

$$x^2 - 3x - 4$$

$$y^4 + 11y^2 + 30$$

# TRINOMIALS

$$z^2 + 5zy + 6y^2$$

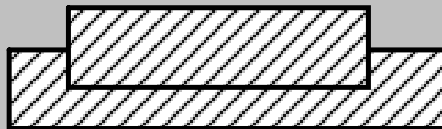
$$m^2 - 8m + 16$$

# Expand:

$$\begin{array}{l} (x+2)(x+1) \\ x^2+1x+2x+2 \\ x^2+3x+2 \end{array}$$

$$\begin{array}{l} (x+5)(x-4) \\ x^2-4x+5x-20 \\ x^2+1x-20 \end{array}$$

$$\begin{array}{l} (x-7)(x-1) \\ x^2-1x-7x+7 \\ x^2-8x+7 \end{array}$$



# Krow sdrawkcab

## Trinomials



$$1. \quad x^2 + \underline{19}x + \underline{18}$$

$$(x+1)(x+18)$$

$$\underline{1} + \underline{18} = 19$$

$$\underline{1} \times \underline{18} = 18$$

18

1x18

2x9

3x6

$$2. \quad x^2 - \underline{5}x + \underline{6}$$

*add*      *multiply*

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



$$\underline{-2} + \underline{-3} = -5$$

$$\underline{-2} \times \underline{-3} = 6$$

6

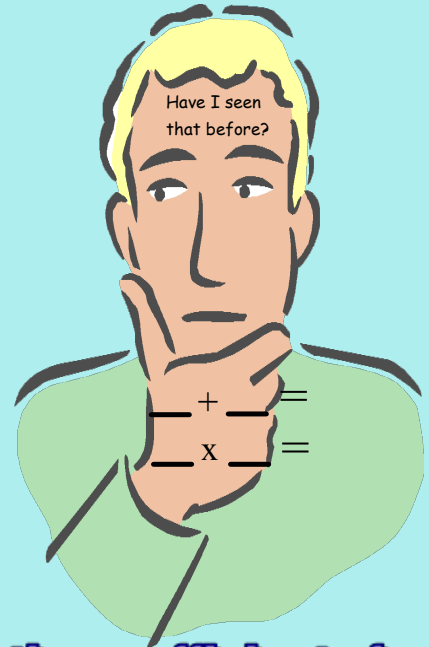
1x6

2x3

Simple trinomial

$$3. \quad x^2 + \underline{5x} - \underline{24}$$

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



$$\underline{8} + \underline{-3} = 5 \quad \text{And that adds to give you the coefficient of } x$$

$$\underline{8} \times \underline{-3} = -24 \quad \text{Find two numbers that multiply to give you the new number!}$$

$-24 \rightarrow$  \* 1 number must be positive  
 1 number must be negative  
 1 x 24  
 2 x 12  
 3 x 8  
 4 x 6

$$4. \quad 3x^2 - 18x - 120$$

common factor first

$$\text{GCF} = 3$$

$$3(x^2 - 6x - 40)$$

$$3(x + 4)(x - 10)$$



$$\begin{array}{r} \underline{4} + \underline{10} = -6 \\ \underline{4} \times \underline{10} = -40 \end{array}$$

$$\begin{array}{l} -40 \\ 1 \times 40 \\ 2 \times 20 \\ \textcircled{4 \times 10} \\ 5 \times 8 \end{array}$$

# Rules of the road...

$x^2 - 5x + 6$

*Sign of the biggest number.*

*Signs are the same.*

$x^2 + 5x - 6$

*Sign of the biggest number.*

*Signs are different.*

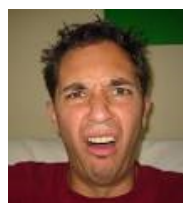


Check out  
a few  
on  
your own.



Hard Trinomial GCF=1

$$\begin{array}{c}
 \text{Hard Trinomial GCF=1} \\
 \xrightarrow{\text{AC Method}} \\
 \underline{2x^2} + \underline{7x} + \underline{3} \\
 \xrightarrow{\text{AC Method}} \\
 (x + 1)(x + 6) \\
 \xrightarrow{\text{AC Method}} \\
 \boxed{(2x + 1)(x + 3)}
 \end{array}$$



$$\begin{array}{l}
 \frac{1}{1} + \frac{6}{6} = 7 \\
 \frac{1}{1} \times \frac{6}{6} = 6 \quad (2 \times 3)
 \end{array}$$

$$\begin{array}{c}
 6 \\
 \textcircled{1 \times 6} \\
 2 \times 3
 \end{array}$$

Hard Trinomial

$$\underline{5x^2} + \underline{34x} - \underline{7}$$

$$(x - \underline{1})(x + \underline{\frac{35}{5}})$$

$$\boxed{(5x - 1)(x + 7)}$$



$$\begin{aligned} -\underline{1} + \underline{35} &= 34 \\ -\underline{1} \times \underline{35} &= -35 \quad (5x-7) \end{aligned}$$

$$\begin{aligned} &-35 \\ &\textcircled{1 \times 35} \\ &5 \times 7 \end{aligned}$$

$$6x^2 - 7x + 2$$



$$\begin{array}{l} \_ + \_ = \\ \_ x \_ = \end{array}$$

$$8x^2 + 10x - 3$$



$$\begin{array}{l} \_ + \_ = \\ \_ \times \_ = \end{array}$$

Check out the sheet. :)

$$\textcircled{5} \quad 5n^2 - 65n + 180$$

$$5(n^2 - \underline{13}n + \underline{36})$$

$$5(x-4)(x-9)$$

$$\underline{-4} + \underline{-9} = -13$$

$$\underline{-4} \times \underline{-9} = 36$$

36

1 x 36

2 x 18

3 x 12

4 x 9

6 x 6

## Hard Trinomial

$$\textcircled{7} \quad \underline{9}m^2 - \underline{80}m + \underline{80}$$

$$(m - \underline{10})(m - \underline{70})$$

↑ 9 9

$$\boxed{(9m - 10)(m - 8)}$$

$$-\underline{10} + \underline{-70} = -80$$

$$-\underline{10} \times \underline{-70} = 700 \quad (9 \times 80)$$

700

1 x 700

2 x 360

3 x 240

4 x 180

5 x 144

6 x 120


8 x 90

9 x 80

$$\textcircled{10 \times 70}$$

## DECOMPOSITION

If there is a numerical coefficient in front of  $x$ , then we use a method for factoring called *DECOMPOSITION*.


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



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



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

$$\left(\frac{2x+2}{2}\right)\left(\frac{2x+3}{2}\right)$$

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



$$\underline{\quad} + \underline{\quad} = 5$$

$$\underline{\quad} \times \underline{\quad} = 6$$

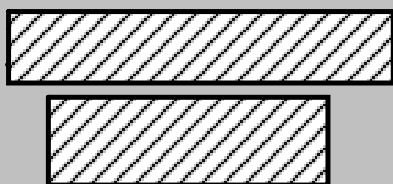
Check out pages 167,177 and 178.

Numbers \_\_\_\_\_ , 13 and 15. :)

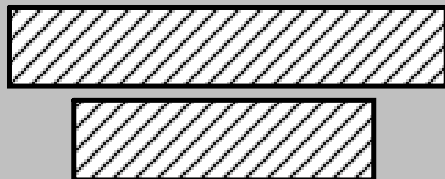


# Expand:

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



$$(2x+5)(3x-4)$$



$$(2x-7)(x-1)$$

