Factoring Polynomials using GCF

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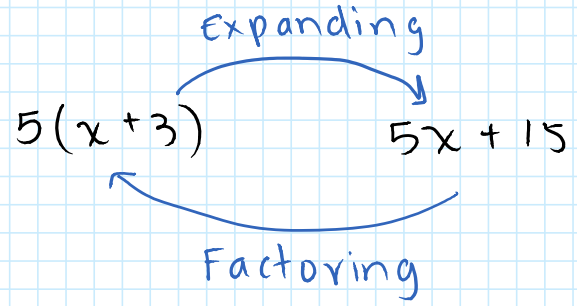
* Factoring a GCF is always the 1ST step.
* Factoring is the opposite of expanding (FOIL, dist. Law)



Ex. write the Prime factorization of $12x^2y$ and $30xy^3$ to find the GCF.

$12x^2y = 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot y$

$30xy^3 = 2 \cdot 3 \cdot 5 \cdot x \cdot y \cdot y \cdot y$

$GCF = 2 \cdot 3 \cdot x \cdot y$

$GCF = 6xy$

Ex. State the GCF of:

a) $21x$ and $35y$ $GCF = 7$

b) $8m^2$ and $24m^4$ $GCF = 8m^2$

Ex. Factor the GCF out of each polynomial

a) $\underset{7x}{21xy} + \underset{7x}{14x} = 7x(3y+2)$

$GCF = 7x$

① Identify GCF
② Divide by GCF
③ write in factored form

b) $\frac{-35x^3y}{5x^2} + \frac{25x^2y^2}{5x^2} - \frac{10x^2}{5x^2} = 5x^2(-7xy + 5y^2 - 2)$

GCF = $5x^2$

(*) If all the terms are neg, the GCF is negative too.

(*) The GCF can also be a binomial

Ex. Factor by removing the GCF:

a) $\frac{(4x)(x-3)}{(x-3)} + \frac{(7)(x-3)}{(x-3)} = (x-3)(4x+7)$

GCF = $(x-3)$