Guide to Factoring

How do I know which method to choose?

Always factor out any common factors first!

$$2x^2+8x-10=0$$
$$2(x^2+4x-5)=0$$
$$2(x+5)(x-1)=0$$
$$x=-5;\ x=1$$

How many terms are there???

2 Terms

Look for difference of 2 squares.

$$4x^2-9=0$$
$$(2x+3)(2x-3)=0$$
$$x=-\frac{3}{2};\ x=\frac{3}{2}$$

Sum of 2 squares cannot be factored!!

$$4x^2+9=0$$

Cannot factor!

3 Terms

Leading coefficient = 1

Normal factoring!

$$x^2+5x-14=0$$
$$(x+7)(x-2)=0$$
$$x=-7;\ x=2$$

Leading coefficient ≠ 1 but not a perfect square trinomial?

Slip and Slide!

Slip
$$3x^2+10x-8=0$$
$$x^2+10x-24=0$$
$$(x+12)(x-2)=0$$

Slide
$$(x+\frac{12}{3})(x-\frac{2}{3})=0$$
$$(x+4)(3x-2)=0$$
$$x=-4;\ x=\frac{2}{3}$$

Perfect square trinomial?

When middle term is positive:

$$9x^2+12x+4=0$$
$$(3x+2)(3x+2)=(3x+2)^2=0$$
$$(3x+2)=0$$
$$x=-\frac{2}{3}$$

When middle term is negative:

$$4x^2-10x+25=0$$
$$(2x-5)(2x-5)=(2x-5)^2=0$$
$$(2x-5)=0$$
$$x=\frac{5}{2}$$

Common Perfect Squares:

$1^2 = 1$	$7^2 = 49$
$2^2 = 4$	$8^2 = 64$
$3^2 = 9$	$9^2 = 81$
$4^2 = 16$	$10^2 = 100$
$5^2 = 25$	$11^2 = 121$
$6^2 = 36$	$12^2 = 144$