Factoring

** Always look for a GCF first!**

GCF

- Take out highest factor each term has in common. If all terms have a variable, choose the lowest exponent.

- $3x^2 + 9$

  $3(x^2 + 9)$

- $4x^5 - 8x^3 - 12x$

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

DOTS

$(a^2 - b^2) = (a + b)(a - b)$

- $x^2 - 100$

  $(x+10)(x-10)$

- $4x^2 - 25$

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

- $3x^2 - 12$

  $3(x^2-4)$

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

Perfect Square Trinomials

$\cancel{(a+b)^2 = (a^2 + 2ab + b^2)}$

$\cancel{(a-b)^2 = (a^2 - 2ab + b^2)}$

- $x^2 + 12x + 36$

  $(x+6)(x+6)$

  or

  $(x+6)^2$

  36
  1, 36
  2, 18
  3, 12
  4, 9
  6, 6

- $4x^2 - 12x + 9$

  $x^2 - 12x + 36$

  $(x - \frac{6}{4})(x - \frac{6}{4})$

  $(x - \frac{3}{2})(x - \frac{3}{2})$

  $(2x-3)(2x-3)$

  $(2x-3)^2$

Trinomials

- $x^2 - 9x + 14$

  $(x-2)(x-7)$

  14
  1, 14
  2, 7

- $x^2 - 3x - 40$

  $(x-8)(x+5)$

  40
  1, 40
  2, 20
  4, 10
  5, 8

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

  $x^2 + 5x - 24$

  $(x + \frac{8}{2})(x - \frac{3}{2})$

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

  24
  1, 24
  2, 12
  3, 8
  4, 6