

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

## Factoring by Grouping

⊙ **Factoring:** Writing the polynomial as a product.

$$ax^3 + bx^2 + cx + d$$

**Steps:**

1. Quadratic Equation needs to be in standard form

$$24x^3 - 56x^2 - 3x + 7$$

2. Group the first two terms and the last two terms using parenthesis

$$(24x^3 - 56x^2)(-3x + 7)$$

3. Ask yourself what is the GCF for each set of parenthesis and Factor it Out

$$8x^2(3x - 7) - 1(3x - 7)$$

4. Write as a product of binomials

$$(8x^2 - 1)(3x - 7)$$

**Examples:**

$$1) (21a^3 + 18a^2)(-35a - 30)$$

$$3a^2(7a + 6) - 5(7a + 6)$$

$$(3a^2 - 5)(7a + 6)$$

$$2) (36x^3 + 6x^2)(-30x - 5)$$

$$6x^2(6x + 1) - 5(6x + 1)$$

$$(6x^2 - 5)(6x + 1)$$

~~3)  $49xy - 42xa - 42ay + 36a^2$~~

~~4)  $21xy - 18x + 28ky - 24k$~~