Review of Factoring

GCF

Factor: $12x^2 + 8x$

GCF = $4x$ Both terms are divisible by $4x$

$4x(3x + 2)$ Divide each term by $4x$

Difference of squares

Factor: $4x^2 - 81$

Both terms are perfect squares:

$\sqrt{4x^2} = 2x$ and $\sqrt{81} = 9$

$(2x + 9)(2x - 9)$

Trinomial with a = 1

Factor: $4x^2 - 24x + 32$

$4(x^2 - 6x + 8)$

Factor GCF first.

$4(x - 4)(x - 2)$

Find factors that multiply to be 8 and add to be -6: -2, -4

Trinomials with a ≠ 1: Bottom's Up Method

Factor: $12x^2 + 5x - 2$

$x^2 + 5x - 24$

Replace the last number with the product of the first and last number.

$(x + 8)(x - 3)$

Find factors that multiply to be -24 and add to be 5: -8, 3

$(x + \frac{8}{12})(x - \frac{3}{12})$

Write each factor as a fraction divided by 12 (the original leading coefficient)

$(x + \frac{2}{3})(x - \frac{1}{4})$

Reduce each fraction.

$(3x + 2)(4x - 1)$

Bring the bottom of the fraction up to be the coefficient in front of x.