

## 4.4 Solving Equations Using factoring

$$ax^2 + bx + c = 0$$

$$(x \quad ) = 0$$

zero product property  
if  $ab = 0$   $a = 0, b = 0$

$$x^2 + 5x + 6$$

$$\underline{2} + \underline{3} = 5 \quad \underline{2} \times \underline{3} = 6$$

$$(x+2)(x+3) =$$

$$x^2 - 10x - 24$$

$$\underline{-12} + \underline{2} = -10 \quad \underline{-12} \times \underline{2} = -24$$

$$(x-12)(x+2) = 0$$

FOIL

$$2x^2 + 5x + 3$$

$$(2x \quad ) (x \quad )$$

$$\begin{matrix} a & & c \\ \nearrow & & \searrow \\ m & n & p & q \end{matrix}$$

$$b = mp + nq$$

$$5 = \underset{\uparrow 0}{2} \cdot \underset{\uparrow 1}{1} + \underset{\uparrow 3}{1} \cdot \underset{\uparrow 3}{3}$$

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

$$5x^2 + 37x - 24$$

$$(5x-3)(x+8)$$

$$37 = 5 \cdot \underset{\uparrow 0}{8} + 1 \cdot \underset{\uparrow 3}{-3}$$

$$\begin{matrix} 1, 24 \\ 2, 12 \\ 3, 8 \\ 4, 6 \end{matrix}$$

$$10x^2 + 45x - 90$$

$$5(2x^2 + 9x - 18)$$

$$(2x-3)(x+6)$$

$$9 = 2 \cdot \underset{\uparrow 0}{6} + 1 \cdot \underset{\uparrow 3}{-3}$$

$$\begin{matrix} 1, 18 \\ 2, 9 \\ 3, 6 \end{matrix}$$

Equations

$$(2x+5)(x-4)=0$$

$$2x+5=0 \quad x-4=0$$

$$\begin{array}{r} -3 \quad -5 \\ 2x = -5 \\ x = -\frac{5}{2} \end{array} \quad \begin{array}{r} +4 \quad +4 \\ x = 4 \end{array}$$