

Name: _____

Notes

Date: _____

2/27 (Tues)

per 1, 4

GCF Factoring

Introduction to Factoring out GCF

★ "Factor" simply means to **UNDISTRIBUTE**. ★

Distributed Version	Factored Version
$5x^2 + 15x$	$5x(x + 3)$
$2x^3 - 8x^2$	$2x^2(x - 4)$
$2x^2 - 4x$	$2x(x - 2)$
$15x^2 - 5x + 30$	$5(3x^2 - x + 6)$

More formal Definition:

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

Steps to Factoring Out a GCF:

- ★ Find the GCF of all its terms (number and/or variables). For variables ALL the terms must have the variable. Choose the smallest exponent!
- ★ The GCF goes to the LEFT!
- ★ Write the polynomial as a product by dividing the original terms of the polynomial by the GCF.
- ★ The remaining factors in each term will form a polynomial. You'll always have the same number of terms you started with.

Factor using a GCF:

⊙ $4x + 6y$

$2(2x + 3y)$

⊙ $6x^3 - 9x^2 + 12x$

$3x(2x^2 - 3x + 4)$

⊙ $y^8 - y^5 + y^2$

$y^2(y^6 - y^3 + 1)$

PRACTICE: Factor each polynomial using a GCF.

1. $10x + 45$

$5(2x + 9)$

2. $28x - 63$

$7(4x - 9)$

3. $18a + 42$

$6(3a + 7)$

4. $8x + 24$

$8(x + 3)$

5. $18x^2 - 15x + 39$

$3(6x^2 - 5x + 13)$

6. $27a^2 + 81$

$27(a^2 + 3)$

7. $72a^8 + 33a^5 - 42a^3$

$3a^3(24a^5 + 11a^2 - 14)$

8. $15x^7 + 30x^6 - 45x^3$

$15x^3(x^4 + 2x^3 - 3)$

9. $4x^3 + 16x^2 - 44$

$4(x^3 + 4x^2 - 11)$

10. $14x^2 + 7x - 42$

$7(2x^2 + x - 6)$
