

Name: Key Date: _____
 Mrs. Roubos 8A Period _____
 on calc: MATH → NUM → 9:GCD (1st #, 2nd #) enter
 if it is 3 # DO: MATH → NUM → 9:GCD (9:GCD 1st #, 2nd #), 3rd #) enter
 Do twice! **Factoring Using the GCF**

Simplify the expression: $5(c + d) = \underline{5c + 5d}$

What property was used to simplify the above expression? Distributive Property

*When we undo the distributive property we are also factoring using the GCF!
 ↓ inverse ↑ Reverse distribution

Steps: To factor polynomials using the GCF:

- 1) Find the GCMF (GCF of coefficients + smallest exponent of like variables)
- 2) Place the GCMF outside of a set of parentheses
- 3) Divide the terms by the GCMF + place the quotient inside the ().

★ Remember: when dividing you divide the coefficients and subtract the exponents

Examples: Factor the following polynomials

1) $2a + 2b = \underline{2(a + b)}$

GCF = 2

2) $8x - 16 = \underline{8(x - 2)}$

GCF = 8

3) $2y^2 + 5y = \underline{y(2y + 5)}$

GCF = y

4) $10p^2 - 15p^3 = \underline{5p^2(2 - 3p)}$

GCF = $5p^2$

5) $\pi r^2 + \pi r h = \underline{\pi r(r + h)}$

GCF = πr

6) $35a^2b - 25ab^2 = \underline{5ab(7a - 5b)}$

GCF = $5ab$

7) $12m^3 + 6m^2 - 3m = \underline{3m(4m^2 + 2m - 1)}$

GCF = $3m$

★ Requirements: Terms must have common factors in order to do GCF

We have just seen how to identify the greatest common factor of two monomials. We now would like to use this skill to write binomials and trinomials in factored form. First, though, we will review the distributive property.

Exercise #8: Rewrite each of the following without parentheses by applying the distributive property.

(a) $5(2x+3) =$

(b) $2x(x-6) =$

(c) $5(x^2-4x+7) =$

We now will reverse this process by "factoring out" the GCF from binomials and trinomials.

Exercise #9: Write each of the following expressions as equivalent products of their GCF's and another factor.

(a) $3x+6 = 3(x+2)$

(b) $2x^2+8x = 2x(x+4)$

(c) $4x^2-8x+6 = 2(2x^2-4x+3)$

(d) $10x^2-25x = 5x(2x-5)$

(e) $6x+27 = 3(2x+9)$

(f) $5x^3+10x^2+5x = 5x(x^2+2x+1)$

(g) $2x^2+10x+20 = 2(x^2+5x+10)$

(h) $x^2-x = x(x-1)$

(i) $3x+3 = 3(x+1)$

(j) $4x^2-10x = 2x(2x-5)$

(k) $8x^2-4x+16 = 4(2x^2-x+4)$

(l) $10x^3y^2+15x^2y^4-5x^2y^2 = 5x^2y^2(2x+3y^2-1)$

(m) $c^2d - cd^2 = cd(c-d)$

(n) $21r^3s^2 - 14r^2s = 7r^2s(3rs-2)$

Regents Solve for a:

Qs ① $a+ar = b+r$
 ② $(1+r)a = b+r$

$a = \frac{b+r}{1+r}$

② Solve for x:

$x+x/b = m+b$
 $\frac{x(1+b)}{1+b} = \frac{m+b}{1+b}$

$x = \frac{m+b}{1+b}$