Name: _____   Date: _____   Period: _____

<u>Factors</u> are numbers that divide evenly into a number with no remainder. Factors multiply to give you a product.

Find the factors of 36.   1 • 36
                            2 • 18
                            3 • 12 ←—————— When listing out factors it is helpful to write them out in pairs. Writing
                            4 • 9   them in order makes it less likely to forget any.
                            6 • 6

A <u>prime number</u> is a number that has only 2 factors, 1 and itself. | A <u>composite number</u> is a number that has 3 or more factors.
Ex. 2, 3, 5, 7, … | Ex. 4, 6, 9, …

Finding the Greatest Common Factor of Two Numbers:

Find the GCF 28 & 42.

<u>Method 1</u> – list out the factors of each and find the largest factor | <u>Method 2</u> – find the prime factorization of each and multiply the
common to both. | common prime factors.

| 28	42		28	42
1 • 28	1 • 42		4 • 7	6 • 7
2 • 14	2 • 21		2 • 2	3 • 2
4 • 7	3 • 14			
	6 • 7		28 = 2 • 2 • 7	
	GCF = 14		42 = 2 • 3 • 7	
			GCF = 2 • 7 = 14	

<u>New Stuff:</u>

GCF Factoring of Polynomials (Monomial Factoring)

1) Find the **Greatest** Monomial that is a factor of **EACH** term.
2) Write it outside the parenthesis.
3) Divide each term by the GCF to determine the "left overs" to be written in parenthesis.

GCF factoring is BACKWARDS DISTRIBUTIVE!!

Example:

Factor $6x – 3y$

$3 (2x – y)$

GCF   Left over after dividing by GCF
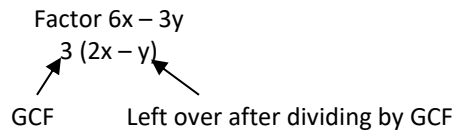
Factor the following:

1. $7y - 21$	2. $32x + x^2$	3. $p + prt$
4. $4x^2 + 12y^2$	5. $rs^2 + 2r$	6. $3a^2b^3 – 9ab^2$
7. $3x^4y^3z + 6x^2yz^3$	8. $16b^4c^2 – 4b^2c^2$	9. $8a^4b^2c^3 + 12a^2b^2c^2$

Factor the following using GCF Factoring.

1. $6x^3 + 21x$

2. $35x^3 - 28x$

3. $28y^3 + 4ay$

4. $2xy^2 + 15x^3y^4$

5. $32a^2b - 40ab$

6. $5xy^2 + 15x^3y^4$

7. $4a^2bc - 40ab$

8. $16r^2s^2 - 48r^3s$

9. $3x^2 + 6x + 15$

10. $2x^3 + 6x^2 - 10x$

Sometimes greatest common factors are more complicated than simple monomials. Rewrite each of the following expressions as the product of two binomials by factoring out a common **binomial** factor then combining like terms. (Pay special attention to the subtraction example).

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

2. $(2x - 1)(2x + 5) - (2x - 1)((x - 2)$

3. $(x + 3)(3x + 3) + (x + 3)(5x - 6)$

4. $(3x - 1)(2x - 7) - (3x - 1)(x + 4)$