

$$\begin{aligned}
 7. \quad & -3(2y-1) = 12|x+1| - 3 \\
 & -6y + 3 = 12|x+1| - 3 - 3 \\
 & \frac{-6y}{-6} = \frac{12|x+1|}{-6} - \frac{6}{-6} \\
 & y = -2|x+1| + 1
 \end{aligned}$$

$\left( \begin{matrix} -1 \\ 2 \end{matrix} \right)$

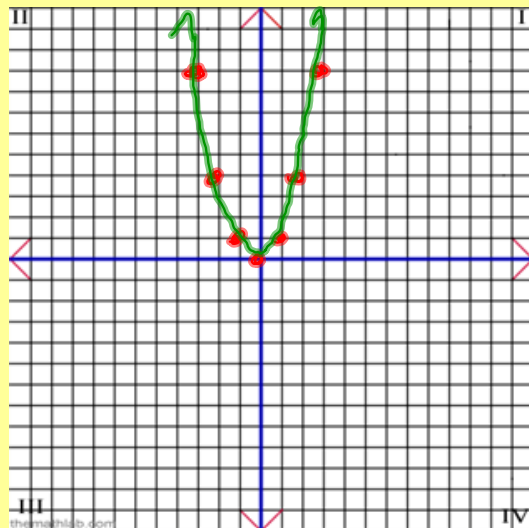
## Example #1:

Lets find the pattern!!

x	y
-2	4
-1	1
0	0
1	1
2	4
3	9

$$y = x^2$$
$$(-2)^2$$
$$(-1)^2$$
$$(0)^2$$
$$(1)^2$$
$$(2)^2$$
$$(3)^2$$

Parabola



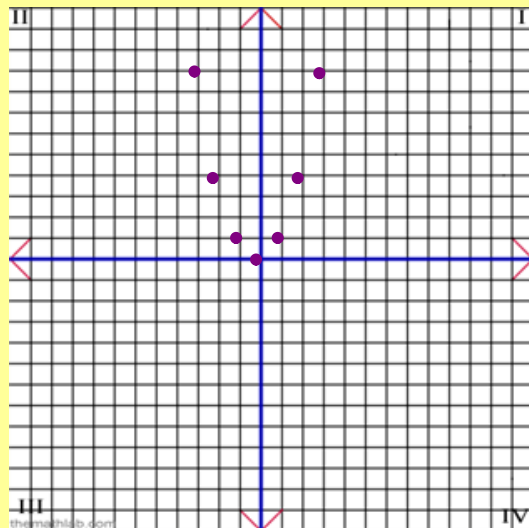
## Example #1:

$$y = x^2$$

Lets find the pattern!!

x	y
-2	4
-1	1
0	0
1	1
2	4

over	up
1	1
2	4
3	9
4	16
5	25



# Quadratic Functions

$$y = a(x+h)^2 + k$$

**Shape:**

**Parabola**



**Vertex:**

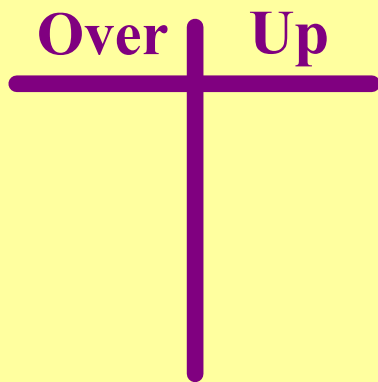
**(-h, k )**

**Stretch Factor:** a

**Direction:**

**Look at stretch factor  
( + ) Up ( - ) Down**

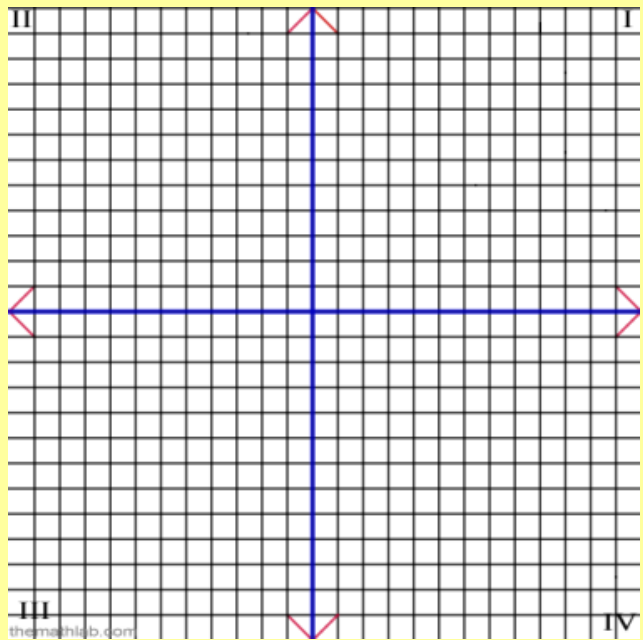
## *What is the Pattern ??*



**Vertex:**

**Stretch Factor:**

**Direction:**



## Example #2:

$$y = (x - 2)^2 - 4$$

Vertex :

$(2, -4)$

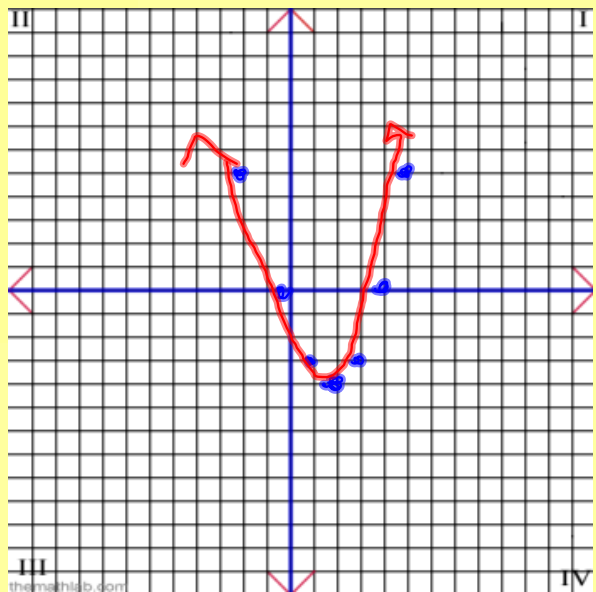
Stretch Factor:

1

Direction:

↑

Over	Up
1	1 × 1
2	4 × 1
3	9 × 1



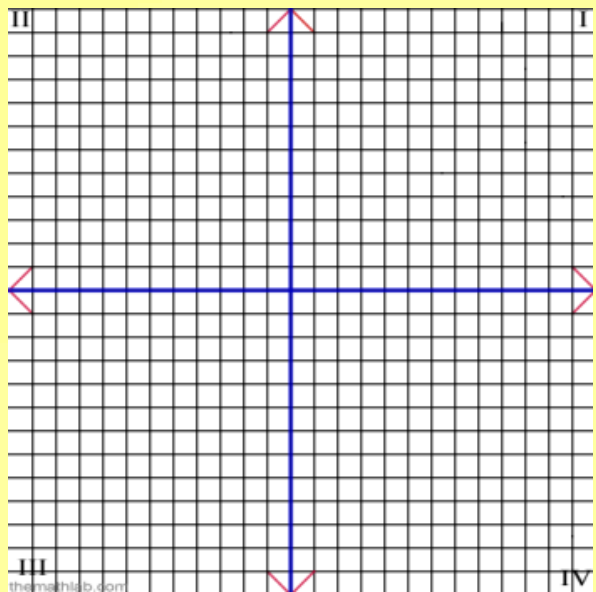
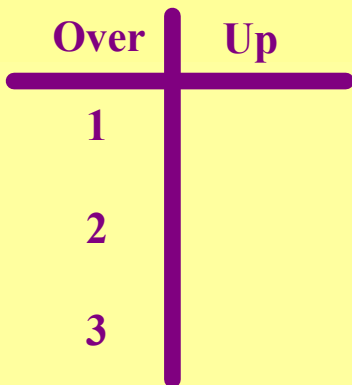
### Example #3:

$$y = -(x + 3)^2 - 2$$

Vertex : \_\_\_\_\_

Stretch Factor: \_\_\_\_\_

Direction: \_\_\_\_\_



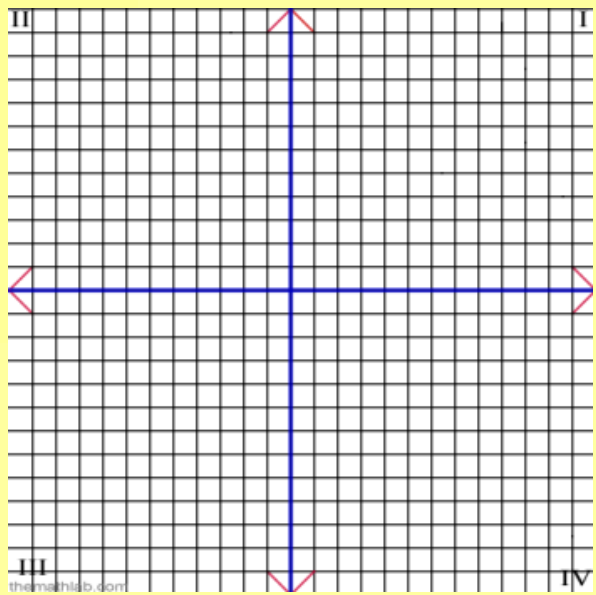
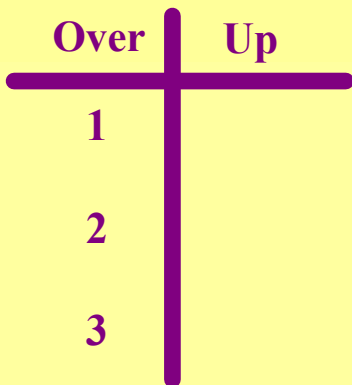
### Example #4:

$$y = 2(x - 1)^2 + 4$$

Vertex : \_\_\_\_\_

Stretch Factor: \_\_\_\_\_

Direction: \_\_\_\_\_





**Example #5:**

$$-3x^2 - 5$$

$$y = -3(x)^2 - 5$$

**Vertex :**

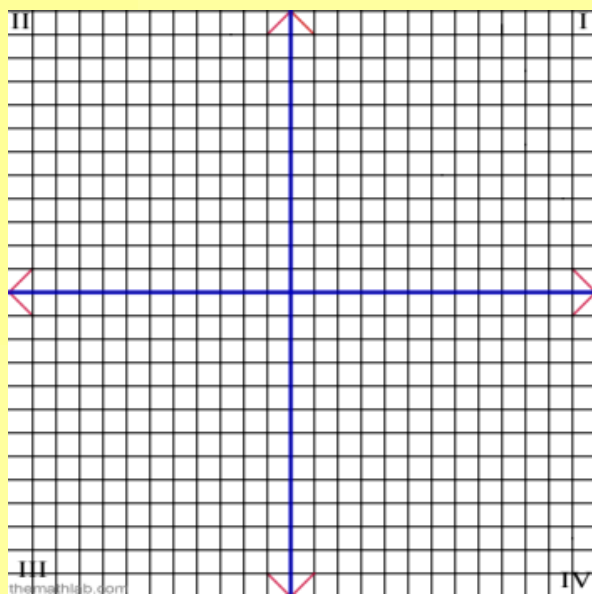
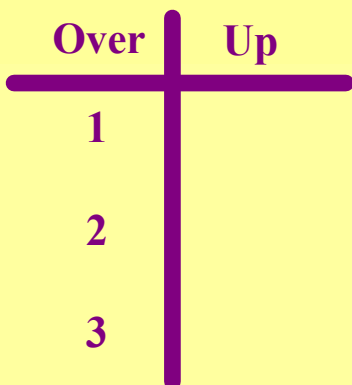
$$(0, -5)$$

**Stretch Factor:**

$$3$$

**Direction:**

$$\downarrow$$



### Example #6:

$$y = \frac{1}{2}(x - 3)^2$$

Vertex :

(3, 0)

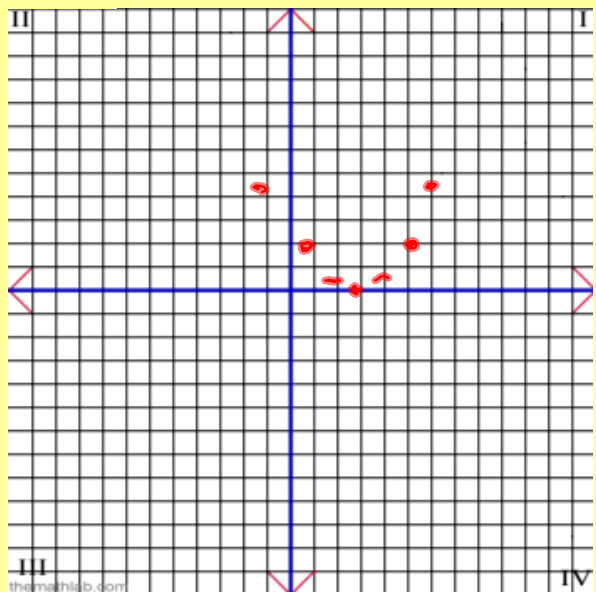
Stretch Factor:

$\frac{1}{2}$  us

Direction:

↑

Over	Up
1	$1 \cdot 0.5 = 0.5$
2	$4 \cdot 0.5 = 2$
3	$9 \cdot 0.5 = 4.5$



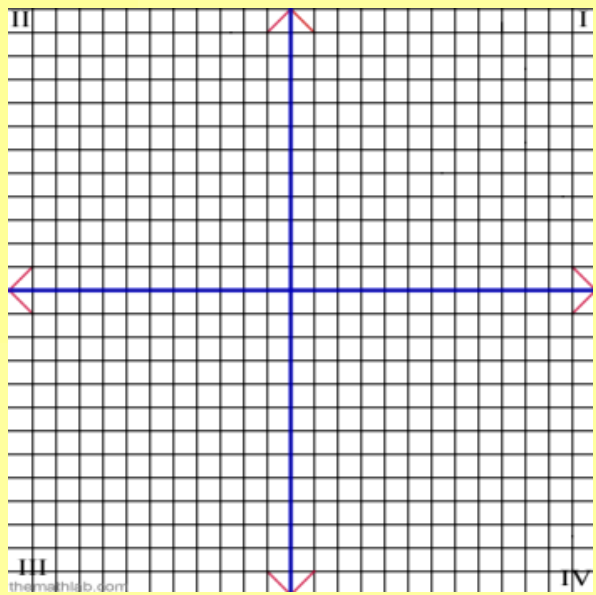
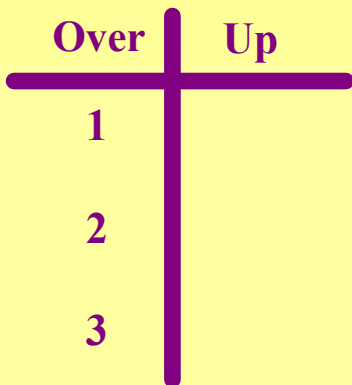
### Example #7:

$$-2(y + 1) = 4(x - 3)^2 - 4$$

Vertex : \_\_\_\_\_

Stretch Factor: \_\_\_\_\_

Direction: \_\_\_\_\_



$$-2(y+1) = 4(x-3)^2 - 4$$

$$-2y - 2 = 4(x-3)^2 - 4$$

$$-2y = 4(x-3)^2 - 4 + 2$$

$$\underbrace{-2y}_{-2} = 4(x-3)^2 \underbrace{-4}_{-2} + 2$$

$$y = -2(x-3)^2 + 1$$

(3, 1)

↓

2

**Example #7:**

$$-2(y + 1) = 4(x - 3)^2 - 4$$