Pg 185 #5.

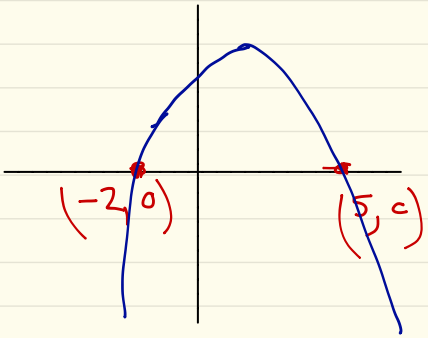
x Ints: $x = -2$
$x = 5$

The 2nd differences are negative

↙ parabola opens down

∴ The y coordinate is the maximum value

b)



c) A.O.S. $x = \frac{-2+5}{2}$

$= 3/2 = 1.5$

Factored form:
$y = a(x-r)(x-s)$

Std. Form
$y = ax^2 + bx + c$

Pg 187 #2

$(-9, 0)$ and $(19, 0)$

zeros $x = -9$
$x = 19$

a) A.O.S. $x = \frac{-9+19}{2}$

$x = \frac{10}{2}$

$x = 5$

b) $y = a(x-s)(x-r)$

$y = a(x+9)(x-19)$

$-28 = a(5+9)(5-19)$

$-28 = a(14)(-14)$

$-28 = -196a$

$\frac{-28}{-196} = a$

$\frac{28}{196} = a$

$\frac{2}{14} = a$

$\boxed{\frac{1}{7} = a}$

$\therefore y = \frac{1}{7}(x+9)(x-19)$

EXPANDING QUADRATIC EXPRESSIONS

LEARNING GOAL

- Determine the product of two binomials using a variety of strategies.

2 terms

BIG IDEAS

- Expanding is MULTIPLYING using the distributive property.

- Simplifying is COLLECTING the like terms by adding and subtracting.

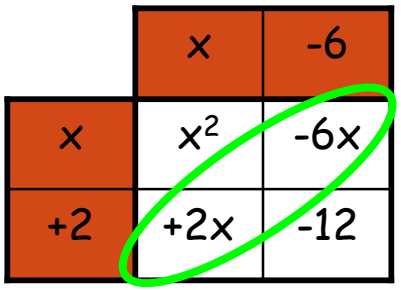
BIG IDEAS (CONT)

- Strategies that can be used to multiply two binomials are:
  - Algebra Tiles → in textbook
  - Area Diagram
  - Distributive Property ✓

EX 1) AREA DIAGRAM

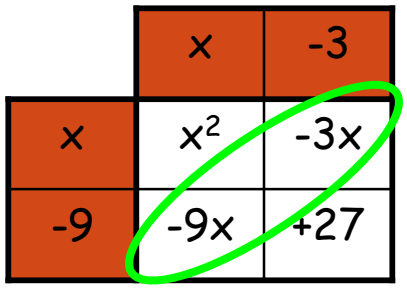
- Expand and simplify

a) $(x-6)(x+2)$ b) $(x-3)(x-9)$ c) $(x+4)(x-11)$



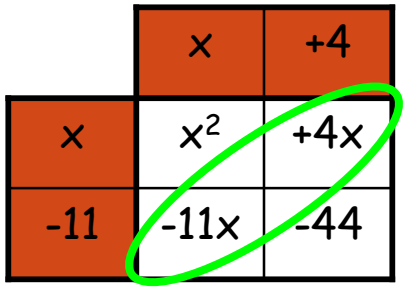
$= x^2 + 2x - 6x - 12$

$= x^2 - 4x - 12$



$= x^2 - 9x - 3x + 27$

$= x^2 - 12x + 27$



$= x^2 - 11x + 4x - 44$

$= x^2 - 7x - 44$

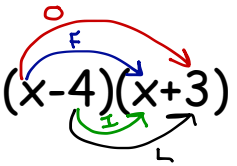
EX 2) DISTRIBUTIVE PROPERTY

- Also known as FOIL,
  - First
  - Outside
  - Inside
  - Last

Just draw the arrows!!!

- ***Expand and simplify.***

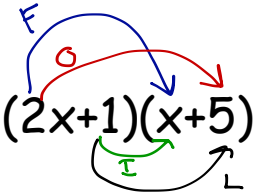
a) $(x-4)(x+3)$



$= x^2 + 3x - 4x - 12$

$= x^2 - x - 12$

b) $(2x+1)(x+5)$



$= 2x^2 + 10x + 1x + 5$

$= 2x^2 + 11x + 5$

MORE EXAMPLES

- Expand and simplify.

(a) $2(x - 8)(x - 1)$

$= 2[x^2 - 1x - 8x + 8]$

$= 2[x^2 - 9x + 8]$

$= 2x^2 - 18x + 16$

(b) $-3(x + 5)^2$ → write the bracket 2 times

$= -3(x+5)(x+5)$

$= -3[x^2 + 5x + 5x + 25]$

$= -3[x^2 + 10x + 25]$

$= -3x^2 - 30x - 75$

CONSOLIDATION

- Make the connection!

- How did we go from factored form of the quadratic relation $y = (x - 3)(x + 6)$ to standard form of the same quadratic relation $y = x^2 + 3x - 18$?

Expand and simplify!!

REINFORCEMENT

- *Pages 166 – 168*
  - *#3 – 10, 17**