

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

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

TRINOMIALS

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

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

Expand:

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

$$x^2 + 1x + 2x + 2$$

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

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

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

Krow sdrawkcab



1. $x^2 + 19x + 18$

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

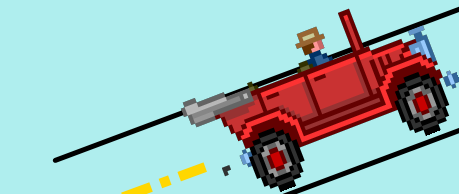
$$\begin{array}{r} 18 \times 1 = 18 \\ 18 + 1 = 19 \end{array}$$

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

$$x^2 + 1x + 18x + 18$$

$$x^2 + 19x + 18 \checkmark$$

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.*

$$2. \quad x^2 - 5x + 6$$

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



$$\begin{array}{r} \underline{-2x - 3} = +6 \\ \underline{-2 + -3} = \overline{+5} \end{array}$$

← Same
 ↑ Both ⊖

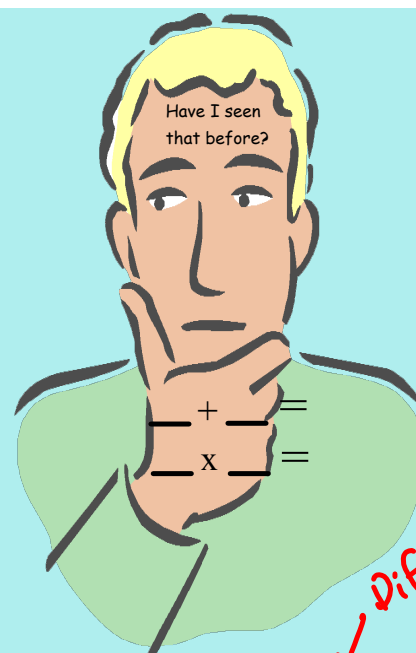
$$\begin{array}{r} 6 \\ \swarrow \quad \searrow \\ -1 \quad x - 6 \\ -2 \quad x - 3 \\ \cdot \quad \cdot \end{array}$$

$$3. \quad 2x^2 + 10x - 48$$

$$2(x^2 + 5x - 24)$$

$$2(x - 3)(x + 8)$$

$$\begin{aligned} & -1x + 24 \\ & -2x + 12 \\ & -3x + 8 \end{aligned}$$



$$\begin{aligned} -3 \times 8 &= -24 \\ -3 + 8 &= +5 \end{aligned}$$

↓ Diff.
 ↑ Big ⊕

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

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

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

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



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

← Diff
 ↑
 Big ⊖

$$2x^2 + 7x + 3$$

(Note: In the original image, the 2 and 3 are circled in blue, and an arrow with an 'x' above it points from the 2 to the 3.)

$$\left(\frac{2x+1}{2}\right) \left(\frac{2x+6}{2}\right)$$

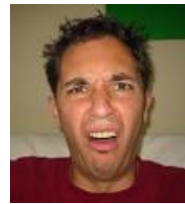
(Note: In the original image, the 2s are crossed out with blue lines.)

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

(Note: In the original image, the 2 in the denominator of the first term is circled in red.)

$$1 \times 6 \quad (2x+1)(x+3)$$

(Note: In the original image, the 6 is written above the 1x6.)



$$\begin{aligned} \frac{1}{1} \times \frac{6}{1} &= +6 \\ \frac{1}{1} + \frac{6}{1} &= +7 \end{aligned}$$

(Note: In the original image, red arrows point from the text 'Same' to the first equation and 'Both ⊕' to the second equation.)

$$5x^2 + 34x - 7$$



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

$$\left(\frac{x-1}{5}\right) (x+7)$$

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

$$\begin{array}{c} 35 \\ -1 \quad +35 \end{array}$$

$$\begin{array}{l} _ \times _ = \ominus 35 \\ _ + _ = \oplus 34 \end{array}$$

Diff ↗
Big ⊗ ↘

$$3r^2 + 20r - 7$$

$$\left(\frac{3r-1}{3}\right) \left(\frac{3r+21}{3}\right)$$

$$(r-1)(r+7)$$

$$\begin{array}{l} 21 = (3r-1)(r+7) \\ -1 \quad x+21 \end{array}$$

$$\begin{array}{l} _ \times _ = -21 \\ _ + _ = 20 \end{array}$$

Diff
Big ⊕

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

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

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

$$(2x - 1)(3x - 2)$$

- 12
- 1 x - 12
 - 2 x - 6
 - 3 x - 4




~~ACMA~~

$_ x _ = +12$
 $_ + _ = -7$
 Same
 Both \ominus

Check out the sheet. :)

DECOMPOSITION

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


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

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

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

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

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



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

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

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



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

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

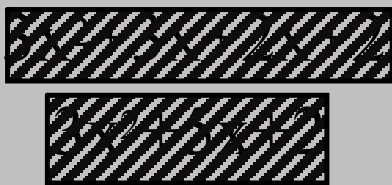
Check out pages 167,177 and 178.

Numbers _____ , 13 and 15. :)

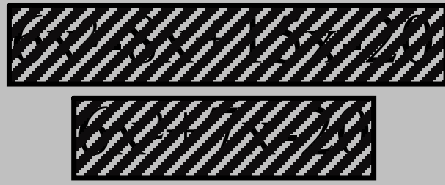


Expand:

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



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



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

