

Factoring Trinomials

#1

$$x^2 - 17x + 42 \quad \begin{array}{l} -3 \times 14 = 42 \\ -3 + 14 = -17 \end{array}$$
$$(x-3)(x-14)$$

#2

$$x^2 - 17x - 38 \quad \begin{array}{l} -19 \times 2 = -38 \\ -19 + 2 = -17 \end{array}$$
$$(x-19)(x+2)$$


#3

$$\rightarrow 4x^2 + 5x - 6$$

What do you notice ??

Factor Using Decomposition

If there is a numerical coefficient in front of x^2 , then we use a method for factoring called **Decomposition**


$$4x^2 + 5x - 6$$

Multiply

$$4x^2 + 5x - 6$$

$$\begin{array}{l} 4x^2 + 8x \\ \underline{-3x - 6} \\ \hline 4x^2 + 5x - 6 \end{array}$$

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



$$8 \times -3 = -24$$

Find two numbers that multiply to give you the new number!

$$8 + -3 = 5$$

Big 5

And that adds to give you the coefficient of x

Factor Completely!

1. $2x^2 + 5x + 3$

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

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

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

I think I need
to use decomposition!



$\frac{2}{2} \times \frac{3}{3} = 6$
 $\frac{2}{2} + \frac{3}{3} = 5$

Factor Completely!

2. $10x^2 + 13x - 3$

$$\begin{aligned} & 10x^2 - 2x + 15x - 3 \\ & \underline{2x(5x-1) + 3(5x-1)} \\ & (2x+3)(5x-1) \end{aligned}$$

$$\begin{aligned} \underline{15}x - \underline{2} &= -30 \\ \underline{15} + \underline{-2} &= 13 \end{aligned}$$

