FACTORING TRINOMIALS

learning goals

- **new vocabulary**
- **demonstrate the difference in processes required in factoring**
- **factor effectively**

Recall:

Common Factoring - divide the same thing out of each term

ex. $6a+18$

$= 6(a+3)$

ex. $6a^5-12a^3$

$= 6a^3(1a^2-2)$

Difference of Squares - two perfect squares that are subtracted from each other

ex. a^2-9

$= (a+3)(a-3)$

ex. $4a^2-16b^2$

$= 4(a^2-4b^2)$

$= 4(a+2b)(a-2b)$

On the Boards...

Factor.

(a) $2x + 8$
(b) $15m^2 - 5m$
(c) $4a^2 - 8a$
(e) $2a - 4b + 8c$
(f) $5x + 10x^2 + 15$
(g) $6a^2 + 12a^3 + 2a$

EXPANDING - *getting rid of brackets by multiplication*

$(x+3)(x+2)$ $= x^2 + 3x + 2x + 6$

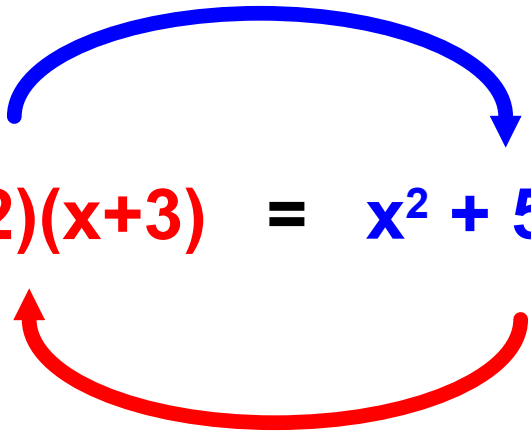
$= x^2 + 5x + 6$

FACTORING - *adding in brackets by division*

x^2+5x+6 $= (x + 3)(x + 2)$

The two processes are opposite of one another.

EXPAND (x)



$$(x+2)(x+3) = x^2 + 5x + 6$$

FACTOR (÷)

Factoring Trinomials of the Form $1x^2 + bx + c$

$x^2 + 6x + 8$

$2 \times 4 = 8$

$2 + 4 = 6$

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

Steps:

1. Put terms in order

2. Look for 2 numbers

___ × ___ = last

___ + ___ = middle

$9x + 20 + x^2$

$= x^2 + 9x + 20$

$= (x + 5)(x + 4)$

$5 \times 4 = 20$

$5 + 4 = 9$

Find the dimensions of a rectangle with the given area

length
width

a. $A = 24\ cm^2$

$A = lw$

$24 = lw$

3, 8

2, 12

1, 24

4, 6

b. $A = x^2 + x - 12$

$4 \times -3 = -12$

$4 + -3 = 1$

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

On the Boards...

1. $x^2 - 3x - 18$ $= (x - 6)(x + 3)$
2. $x^2 + 2x - 35$ $= (x + 7)(x - 5)$
3. $x^2 - 12x + 36$ $= (x - 6)(x - 6)$
4. $x^2 + 7xy - 18y^2$ $= (x - 2y)(x + 9y)$

The area of a rectangular garden can be represented by the expression $x^2 + 7x + 10$.

a) Find expressions for the length and width of the garden.

~~**b)** If the area is 40 m^2, find the length and width.~~

a) $(x + 2)(x + 5)$

Homework

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