<u>3.3</u>   <u>Common Factors of a Polynomial</u>

Term → made up of numbers and/or
variables. Usually one number,
but may have more than one
variable. Sometimes the variables
have exponents.

<u>Ex:</u> $3x$, $5x^2$, $7x^2y$, $15x^3y^2$, 12, y

Polynomial → made up of one or more
terms added together.

<u>Ex:</u> $3x^2y$ → one term called a Monomial

$5x + 12$ → two terms called a binomial

$7x^2 - 3x + 5$ → three terms called a trinomial

more than 3 terms are just called polynomial

Common factors : numbers and variables

what is the GCF of $8, 12, 24$?

the GCF is 4

What is the GCF of x^2 and x^3

$x \cdot x$ $x \cdot x \cdot x$

GCF is the variable with the lowest
exponent, provided it's the same
variable.

So, the GCF of x^2 and x^3 is x^2

Ex: what is the GCF of x^3y^2 and x^2

x^2y^2 is the GCF

Ex: what is GCF of $4x^2y^3$, $12xy$

$4xy^3$

Ex: $15x^2y^3$, $25xy^2z^3$, $10x^3y^2z$

Factor out GCF:

Recall using distributive property to multiply:

$$3x(2x + 1)$$

$$6x^2 + 3x$$

Factoring out the GCF is the reverse of the distributive property.

Ex: Factor $8x^3 + 12x^2$ GCF: $4x^2$

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

Ex: Factor $15x^3y^2 - 20x^2y^1$ GCF: $5x^2y$

$$5x^2y(3xy - 4)$$

Ex: $24x^3y^5z^2 + 36x^2y^4z^3 - 30x^5y^3z^4$

$$6x^2y^3z^2(4xy^2 + 6yz - 5x^3z^2)$$