



Today.....Ready.... Set....Go....

1. Spend **15 minutes** with the graphing calculators or Gizmo to complete last day's exploration
2. **Hand in exploration** Gizmos  
●
3. Note on Transformations **40 min**
4. Unit Quiz **20 min**

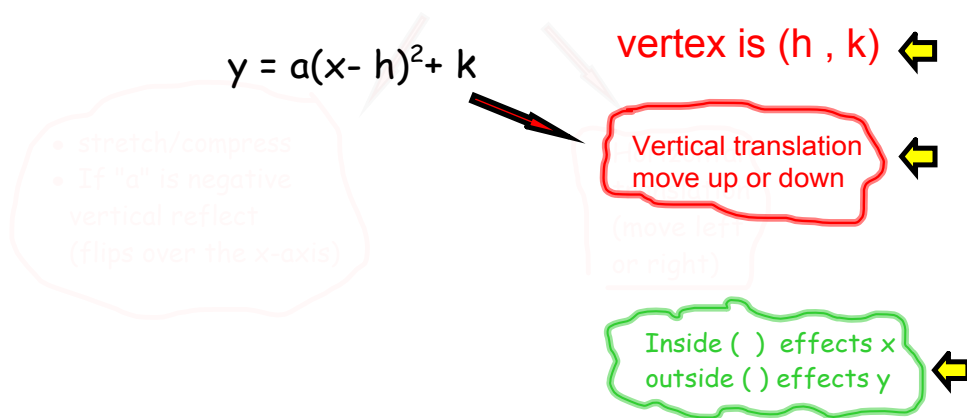
## 1.6 Quadratic Transformations

Transformations: are operations performed on functions to change the position or shape of the curves or lines  
Putting it all together

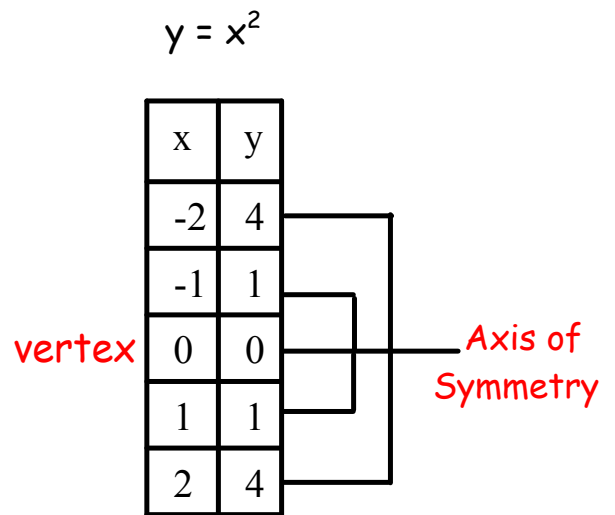
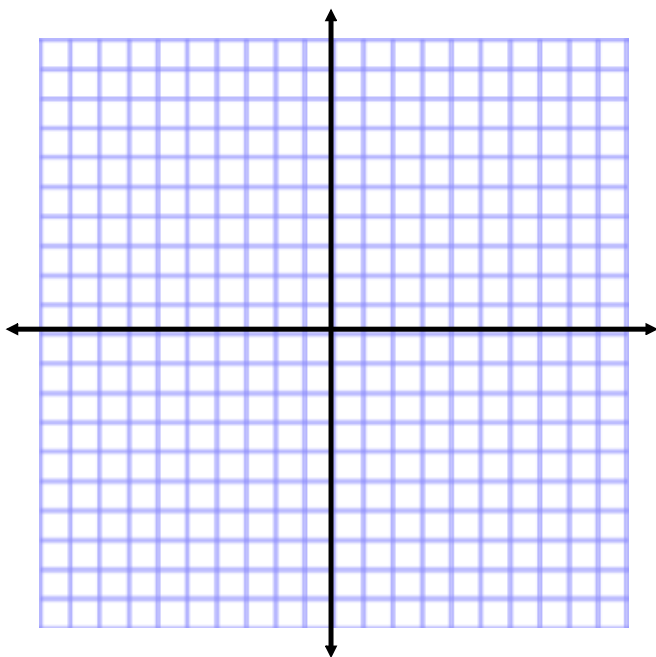
Compared to the graph in standard position  $y = x^2$

What did you notice from your investigation?

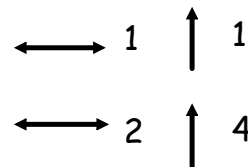
Vertex Form of a Quadratic:



You will compare each of your transformed parabola to  
 $y = x^2$   
 graphed using 5 KEY points :



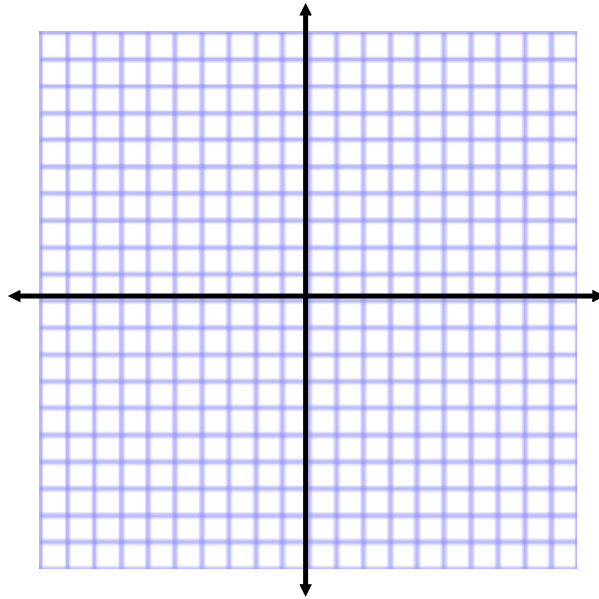
From the Vertex go...



Example: Graph each of the following

a)  $Y = x^2 - 5$

★ This is  $y=x^2$  moved **down** 5 units.



b)  $Y = (x + 7)^2$

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

notice to get " + " in the brackets

h is **neg**

\* so here  $h = -7$

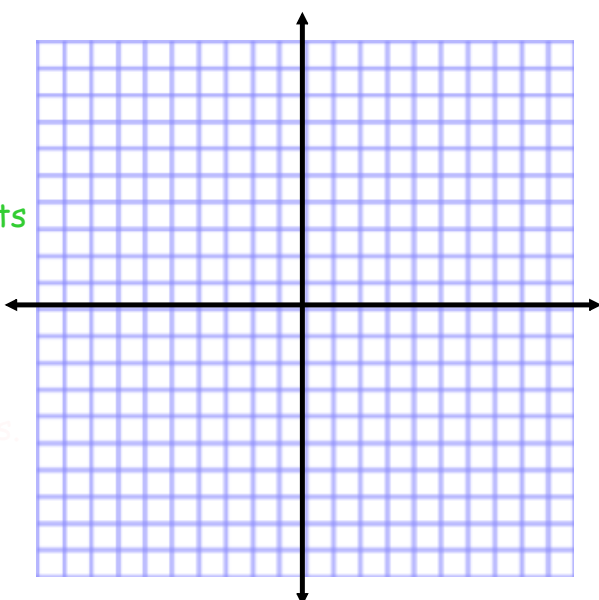
(backwards in the brackets)

★ This is  $y=x^2$  moved left 7 units.

From the Vertex go...

← 1    ↑ 1

← 2    ↑ 4

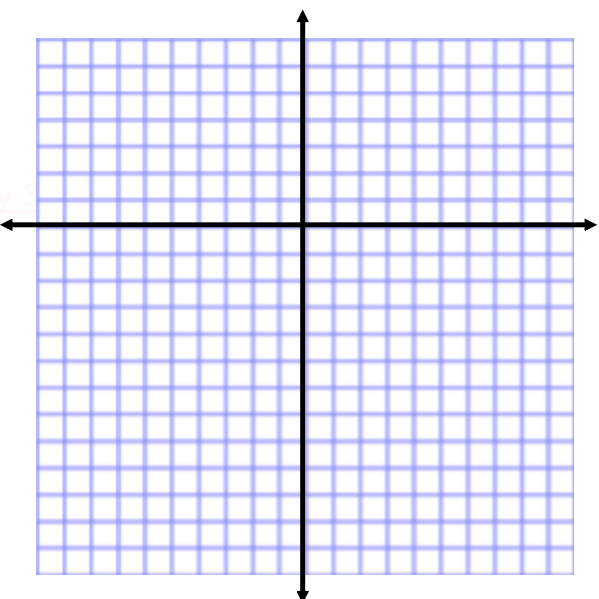


c)  $Y = -3x^2$

This is  $y=x^2$  reflected in the x axis  
★ and vertically stretched by 3

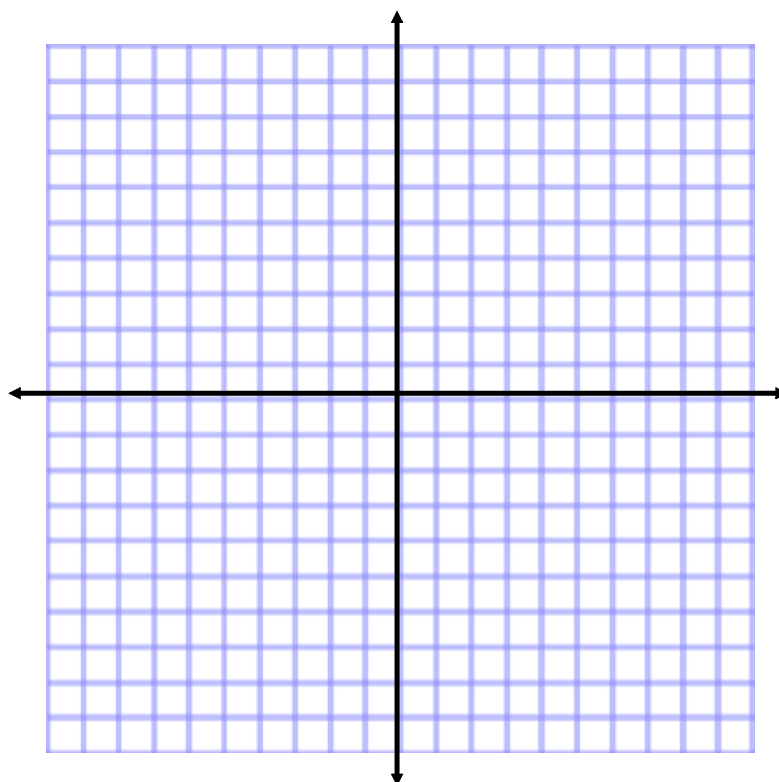
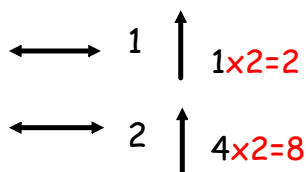
← 1    ↑  $1 \times -3 = -3$     mult by "a"

← 2    ↑  $4 \times -3 = -12$



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

vertex (3, -4)  
from the vertex  
plot points....



State the transformation:

- vertical stretch factor of 2
- horizontal shift right 3
- vertical shift down 4

### When Stating Transformations

Order matters

**1st (multiplying operations)**

- Stretching
- Reflecting

**2nd (adding/subtracting operations)**

- Translations (left/right; up/down)

Stretch Before you move  
(or you'll hurt something :)



What if you can't see a h or k ie  $y = x^2$  ????

They are still .....there- you just don't write them

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



a      h      k

## HMWK

P47 # 1, 2(no table), 3, 4, 5-7 cd, (8 iv) abc

