2.2.4 How can I transform other graphs?
....
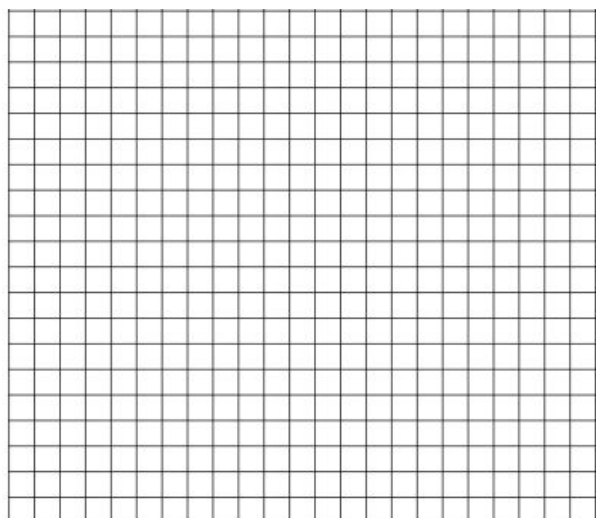Transforming Non-Functions

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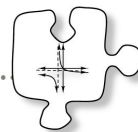
#89 Begin by fully investigating $x = y^2$ and $x^2 + y^2 = 25$ as follows.

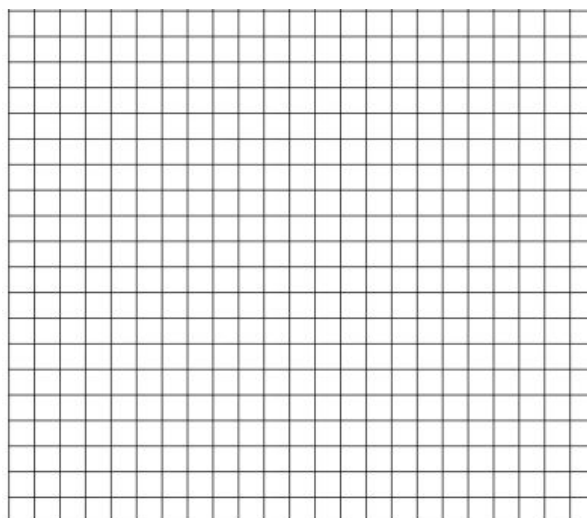a. Without using your graphing calculator, make a table and a graph for each equation.

Equation: $x = y^2$	**Equation:** $x^2 + y^2 = 25$

X	
y	

X	
y	

X	
y	

X	
y	

---

b.

Marabel and Lissa are working on this problem. Marabel is making a table for $x = y^2$. For an x-value of 4, she finds a y-value of 2. Lissa is watching and says, *"Wait! When x is 4, there is also another possible value for y."* What does Lissa mean? Look back at your tables and decide if there are more points you could add.

c.

Fully describe the graphs of $x = y^2$ and $x^2 + y^2 = 25$.

#89 Continued

| d.	e.
How are the relationships described by these equations and graphs different from other relationships you have investigated in this chapter?	The second equation may look familiar from your work with right triangles. Did you use any right triangles when you were making the graph? Explain any connections you noticed.

#90 TRANSFORMATIONS OF A NON-FUNCTION
Transform the function $x=y^2$ using the etool. Sketch and write the equation for each of the following transformations below.
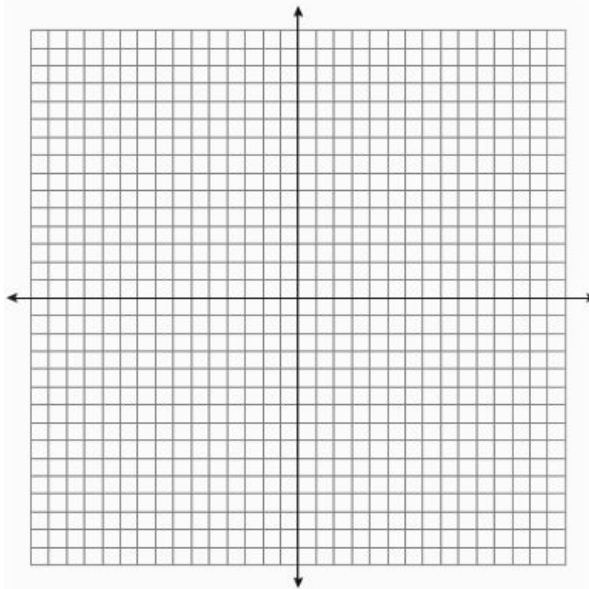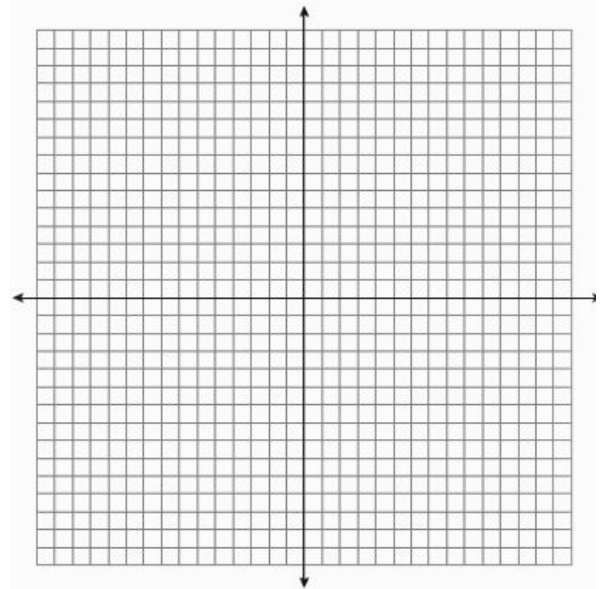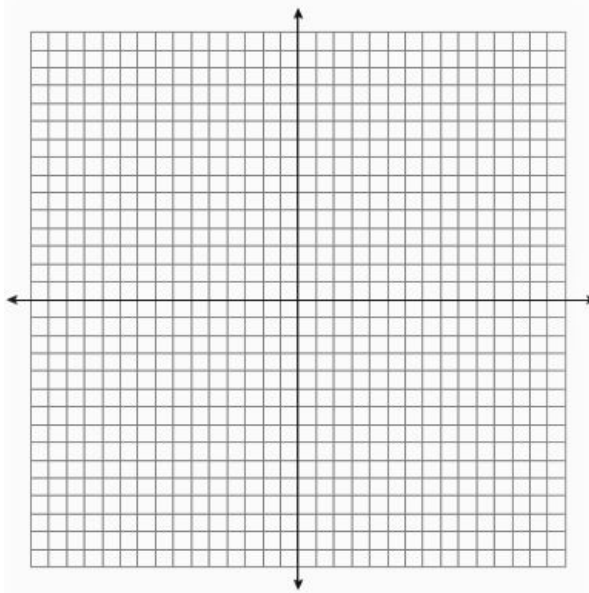
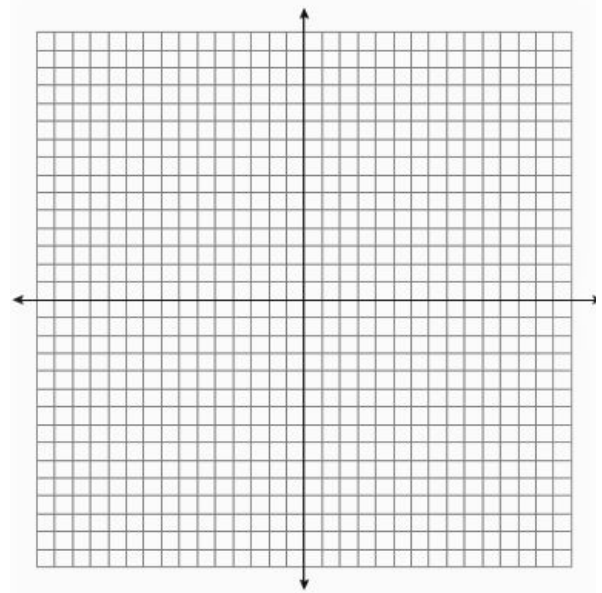| Horizontal Shift	Vertical Shift
Equation:	Equation:

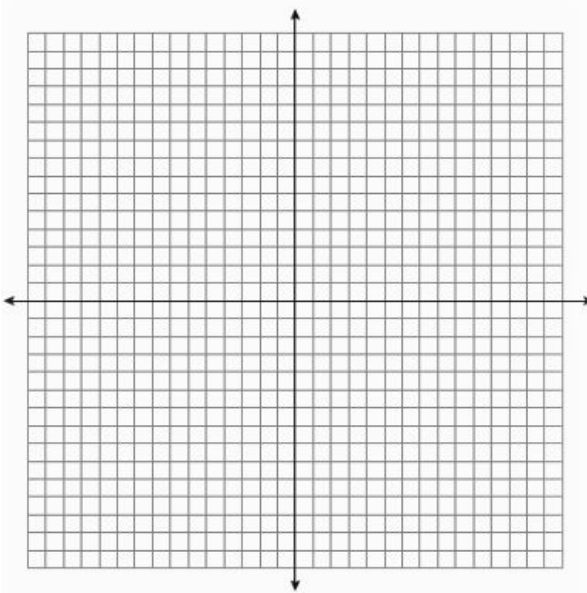| Stretch of Compression	Reflection
Equation:	Equation:

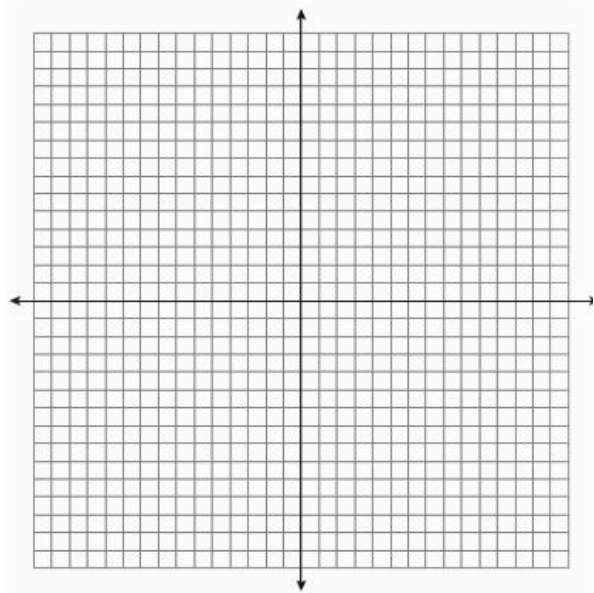Graphing Equation:

#91 TRANSFORMATIONS OF CIRCLES

a. As a team, translate the graph of $x^2 + y^2 = 25$ horizontally and vertically. Then write an equation in graphing form for this family of circles using h and k.

Horizontal	Vertical
Equation:	Equation:

Graphing Form of Circle Equation:

#91 Continued

b. How can you make the circle larger or smaller? Refer to your graph of $x^2 + y^2 = 25$. What is the radius? How is the radius of the circle related to the equation?	c. What is the equation of a circle that has its center at $(5, -7)$ with radius 10? With radius 12?

92. GRAPHING FORM OF A CIRCLE

a. Now generalize the connection between the radius and the equation of a circle. Write the graphing form of the equation for a circle with any center (h, k) and any radius r.	b. Given the equation $(x - 3)^2 + (y + 7)^2 = 169$, what is the radius of the circle? How do you know?