21$
 $x^2 + 10x + 21$

* 3. $(x+5)(x-5)$
 $x^2 - 5x + 5x - 25$
 $x^2 - 25$

4. $(x+8)(x-8)$
 $x^2 - 8x + 8x - 64$
 $x^2 - 64$

Common Monomial Factoring

* 1. $x^2 - 6x$
 $x(x-6)$

* 2. $2x^3 + 6x^2 - 14x + 8$
~~2~~ $2(x^3 + 3x^2 - 7x + 4)$

* 3. $x^4 - 3x^3 + 2x^2$
 $x^2(x^2 - 3x + 2)$
 $x^2(x-2)(x-1)$

Factoring by reversing FOIL

Examples:

* 4. $x^2 + 6x + 8$
 $(x+4)(x+2)$

* 5. $x^2 + 3x - 18$
 $(x+6)(x-3)$

* 6. $3x^2 + 16x + 21$
 $(3x+7)(x+3)$

* 7. $4x^2 - 5x - 6$
 $(4x+3)(x-2)$

Practice Problems:

4. $x^2 + 8x + 12$
 $(x+2)(x+6)$

5. $x^2 - 9x + 18$
 $(x-3)(x-6)$

6. $2x^2 - 10x - 28$
 $2(x-7)(x+2)$

7. $9x^2 + 30x + 16$
 $(3x+8)(3x+2)$

Special Patterns of Factoring: Difference of Two Squares

* 8. $x^2 - 36$
 $(x+6)(x-6)$

8. $x^2 - 64$
 $(x+8)(x-8)$

9. $x^2 - 4$
 $(x+2)(x-2)$

9. $x^2 - 100$
 $(x+10)(x-10)$