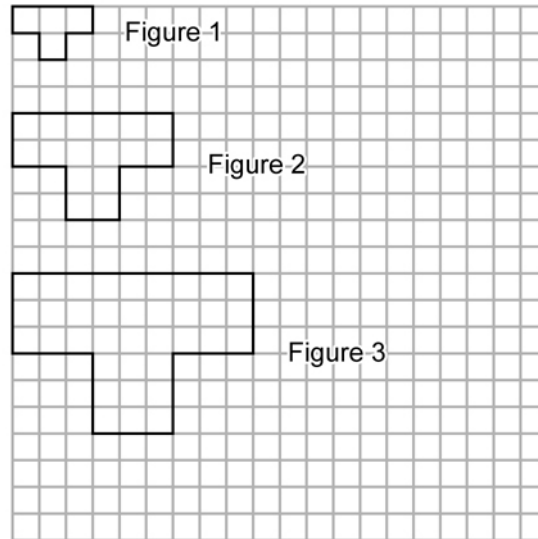


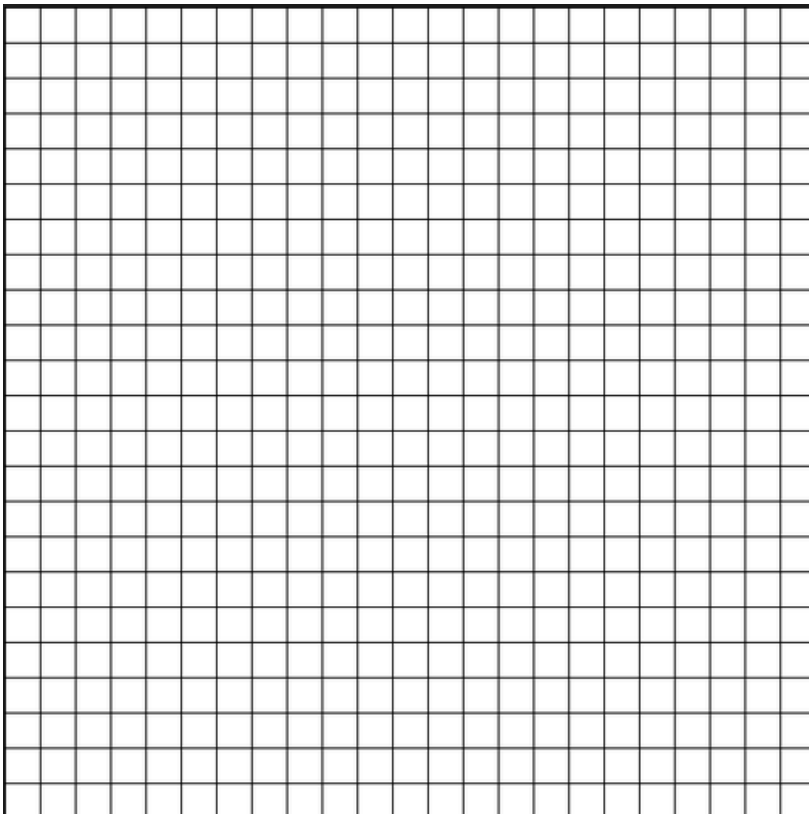
Lesson 1: Math Lab: Investigating Linear Relations

Part A: Investigating Graphs and Tables

Study the following illustrations. Focus on the width, area, and perimeter of each figure. Do you see a pattern?



1. Use graph paper to construct Figure 4 and Figure 5.

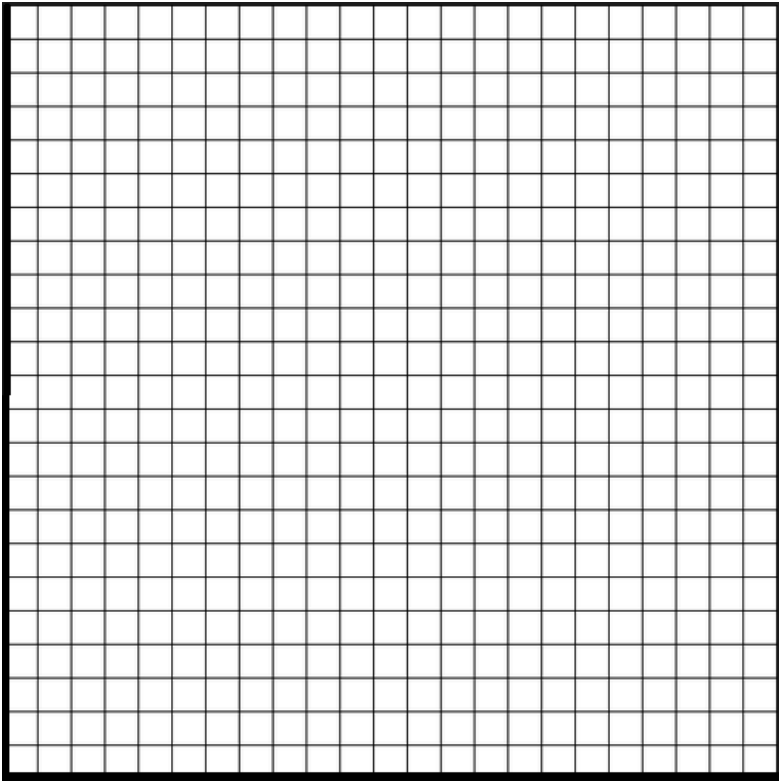


2. Complete the table by recording the width, perimeter, and area of each figure, including the ones that you drew in part for the previous step. The first row has been completed for you as an example.

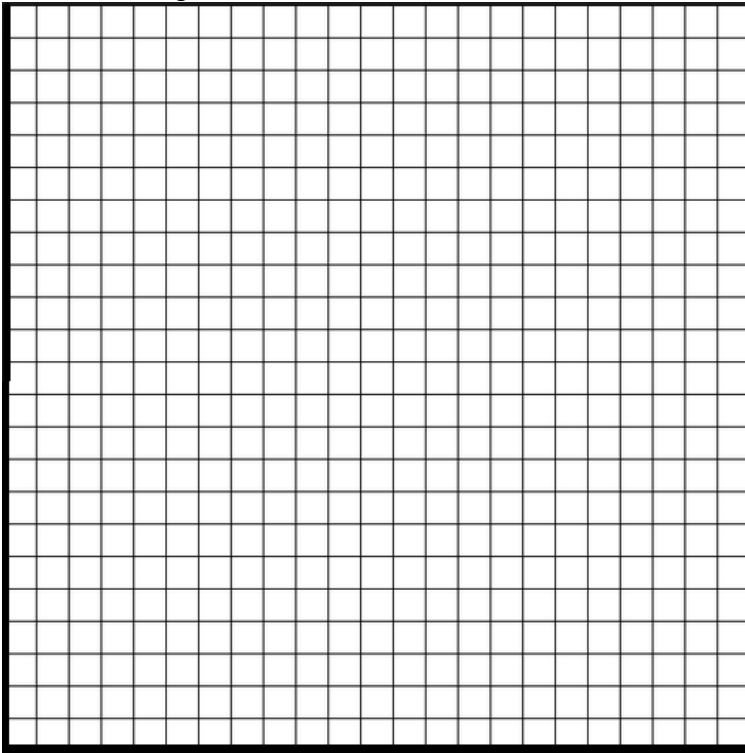
Figure	Width	Perimeter	Area
1	3	10	4
2			
3			
4			
5			

3. Graph the data for all the figures investigated using the following variables.

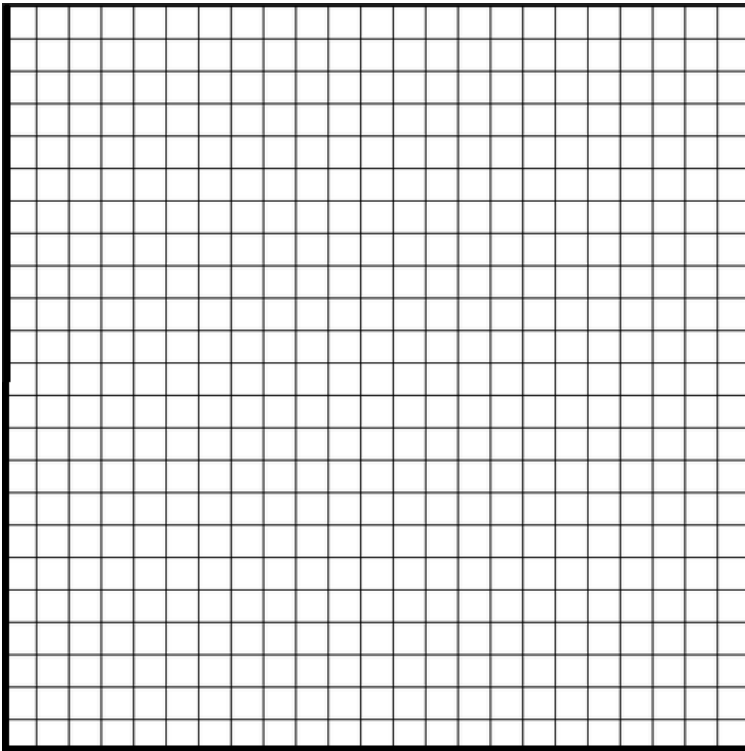
a. perimeter versus figure



b. area versus figure



c. perimeter versus width



Analysis

4. You have just constructed three graphs. In which of these graphs do the points line up along the edge of a ruler?
5. Study the patterns in the tables of the graphs you identified in question 4. How are the tables of these relations different from the one whose graph does not have points that line up along a ruler?

Part B: Investigating Equations

6. Following are four equations:

- $y = x + 3$
- $y = -\frac{1}{2}x + 2$
- $y = x^2$
- $y = \sqrt{x}$

Graph each equation by one of the following means. Do two equations using one process and two equations using the other process so you practice each method.

- Use a graphing calculator or other graphing software. ** There are two help files posted in the lesson right under this file– read them and practice using your calculator.**

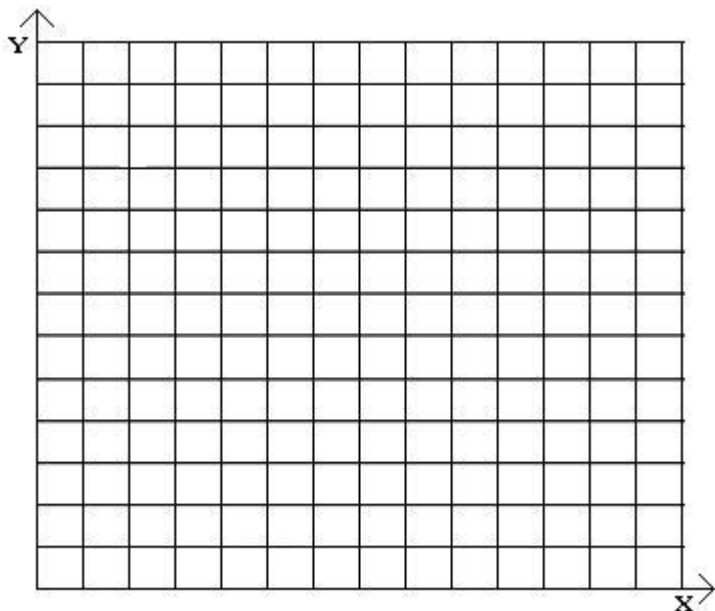
OR

- Create a table of values. Create the following table by calculating the corresponding values of y . Use the data from the table to draw the graph.
I.e. So if we create a table of values for $y = x + 3$, we put the x value in and then evaluate for y .
for $x = 0$, we get $y = (0) + 3 = 3$.
For $x = 2$, we get $y = (2) + 3 = 5$ etc.

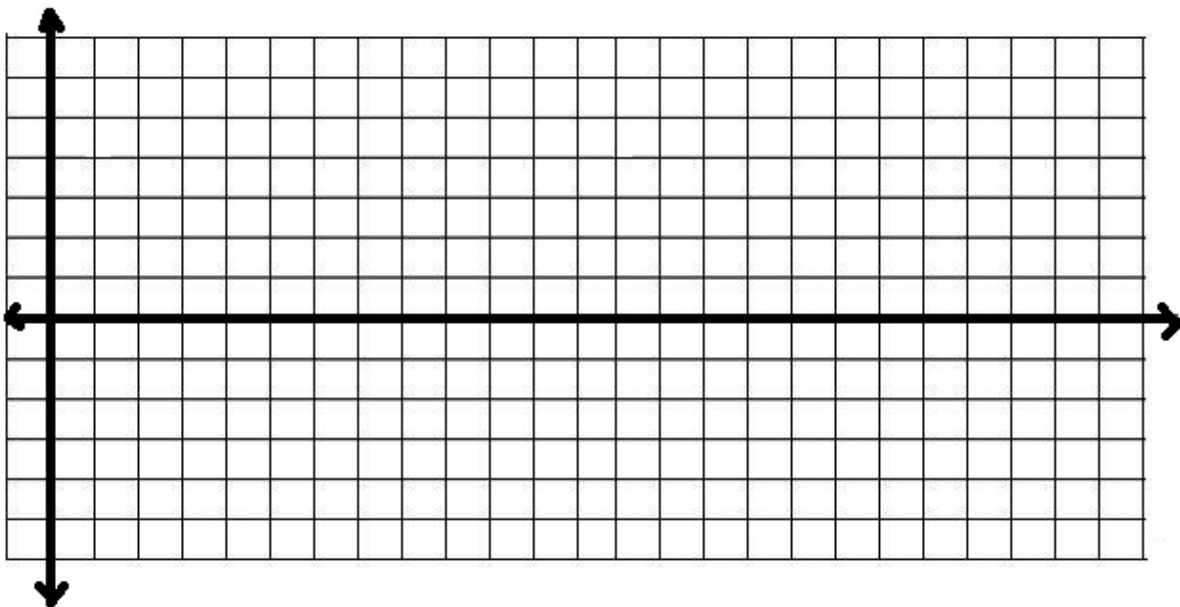
x	y
0	
2	
4	
6	
8	
10	

There are four graphs here so you can sketch the graphs above. If you used your graphing calculator, copy the graph here as carefully as you can. If you used the table of values, plot the points.

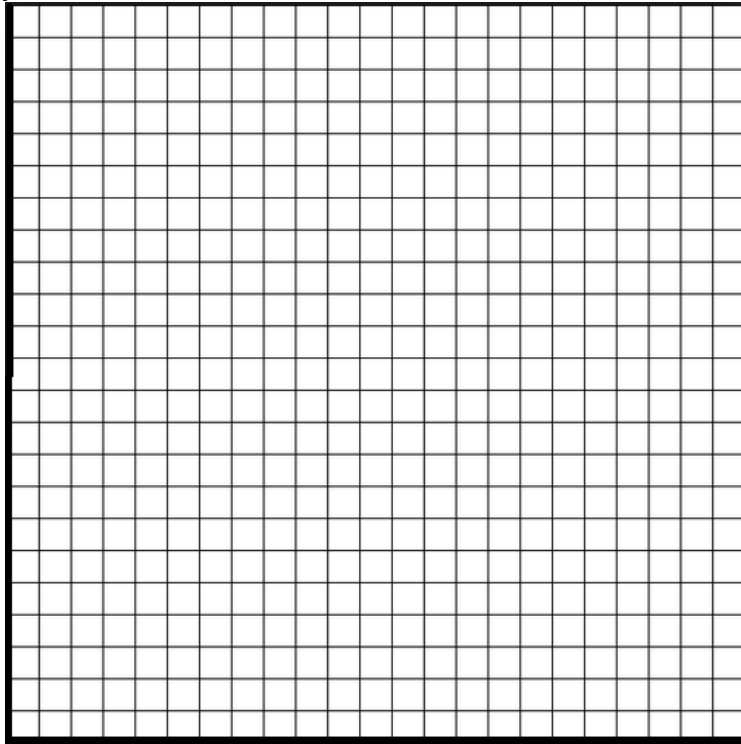
$$y = x + 3$$



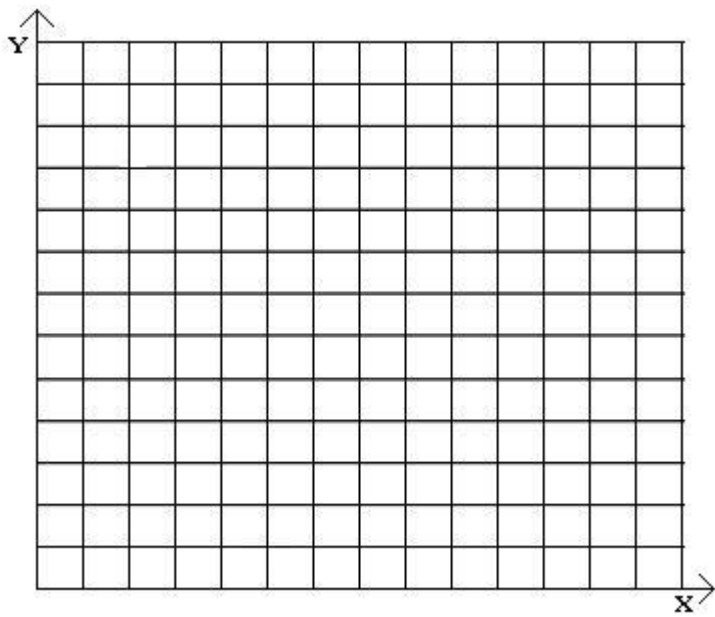
$$y = -\frac{1}{2}x + 2$$



$$y = x^2$$



$$y = \sqrt{x}$$



Analysis

7. What properties of an equation indicate that its graph will be a straight line?