3.3

Date:

Objective:

A) Fill out the table below using the following steps:

Row 1: Write numbers 1-15

Row 2: Square the numbers from row 1

Row 3: Cube the numbers from row 1

Row 1	**Natural Numbers**														
Row 2	**Perfect Squares**														
Row 3	**Perfect Cubes**														

B) 1. $2^3 =$ ___ 2. $(-2)^3 =$ ___ 3. $x^3 =$ ___ 4. $(-x)^3$ 5. $2x^2 =$ ___ 6. $(-2x)^2 =$ ___

C) In the box below put a ***circle*** around the perfect ***cubes*** and a ***square*** around the perfect ***squares***.

8		$\frac{2}{3}$			**25**		$\frac{1}{8}$		**4**
	$\frac{1}{4}$			**-121**		**216**		**-0.3**	
$12x^3$							**10**		
			$64x^6$		**49**				$27x^9$
		-2			**225**			**-343**	

D) Multiply the following. Which one is **not** a perfect square? Which ones are conjugates?

1. $(x-5)(x+5)$	**2.** $(x+2)(x+2)$	**3.** $(2x-3)(2x+3)$

E) Answer the following questions as a class.

1) If $a^2-b^2=2^2-3^2$ then $a =$ ___ and $b =$ ___ ?	**2)** If $a^2-b^2=4-9$ then $a =$ ___ and $b =$ ___ ?	**3)** If $a^2-b^2=x^2-25$ then $a =$ ___ and $b =$ ___ ?
4) If $a^2-b^2=(2x)^2-(3y)^2$ then $a =$ ___ and $b =$ ___ ?	**5)** If $a^2-b^2=4x^2-9y^2$ then $a =$ ___ and $b =$ ___ ?	**6)** If $a^2-b^2=-64c^2+d^2$ then $a =$ ___ and $b =$ ___ ?

F) Sum of Squares:

Difference of Squares:

G) Answer the following questions as a class.

1) If $a^3+b^3=2^3+3^3$ then $a=$ ___ and $b=$ ___ ?	**2)** If $a^3+b^3=8+27$ then $a=$ ___ and $b=$ ___ ?	**3)** If $a^3-b^3=x^3-4^3$ then $a=$ ___ and $b=$ ___ ?
4) If $a^3-b^3=x^3-64$ then $a=$ ___ and $b=$ ___ ?	**5)** If $a^3+b^3=(2x)^3+(3y)^3$ then $a=$ ___ and $b=$ ___ ?	**6)** If $a^3+b^3=8x^3+27y^3$ then $a=$ ___ and $b=$ ___ ?
7)) If $a^3+b^3=125+8x^3$ then $a=$ ___ and $b=$ ___ ?	**8)** If $a^3-b^3=y^6-216$ then $a=$ ___ and $b=$ ___ ?	**9)** If $a^3-b^3=-64c^3-d^3$ then $a=$ ___ and $b=$ ___ ?

H) Sum of Cubes:

Difference of Cubes:

S
O
A
P

I) Examples: Identify the type of factoring. Then factor completely.

1) $1-9x^2$	**2)** $16x^2+25$	**3)** $16x^2-25$	**4)** $\mathbf{-100x^4+36}$
5) $1-x^3$	**6)** m^3+8	**7)** $343-125x^3$	**8)** $\mathbf{27a^6+8}$
9) $-125u^3+64$	**10)** $27x^4+8x$	**11)** $343t^3-u^3$	**12)** $-27a^6-y^6$