

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

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

TRINOMIALS

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

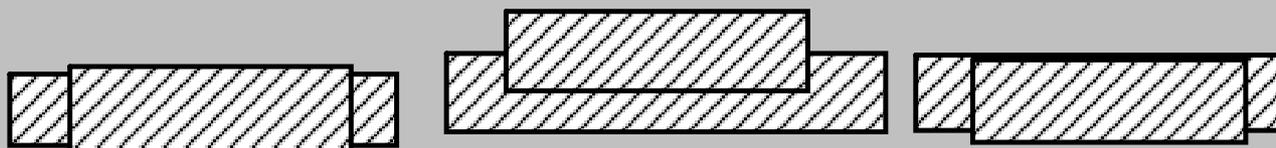
$$m^2 - 8m + 16$$

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

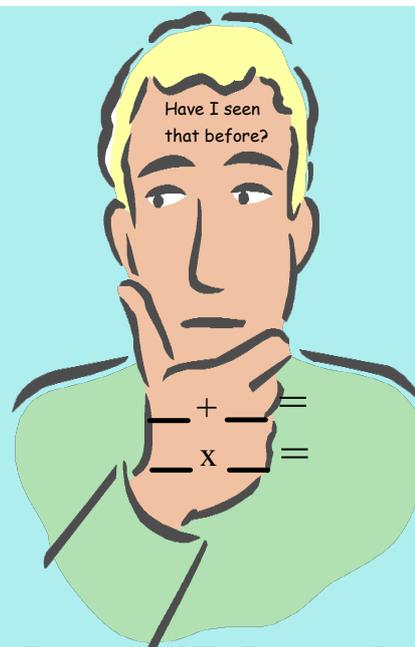
1x6

2x3

Simple trinomial

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

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



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

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

-24 → * 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

$$\text{GCF} = 3$$

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

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



$$\underline{4} + \underline{10} = -6$$

$$\underline{4} \times \underline{10} = -40$$

-40

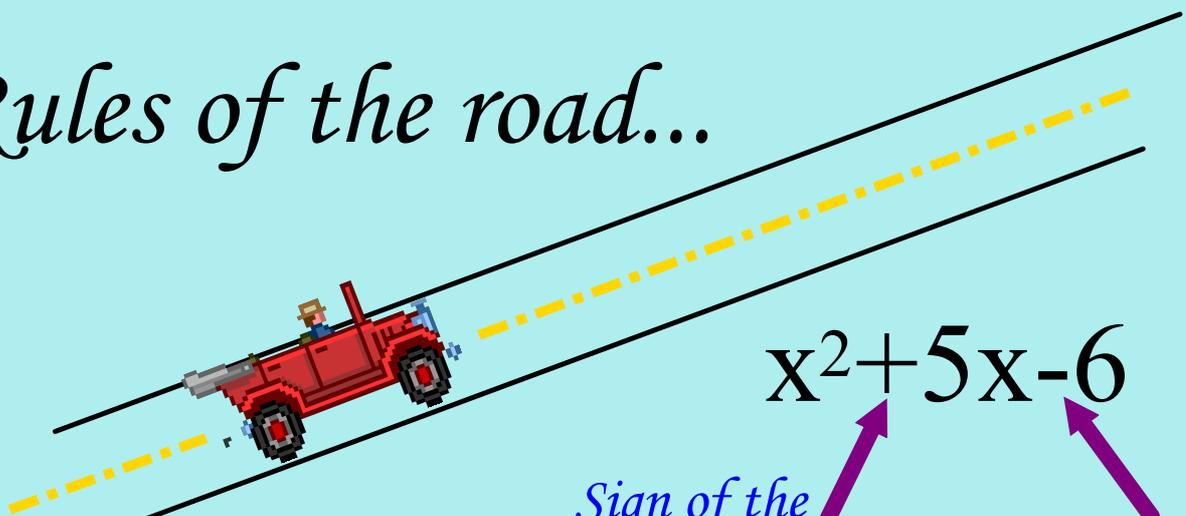
$$1 \times 40$$

$$2 \times 20$$

$$\textcircled{4 \times 10}$$

$$5 \times 8$$

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.

Factor

(simple trinomials)

Factor

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

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

$$-2 + -3 = -5$$

$$-2 \times -3 = 6$$

6

1 x 6

2 x 3

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

$$(x - 1)(x + 6)$$

$$1 + 6 = 5$$

$$-1 \times 6 = -6$$

6

1 x 6

2 x 3



Check out
a few
on
your own.

Hard Trinomial GCF=1

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



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

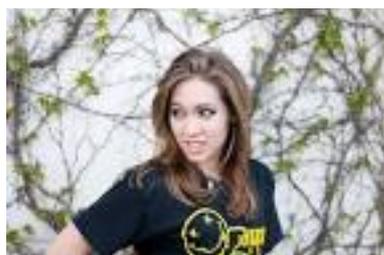
$$\begin{array}{c}
 6 \\
 \textcircled{1 \times 6} \\
 2 \times 3
 \end{array}$$

Hard Trinomial

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

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

$$(5x - 1)(x + 7)$$



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

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

$$\underline{\underline{6x^2}} - \underline{\underline{7x}} + \underline{\underline{2}}$$

$$\left(x - \frac{3}{6}\right) \left(x - \frac{4}{6}\right)$$

Reduce
Fractions

$$\left(x - \frac{1}{2}\right) \left(x - \frac{2}{3}\right)$$

$$\boxed{(2x-1)(3x-2)}$$



$$\frac{-3}{-3} + \frac{-4}{-4} = -7$$

$$\frac{-3}{-3} \times \frac{-4}{-4} = 12 \quad (6 \times 2)$$

12

1x12

2x6

3x4

$$\underline{8x^2} + \underline{10x} - \underline{3}$$

$$\left(x - \frac{2}{8}\right) \left(x + \frac{12}{8}\right)$$

Reduce
Fractions

$$\left(x - \frac{1}{4}\right) \left(x + \frac{3}{2}\right)$$

$$\boxed{(4x-1)(2x+3)}$$



signs are different
larger # is (+)

$$-\frac{2}{8} + \frac{12}{8} = 10$$

$$-\frac{2}{8} \times \frac{12}{8} = -24 \quad (8x-3)$$

24

$$\begin{array}{l} 1 \times 24 \\ 2 \times 12 \\ 3 \times 8 \\ 4 \times 6 \end{array}$$

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

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

$$(m - \underline{10})(m - \underline{72})$$

↑ 9 9

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

$$-\underline{10} + \underline{-72} = -82$$

$$-\underline{10} \times \underline{-72} = 720 \quad (9 \times 80)$$

720

1 x 720

2 x 360

3 x 240

4 x 180

5 x 144

6 x 120

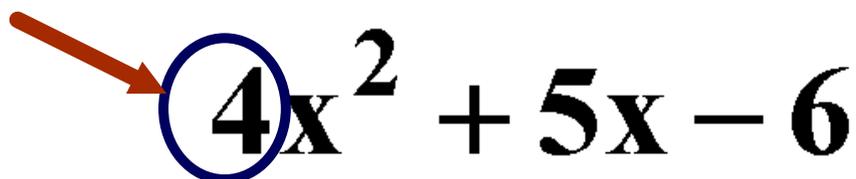
8 x 90

9 x 80

$$\textcircled{10 \times 72}$$

DECOMPOSITION

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


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

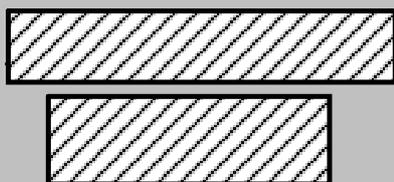
Check out pages 167,177 and 178.

Numbers _____ , 13 and 15. :)

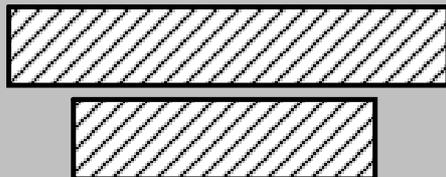


Expand:

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



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



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

