Warm Up - Common factoring :)

1. $6x^3y^7z - 12x^7y^5 + 33x^4yz^3$

2. $45a^9b^4c^2 + 18a^4c^5 - 72a^3b^2c^2$

3. $17m^3n^4 - 5m^4n^8 + 3m^9n$

1. $6x^3y^7z - 12x^7y^5 + 33x^4yz^3$

$= 3x^3y(2y^6z - 4x^4y^4 + 11xz^3)$

2. $45a^9b^4c^2 + 18a^4c^5 - 72a^3b^2c^2$

$= 9a^3c^2(5a^6b^4 + 2a^1c^3 - 8b^2)$

3. $17m^3n^4 - 5m^4n^8 + 3m^9n^1$

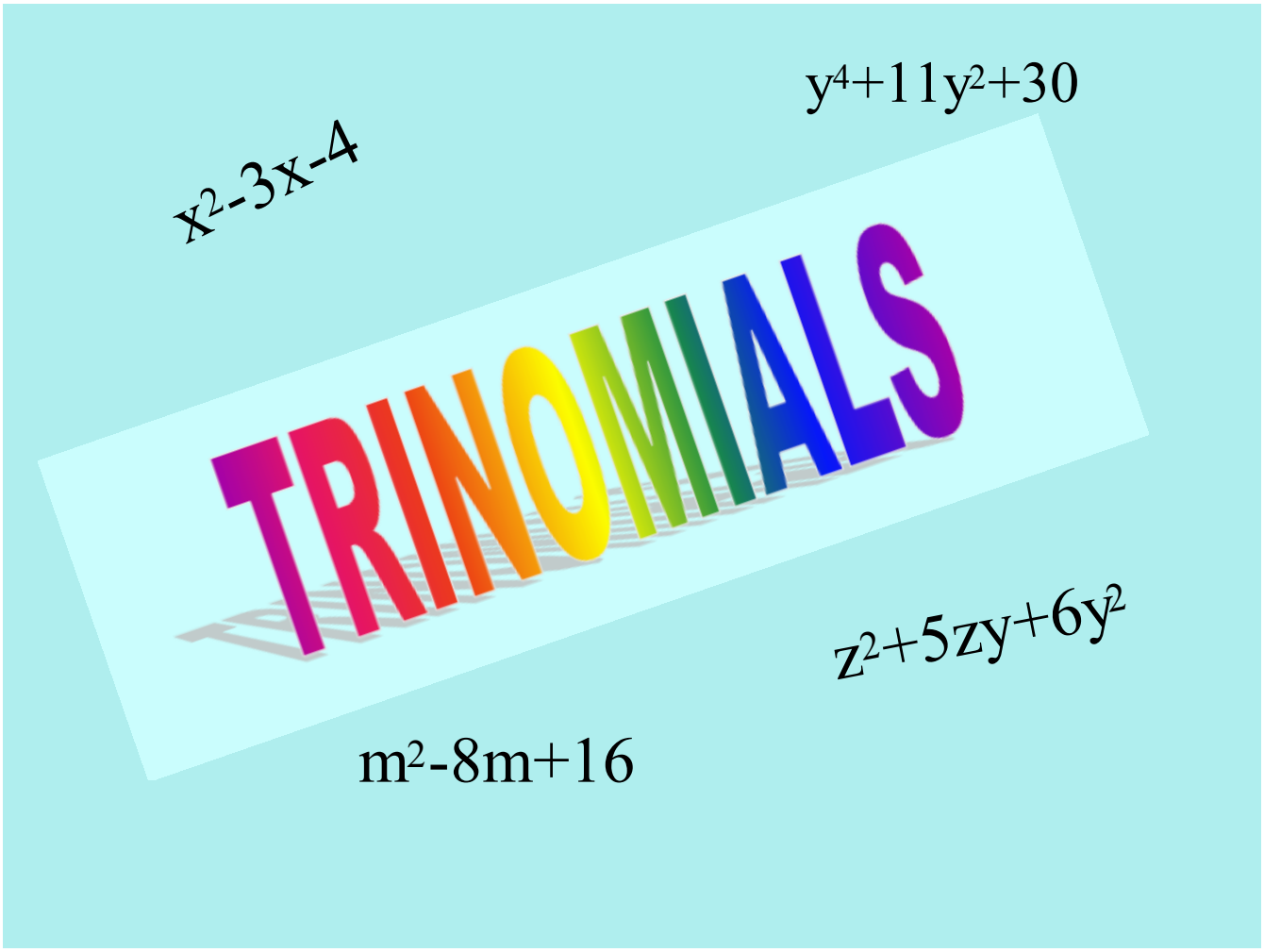
$= m^3n^1(17n^3 - 5m^1n^7 + 3m^6)$

23. $-10e^4y^5 - 30e^3y^2 + 45e^2y^1 - 15e^1$

$= 5e^1(-2y^5 - 6e^1y^2 + 9y^1 - 3)$

31. $42a^2b^2 + 7ab^1 + 6b^1$

$= b^1(42a^2b^1 + 7a + 6)$

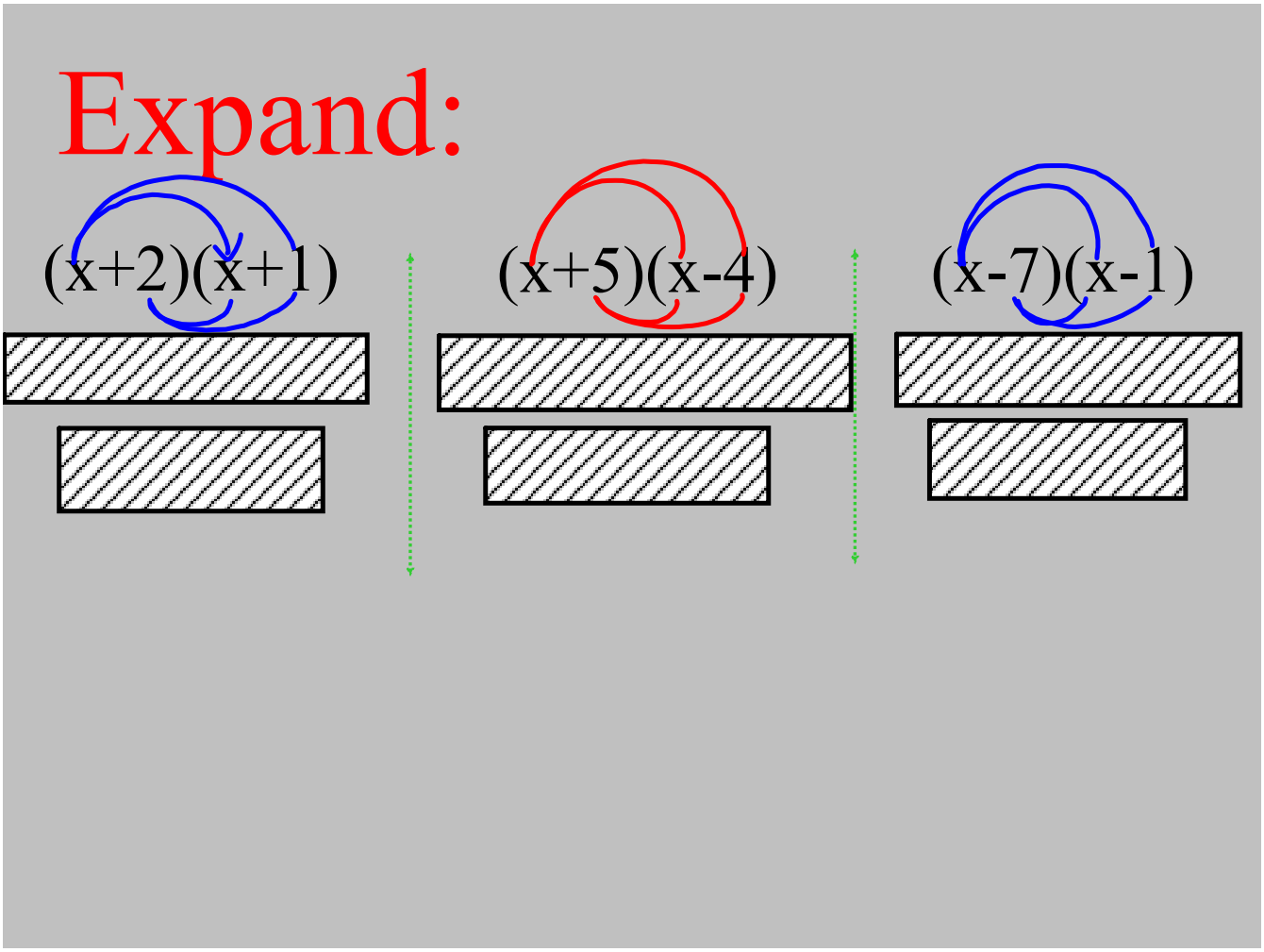

x^2-3x-4
y^4+11y^2+30
TRINOMIALS
$z^2+5zy+6y^2$
$m^2-8m+16$

Expand:

(x+2)(x+1)

(x+5)(x-4)

(x-7)(x-1)



Krow sdrawkcab

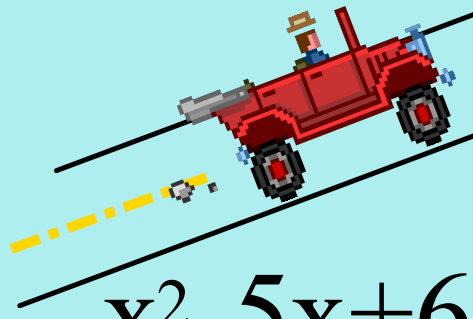
1. $x^2+19x+18$

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

$18 \times 1 = 18$

$18 + 1 = 19$

Rules of the road...



x^2+5x-6

Sign of the biggest number.

Signs are different.

x^2-5x+6

Sign of the biggest number.

Signs are the same.

.

2. x^2-5x+6

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

$-2 \times -3 = +6$ (Same)

$-2 + -3 = -5$ (Both −)

-1×-6

-2×-3

$r^2 - 5r - 50$

$(r+5)(r-10)$

$\_ \times \_ = -50$ ← diff

$\_ + \_ = -5$ ← Big (−)

1 x -50

2 x -25

5 x -10

$-2 \times -2 = +4$ (same)

$-2 + -2 = -4$

Both ⊖

$-2 \times 5 = -10$ (Diff)

$-2 + 5 = +3$

Big ⊕

-1×-4 $-1 \times +10$

-2×-2 $-2 \times +5$

$2 \times 9 = +18$ (same)

$2 + 9 = +11$

Both ⊕

$4 \times -5 = -20$ (Diff)

$4 + -5 = -1$

Big ⊖

1×18

2×9

$+1 \times -20$

2×-10

4×-5

$-5 \times -5 = +25$ (same)

$-5 + -5 = -10$

Both ⊖

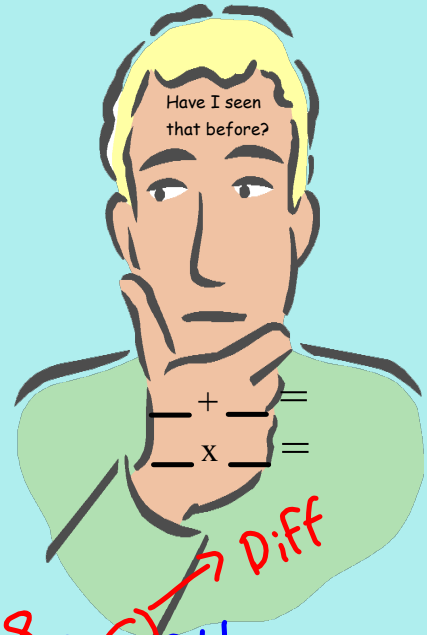
-1×-25

-5×-5

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

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

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



Diff

$-3 \times 8 = -24$

$-3+8=+5$

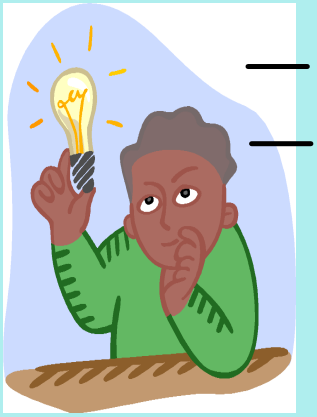
Big ⊕

$-1 \quad x+24$

$-2 \quad x+12$

$-3 \quad x+8$

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



__ + __ =

__ x __ =

$2x^2+7x+3$ (x)

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

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

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

$1 \times 6 = +6$ Same.

$1+6=+7$ Both +

$1 \times 6 =$

$x^2 - 5x - 24$

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

$3 \times -8 = -24$ Diff

$3 + -8 = -5$ Big (−)

Check ✓ $x^2 - 8x + 3x - 24$

$x^2 - 5x - 24$

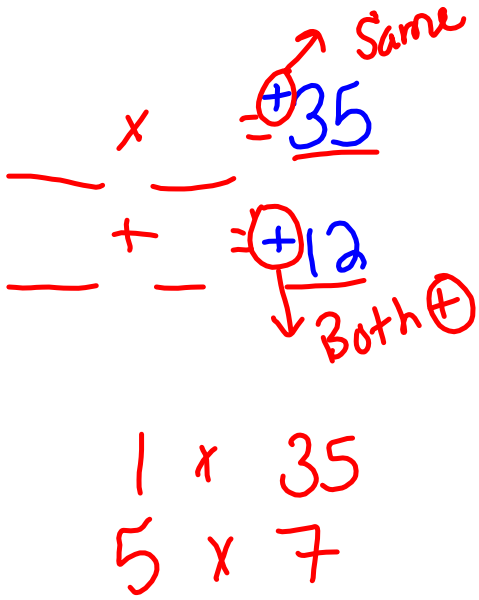
$+1 \times -24$

$+2 \times -12$

$+3 \times -8$

$x^2 + 12x + 35$

$(x+5)(x+7)$



1×35

5×7

$$2x^2+12x-54$$

$$2(x^2+6x-27)$$

$$= 2(x-3)(x+9)$$

$-3 \times 9 = \ominus 27$ ← Diff

$-3+9 = \oplus 6$ ← Big ⊕

$-1 \times +27$

$-3 \times +9$

$5x^2+34x-7$

$(5x-1)(5x+35)$

$5 \quad 5$

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

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

$-1 \times 35 = -35$ diff

$-1+35 = +34$ Big +

$-1 \times +35$

Check $5x^2+35x-1x-7$

$5x^2+34x-7$ ✓

$6x^2-7x+2$

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

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

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

Same:

$\_x\_ = \oplus 12$

$\_+\_ = \ominus 7$

Both $\ominus$

$-1 \quad x-12$

$-2 \quad x-6$

$-3 \quad x-4$

$2x^2 + 13x - 24$

$(2x - 3)(2x + 16)$

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

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

$\_ x \_ = -48$ (diff)

$\_ + \_ = +13$ (Big +)

$-1x + 48$

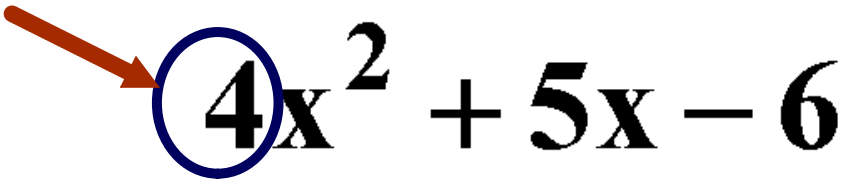
$-2x + 24$

$-3x + 16$

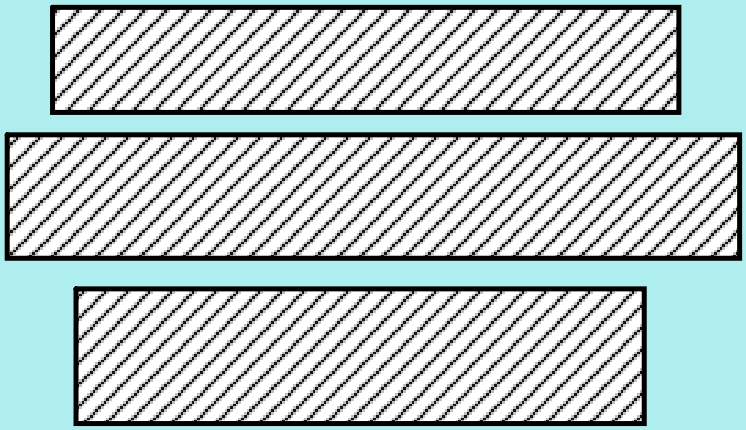
Check out the sheet. :)

DECOMPOSITION

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



$2x^2+5x+3$



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

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

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

$\_ + \_ = 5$

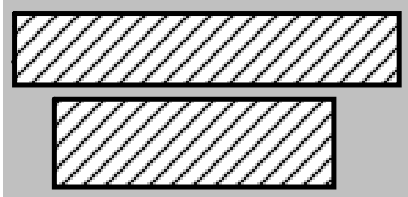
$\_ \times \_ = 6$

Check out pages 167,177 and 178.

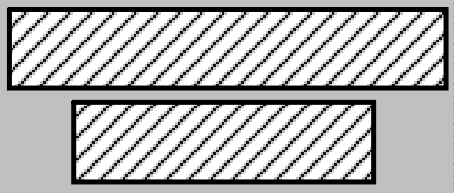
Numbers _____ , 13 and 15. :)

Expand:

(3x+2)(x+1)



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



(2x-7)(x-1)