

Name: \_\_\_\_\_

Period: \_\_\_\_\_

### **5.5 Day 1 Notes Factoring Polynomials**

**Factor the following using GCF. \*\*Always look for GCF first!**

1.  $12x^3 - 36x^2$

2.  $8x^2 - 16x$

3.  $18r^2s^3 - 12r^4s$

**Difference of Two Perfect Squares:** \_\_\_\_\_

4.  $x^2 - 49$

5.  $36x^4 - 25y^6$

6.  $8x^2 - 2$  hint: factor out  
GCF first!

7.  $49x^2 + 36$

**Factoring Trinomials:**

8.  $x^2 - 5x - 24$

9.  $x^2 - 8x + 15$

10.  $6x^2 + 7x - 5$

**You can use this same process for higher degree polynomials IF:** \_\_\_\_\_

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11.  $x^4 + 14x^2 + 48$

12.  $x^6 + 3x^3 - 40$

13.  $3x^4 - 5x^2 - 12$

**Factoring by grouping:**

When we have \_\_\_\_\_ terms, we factor by grouping. If there are only 4 terms, we group the \_\_\_\_\_ terms and the \_\_\_\_\_ terms together and factor out the \_\_\_\_\_ from each grouping to create the factors.

Ex.  $3x^3 + 12x^2 + x + 4$

14.  $2x^3 + x^2 + 8x + 4$

Ex.  $x^3 + 3x^2 - 4x - 12$

15.  $x^3 - 2x^2 - 9x + 18$

**Sums/Differences of two cubes:**

Difference of two cubes:  $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Sum of two cubes:  $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

Remember the signs! - S O A P

Ex.  $x^3 - 8$

16.  $x^3 + 27$

Ex.  $3x^4 + 24x$

17.  $2x^4 - 54x$