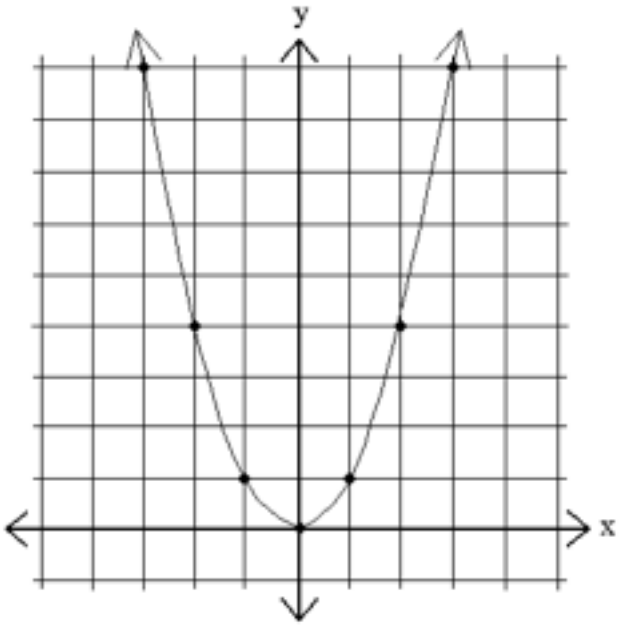
3.3B Investigate Transformations- Day 2

Recall: The base graph of all parabolas is $y=x^2$



Pattern:
from the vertex
over 1, up 1
over 2, up 2
over 3, up 9

C. Investigate $y=ax^2$, $a > 0$

Compare the following graphs to $y=x^2$
Sketch graphs in your notebook

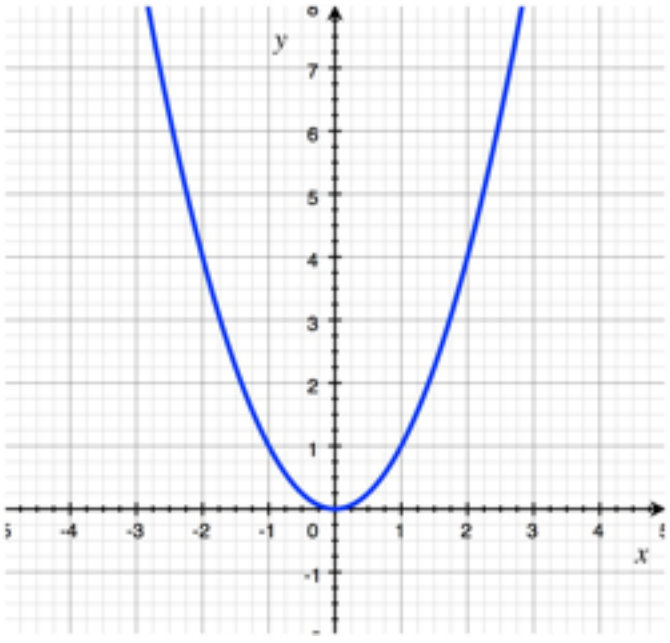
a) $y=x^2$

b) $y=5x^2$

c) $y=2x^2$

d) $y=1/2x^2$

e) $y=1/4x^2$



Compared to $y=x^2$, the graph of $y= ax^2$

If $a > 1$ _____

If $0 < a < 1$, _____

D. Investigate $y=ax^2$, $a < 0$

Compare the following graphs to $y=x^2$
Sketch graphs in your notebook.

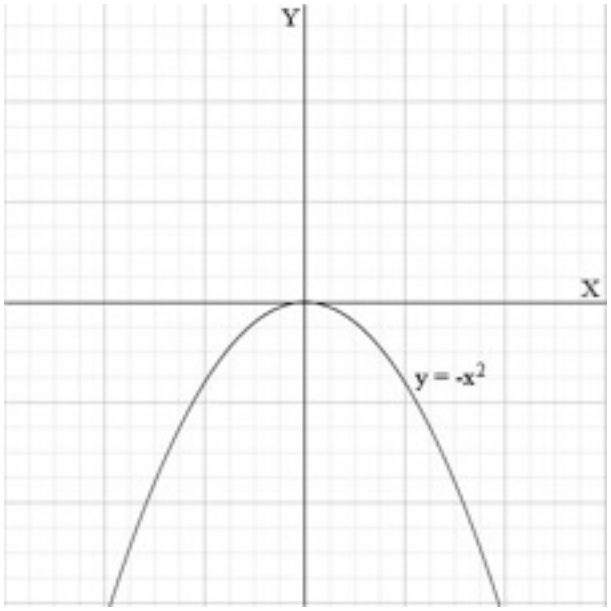
a) $y=-x^2$

b) $y=-5x^2$

c) $y=-2x^2$

d) $y=-1/2x^2$

e) $y=-1/4x^2$



Compared to $y=x^2$, the graph of $y= ax^2$

If $a < 0$, _____

Same patter…. TIMES ‘a’

Pattern:

from the vertex

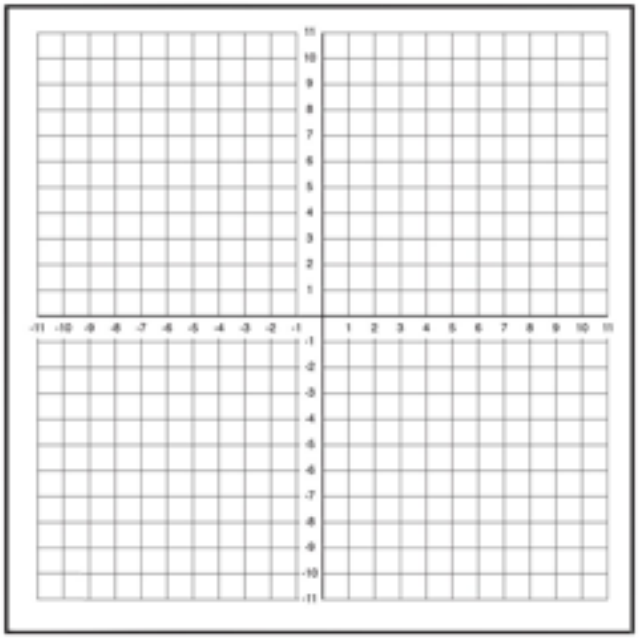
over 1, up 1 (a)

over 2, up 4 (a)

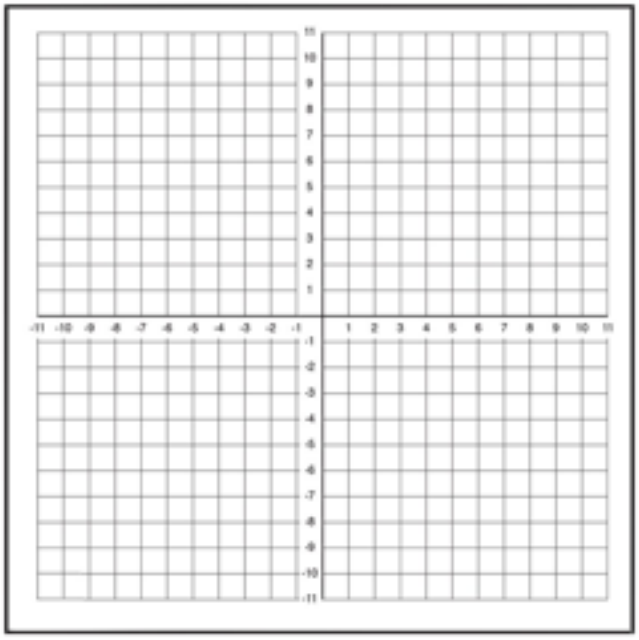
over 3, up 9 (a)

Ex. List transformation on $y=x^2$ and sketch the graph.

a) $y=-4x^2$



b) $y=0.2x^2$



Ex. 2 Write and equation of a quadratic relation under the following transformations on $y=x^2$

a) vertically stretch by a factor of 7

b) Vertically stretched by a factor 1/2 and reflected in the x-axis (sometimes called “compressed by factor of 2”)

c) vertically stretched by a factor of 1/3 and translated up 1 unit (“compressed by a factor of 3”)

d) Vertically stretched by a factor of 4 and translated 5 units left

e) vertically stretched by a factor of 3, translated 4 units left, translated 5 units down and reflected in the x-axis