

Name:	Date:
Topic/Objective: Special Products of polynomials	Class/Period:

Questions/Main Ideas: Notes:

Use FOIL to solve the following expressions:

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

$$x^2 + 5x - 5x - 25$$

$$x^2 - 25$$

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

$$x^2 + 7x - 7x - 49$$

$$x^2 - 49$$

Do you notice any patterns from multiplying these polynomials?
The middle terms cancel out

SUM AND DIFFERENCE PATTERN	
Algebra	Example
$(a+b)(a-b) = a^2 - b^2$	$(x+3)(x-3) = x^2 - 9$

Find the product:

1.) $(x+10)(x-10) =$
 $a=x \quad b=10$
 $a^2=x^2 \quad b^2=100$
 $x^2 - 100$

2.) $(x+3y)(x-3y) =$
 $a=x \quad b=3y$
 $a^2=x^2 \quad b^2=9y^2$
 $x^2 - 9y^2$

3.) $(2x+1)(2x-1) =$
 $a=2x \quad b=1$
 $a^2=4x^2 \quad b^2=1$
 $4x^2 - 1$

4.) $(4x+y)(4x-y) =$
 $a=4x \quad b=y$
 $a^2=16x^2 \quad b^2=y^2$
 $16x^2 - y^2$

SQUARE OF A BINOMIAL PATTERN

Algebra

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

Example

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

$$(2x - 3)^2 = x^2 - 12x + 9$$

1.) $(x + 3)^2 =$
 $a = x \quad b = 3$
 $\rightarrow a^2 = x^2 \quad \rightarrow b^2 = 9$
 $\rightarrow 2ab = 2(x)(3) = 6x$
 $x^2 + 6x + 9$

3.) $(x - 7)^2 =$
 $a^2 = x^2$
 $b^2 = 49$
 $2ab = 2(7x) = 14x$
 $a^2 - 2ab + b^2$
 $x^2 - 14x + 49$

5.) $(x + 4)^2 =$
 $a^2 = x^2$
 $b^2 = 16$
 $2ab = 2(4x) = 8x$
 $a^2 + 2ab + b^2 \Rightarrow x^2 + 8x + 16$

2.) $(a + 6)^2 =$
 $a^2 = a^2$
 $b^2 = 36$
 $2ab = 2(a)(6) = 12a$
 $a^2 + 2ab + b^2$
 $a^2 + 12a + 36$

4.) $(6b - 1)^2 =$
 $a^2 = 36b^2$
 $b^2 = 1$
 $2ab = 2(6b)(1) = 12b$
 $a^2 - 2ab + b^2$
 $36b^2 - 12b + 1$

