3.3 A Investigate Transformations - Day 1

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

x	$y=x^2$
-3	
-2	
-1	
0	
1	
2	
3	
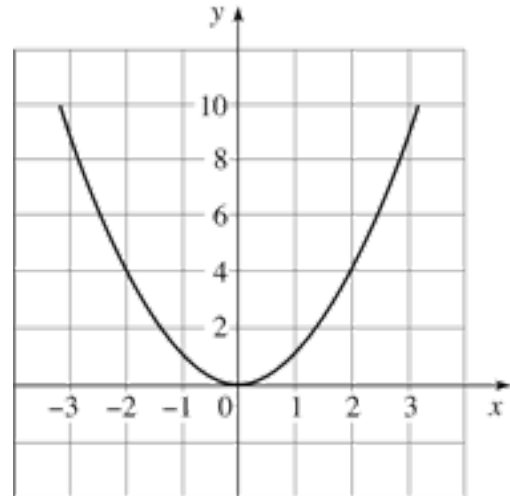
If we move $y = x^2$ right, left, up or down it keeps its shape. Determine a pattern to each of the points shown Each square represents 1unit.
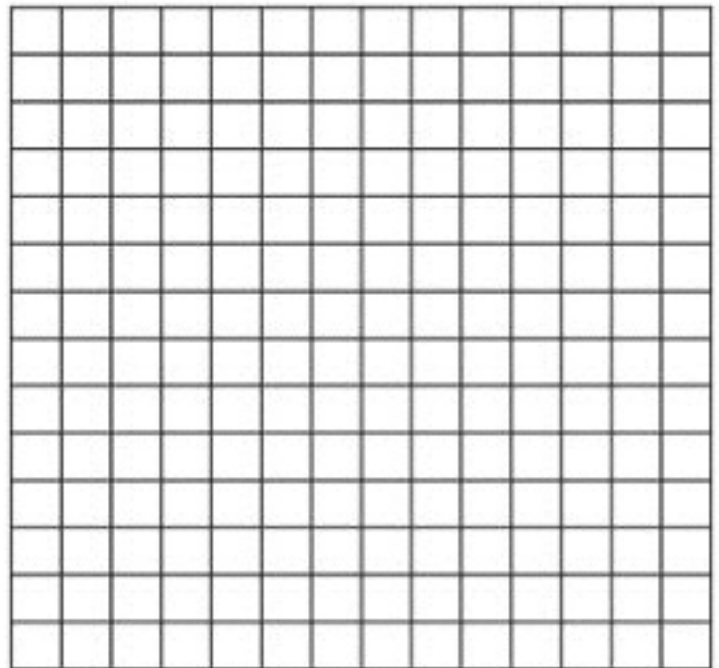
All other parabolas are_____ on y = x^2

_____ include:

- Translations shifts _____/down, right/_____
- reflections (in the x-axis)
- vertical _____

Investigate y = x^2 + k

Compare the following graphs y = x^2
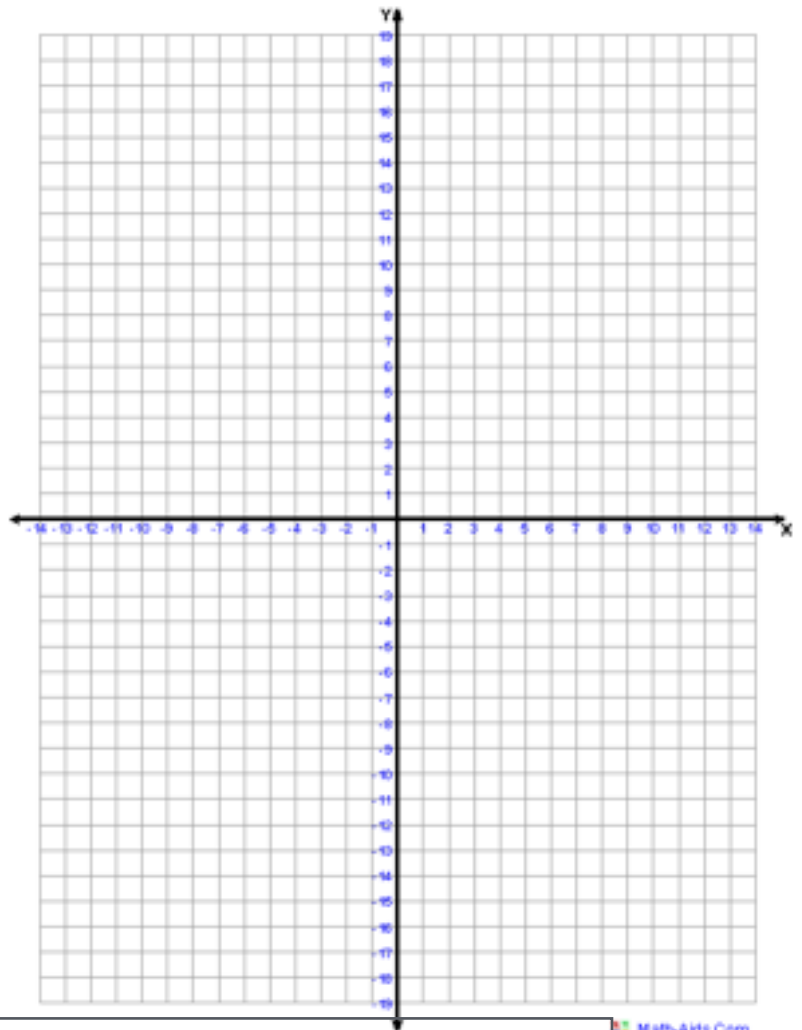Sketch the graphs to your right. Use
Desmos to help.

y = x^2
y = x^2 + 5
y = x^2 + 2
y = x^2 - 7
y = x^2 - 2

Math-Aids.Com

Compare to y = x^2
the graph of y = x^2 + k

if k > 0_____

if k < 0 _____

Investigate y = (x - h)²

Compare the following graphs y = x²
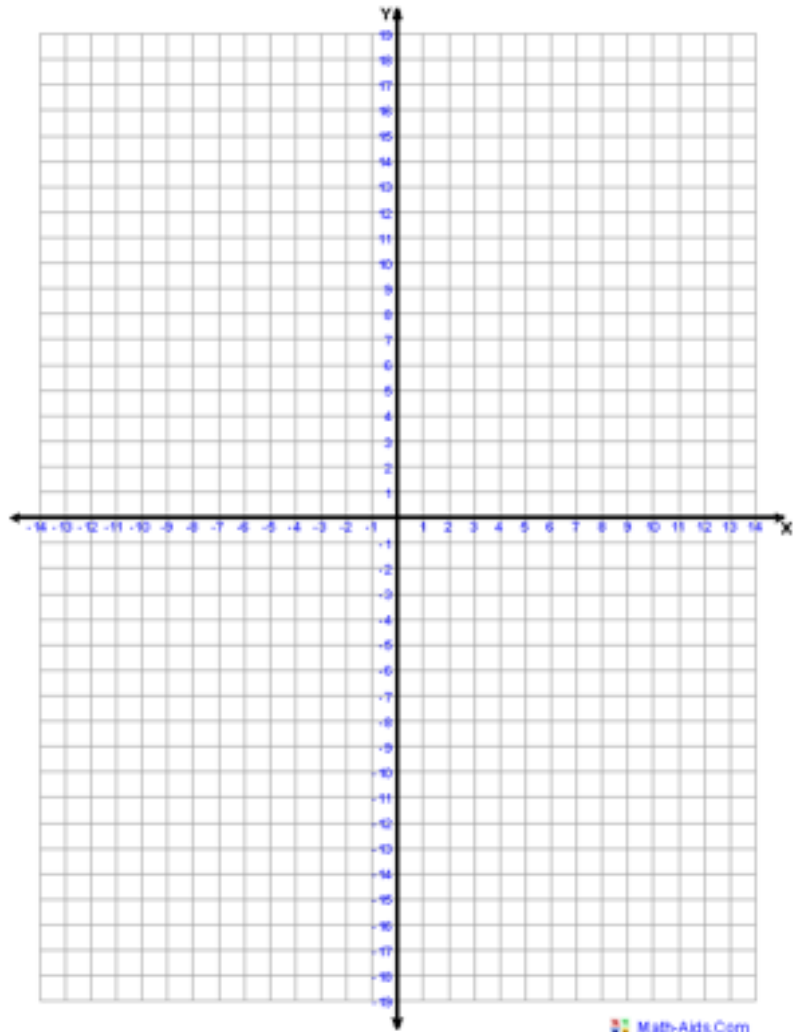Sketch the graphs to your right. Use
Desmos to help.

$y = x^2$
$y = (x + 5)^2$
$y = (x + 8)^2$
$y = (x - 10)^2$
$y = (x - 2)^2$

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Compare to y = x²
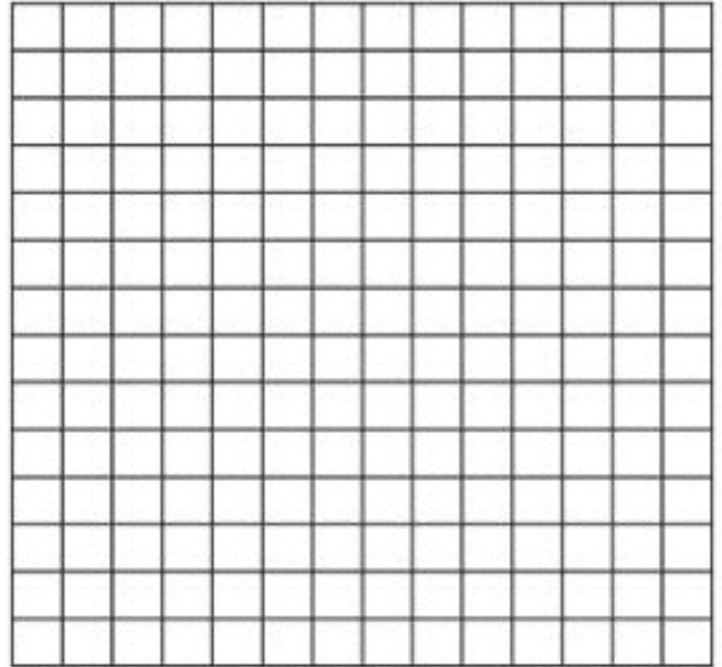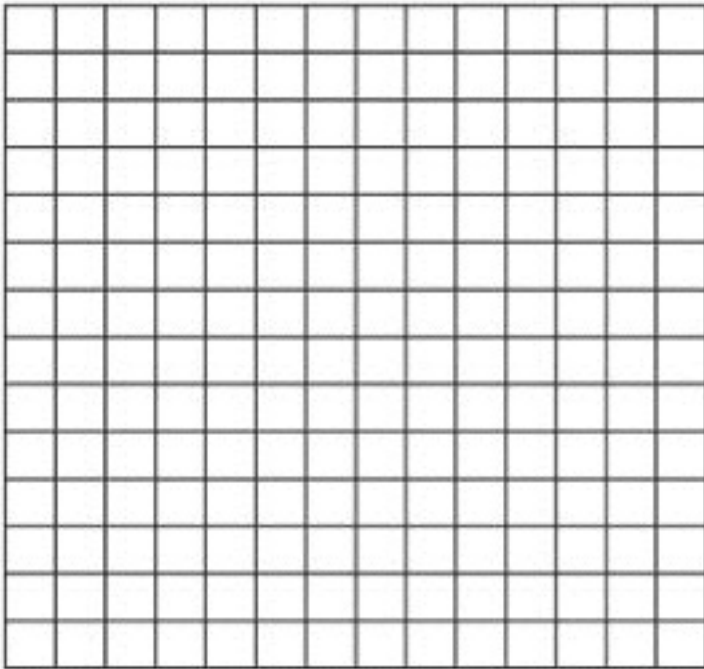**the graph of y = (x - h)² +**

if h > 0 _____

if h < 0 _____

Ex 1 State the transformation on $y = x^2$ and sketch the graph.

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

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

a) Translate 5 units down

b) Translate 7 units right

c) Translate 3 units left

d) Translate 4 units up and 6 units right