

Discovery Part I: Find the Pattern!

1. PREDICTION: Make an educated guess of how you would square the following binomial:

$$(2x + 5)^2 \neq \underline{4x^2 + 25}$$

2. TEST: With you partner, use FOIL to multiply the following. Remember: you are squaring the BINOMIAL – not distributing the exponent to both terms.

a) $(x + 3)^2$

$$\begin{array}{l} (x+3)(x+3) \\ x^2+3x+3x+9 \\ \hline x^2+6x+9 \end{array}$$

b) $(x - 2)^2$

$$\begin{array}{l} (x-2)(x-2) \\ x^2-2x-2x+4 \\ \hline x^2-4x+4 \end{array}$$

c) $(4x + 5)^2$

$$\begin{array}{l} (4x+5)(4x+5) \\ 16x^2+20x+20x+25 \\ \hline 16x^2+40x+25 \end{array}$$

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

$$\begin{array}{l} (3x-1)(3x-1) \\ 9x^2-3x-3x+1 \\ \hline 9x^2-6x+1 \end{array}$$

3. REFLECTION: Was your prediction to Question 1 correct? Circle: Yes or No

If yes, explain why so. If not, explain why not, and then make the correction.

4 . SUMMARY:

SQUARE OF A BINOMIAL PATTERN

Directions: Find the product using the square of a binomial pattern

$$(a + b)^2 = \underline{a^2 + 2ab + b^2}$$

Ex) $(x + 5)^2 = x^2 + 10x + 25$

$$(a - b)^2 = \underline{a^2 - 2ab + b^2}$$

Ex) $(x - 5)^2 = x^2 - 10x + 25$

5. PRACTICE: Use the Square of a Binomial Pattern to find the products of the polynomials below.

(Please do NOT use the FOIL Method or the Double Distribute Method).

a) $(x + 6)^2$

$$x^2 + 12x + 36$$

b) $(x - 8)^2$

$$x^2 - 16x + 64$$

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

$$9x^2 + 42x + 49$$

d) $(3x - 2y)^2$

$$9x^2 - 12xy + 4y^2$$

I ♥
math!



Discovery Part 2: Find a NEW Pattern!

1. PREDICTION: Make an educated guess of how you would square the following binomial:

$$(2x + 5)(2x - 5) = \underline{\hspace{2cm}}$$

2. TEST: With you partner, use FOIL to multiply the following:

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

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

$$\boxed{x^2 - 9}$$

b) $(x - 2)(x + 2)$

$$x^2 + 2x - 2x - 4$$

$$\boxed{x^2 - 4}$$

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

$$16x^2 - 20x + 20x - 25$$

$$\boxed{16x^2 - 25}$$

d) $(3x - 1)(3x + 1)$

$$9x^2 + 3x - 3x - 1$$

$$\boxed{9x^2 - 1}$$

3. REFLECTION: Was your prediction to Question 1 correct? Circle: Yes or No

If yes, explain why so. If not, explain why not, and then make the correction.

4. SUMMARY:

SUM AND DIFFERENCE PATTERN

Directions: Find the product using the sum and difference pattern.

$$(a + b)(a - b) = \underline{a^2 - b^2}$$

Ex) $(x + 5)(x - 5)$

$$x^2 - 25$$

5. PRACTICE: Use the Square of a Binomial Pattern and the Sum and Difference Pattern to find the products of the polynomials below quickly!

a) $(x - 3)^2$

$$x^2 - 6x + 9$$

b) $(x + 4)(x - 4)$

$$x^2 - 16$$

c) $(x + 6)^2$

$$x^2 + 12x + 36$$

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

$$4x^2 + 28x + 49$$

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

$$9x^2 - 16$$

f) $(3x + 8)^2$

$$9x^2 + 48x + 64$$