Name: _____

Factoring

Always look for a Greatest Common Factor FIRST!!!

2 TERMS

Difference of squares:

$a^2 - b^2 = (a+b)(a-b)$

Ex 1: $9x^2 - 49 = (3x+7)(3x-7)$

OR

Sum of cubes:

$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$

Ex: $x^3 + 8 = (x+2)(x^2 - 2x + 4)$

OR

Difference of cubes:

$a^3 - b^3 = (a-b)(a^2 + ab + b^3)$

Ex: $27x^3 - 64 = (3x-4)(9x^2 - 12x + 16)$

3 TERMS

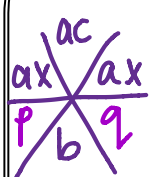
Perfect Square Trinomial

$a^2 \pm 2ab + b^2 = (a \pm b)^2$

Ex: $9x^2 + 24x + 16 = (3x+4)^2$

OR

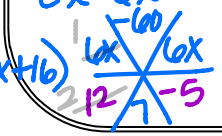
$ax^2 + bx + c$



Find p and q such that $pq = ac$ and $p + q = b$

Reduce $\frac{ax}{p}$ and $\frac{ax}{q}$

Ex: $6x^2 + 7x - 10$



$= (x+2)(6x-5)$

4 TERMS

Grouping:

Ex: $3x^3 + 2x^2 - 15x - 10$

Factor the GCF out of the first 2 terms and the GCF out of the last 2 terms:

$x^2(3x+2) - 5(3x+2)$

THEN

$x^2(3x+2) - 5(3x+2)$

Factor out the common binomial

$(3x+2)(x^2 - 5)$

1. If **nothing** can be done to the original expression, then it is **PRIME** 2. Check to see if any of your final answers **will factor further**.
3. **Check** your answer by multiplying.