

Lesson Summary

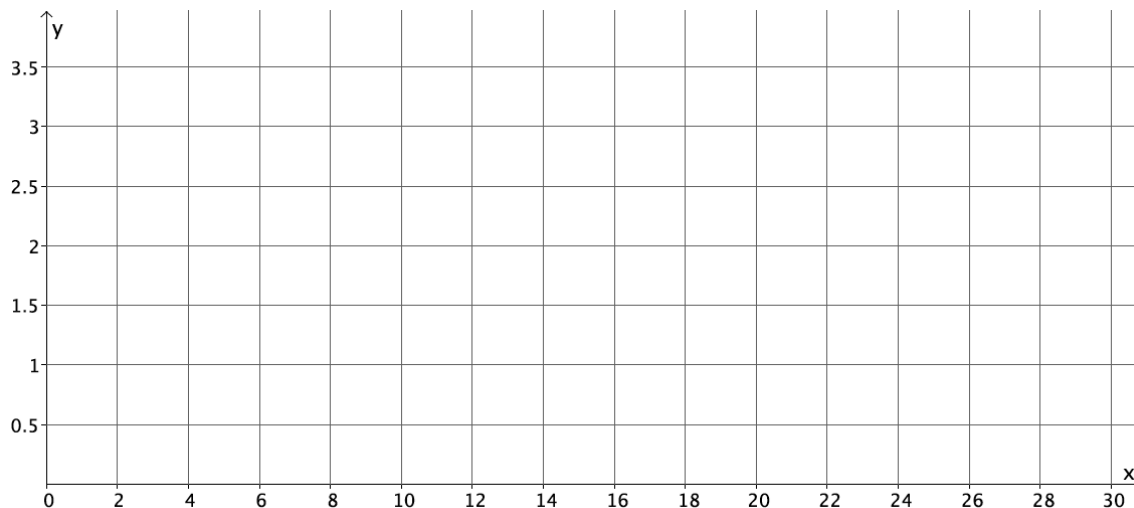
The graph of a function is defined to be the set of all points (x, y) with x an input for the function and y its matching output.

If a function can be described by an equation, then the graph of the function is the same as the graph of the equation that represents it (at least at points which correspond to valid inputs of the function).

It is not possible for two different points in the plot of the graph of a function to have the same x -coordinate.

Problem Set

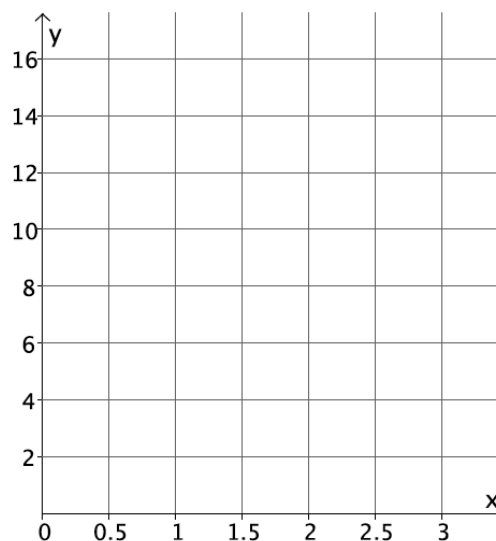
1. The distance that Scott walks is a function of the time he spends walking. Scott can walk $\frac{1}{2}$ mile every 8 minutes. Assume he walks at a constant rate.
 - a. Predict the shape of the graph of the function. Explain.
 - b. Write an equation to represent the distance that Scott can walk in miles, y , in x minutes.
 - c. Use the equation you wrote in part (b) to determine how many miles Scott can walk in 24 minutes.
 - d. Use the equation you wrote in part (b) to determine how many miles Scott can walk in 12 minutes.
 - e. Use the equation you wrote in part (b) to determine how many miles Scott can walk in 16 minutes.
 - f. Write your inputs and corresponding outputs as ordered pairs, and then plot them on a coordinate plane.



- g. What shape does the graph of the points appear to take? Does it match your prediction?
 - h. Connect the points to make a line. What is the equation of the line?

2. Graph the equation $y = x^3$ for positive values of x . Organize your work using the table below, and then answer the questions that follow.

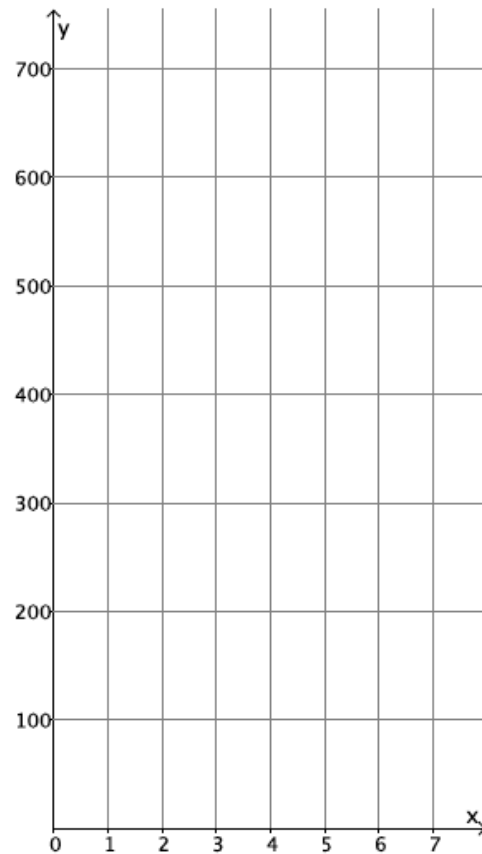
x	y
0	
0.5	
1	
1.5	
2	
2.5	



- Plot the ordered pairs on the coordinate plane.
- What shape does the graph of the points appear to take?
- Is this the graph of a linear function? Explain.
- Consider the function that assigns to each positive real number s the volume V of a cube with side length s units. An equation that describes this function is $V = s^3$. What do you think the graph of this function will look like? Explain.
- Use the function in part (d) to determine the volume of a cube with side length of 3 units. Write the input and output as an ordered pair. Does this point appear to belong to the graph of $y = x^3$?

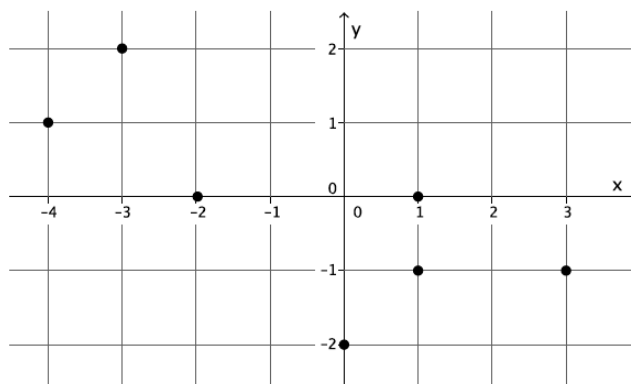
3. Sketch the graph of the equation $y = 180(x - 2)$ for whole numbers. Organize your work using the table below, and then answer the questions that follow.

x	y
3	
4	
5	
6	

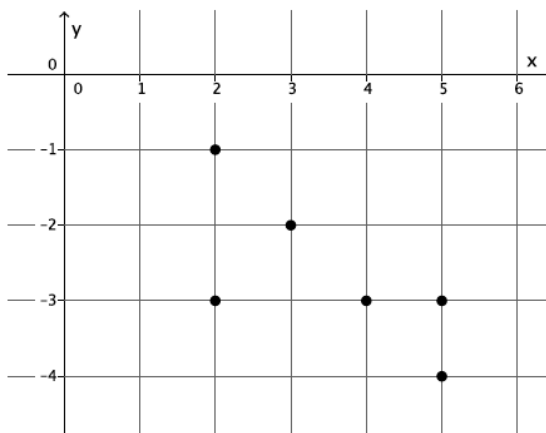


- Plot the ordered pairs on the coordinate plane.
- What shape does the graph of the points appear to take?
- Is this graph a graph of a function? How do you know?
- Is this a linear equation? Explain.
- The sum S of interior angles, in degrees, of a polygon with n sides is given by $S = 180(n - 2)$. If we take this equation as defining S as a function of n , how do think the graph of this S will appear? Explain.
- Is this function discrete? Explain.

4. Examine the graph below. Could the graph represent the graph of a function? Explain why or why not.



5. Examine the graph below. Could the graph represent the graph of a function? Explain why or why not.



6. Examine the graph below. Could the graph represent the graph of a function? Explain why or why not.

