Vocabulary

Factoring: The process of 'undoing' the distributive property in a polynomial. If a polynomial is 'factored' then it is in its most simplified form.

Greatest Common Factor (GCF): The largest term that can be divided out of *every term* in a polynomial. A GCF can be a number, a variable, or a number AND variable

Distributive Review

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

~THIS IS IN FACTORED FORM

~$5x^2$ is the GCF

$10x^5 - 5x^4 + 15x^3 - 30x^2$

- MULTIPLY THE COEFFICIENTS
- ADD THE EXPONENTS

Factor the following polynomials by finding the GCF

Example 1: (only a number GCF)

$\frac{15x^2 - 9x + 3}{3 \quad 3 \quad 3}$

$3(5x^2 - 3x + 1)$

WHAT IS THE BIGGEST NUMBER THAT DIVIDES OUT OF 15, -9 AND 3?
ANSWER: 3

- DIVIDE 3 OUT OF EVERY TERM AND WRITE IT ON THE OUTSIDE OF THE POLYNOMIAL (NOW IN PARENTHESIS)

Factor the following polynomials by finding the GCF

Example 2: (only a variable GCF)

$\frac{4x^7 - 8x^5 + 21x^2}{x^2 \quad x^2 \quad x^2}$

$x^2(4x^5 - 8x^3 + 21)$

1) WHAT IS THE BIGGEST NUMBER THAT CAN DIVIDE OUT OF 4, -8, 21? ANSWER: NOTHING! SO NO NUMBER

2) HOW MANY VARIABLES IN EACH TERM?
$x^7 \quad x^5 \quad x^2$

YOU CAN TAKE OUT x^2. IF YOU TRY TO TAKE OUT ANY MORE THAN THAT YOU WON'T HAVE ANY MORE TO GIVE

Factor the following polynomials by finding the GCF

Example 3: (a number and a variable GCF)

$\frac{25x^3 - 50x^2 + 10x}{5x \quad 5x \quad 5x}$

$5x(5x^2 - 10x + 2)$

BIGGEST FACTOR OF 25, -50, 10? 5

Common terms?
$x^3 \quad x^2 \quad (x) \quad x$

Practice on your own

$\frac{18x^5 + 18x^4 - 45x^3}{9x^3 \quad 9x^3 \quad 9x^3}$ $9x^3(2x^2 + 2x - 5)$	$24x - 12$ $12(2x - 1)$
$12x^3 + 8x^2 - 4x$ $4x(3x^2 + 2x - 1)$	$x^3 - 2x^2$ $x^2(x - 1)$