

FUNCTIONS, CONTINUED: MORE GRAPHICAL REPRESENTATIONS

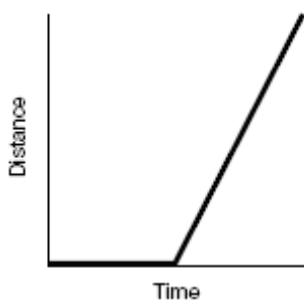
Grades 5 - 7 Patterns, Functions, and Algebra Benchmarks:

- L. Analyze functional relationships, and explain how a change in one quantity results in a change in the other.
- M. Approximate and interpret rates of change from graphical and numerical data.

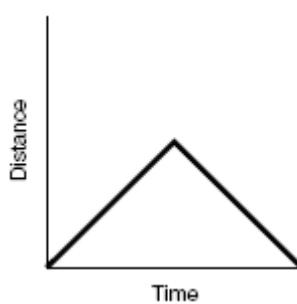
VII. Interpretations of Graphs

1. If I drive along a straight road, the **distance** from my starting point is a function of **time**. Match each of the journeys below to the correct graph.
 - a. I drive at a constant speed until I reach a traffic light, where I have to stop. When the light changes, I continue driving at the same speed as before.
 - b. I drive for a while at a constant speed, then suddenly slow down and drive the rest of the way at a slower (but constant) speed.
 - c. Impossible. (Explain why.)
 - d. I sit in my car for 15 minutes and then drive away at a constant speed for another 15 minutes.
 - e. I drive at a constant speed, then turn around and return to the starting point at the same speed.

A.



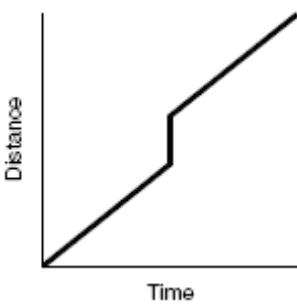
B.



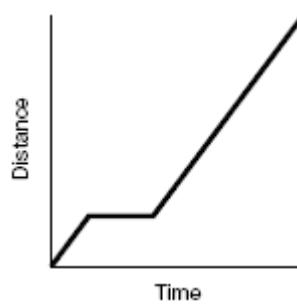
C.



D.



E.

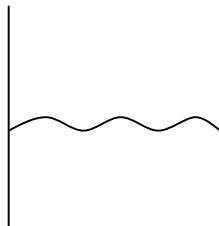


[Graphs from *Teaching Student-Centered Mathematics, Grades 5-8*, by J. Van de Walle and L. Lovin, (Pearson Education, 2006).]

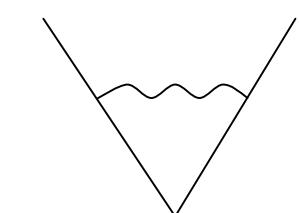
FUNCTIONS: MORE GRAPHICAL REPRESENTATIONS, CONTINUED

2. Each of the pictures below represents the shape of a bottle. As the water rises, the volume will depend on the depth of the water. For each bottle, sketch a graph representing the **volume** of water in the bottle as a function of the **depth** of the water.

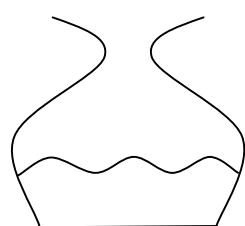
A.



B.



C.



What difference do you notice between the graph for (A) and the others?

3. Sketch a graph of my **distance** from home as a function of **time** for the following trip: I first accelerate slowly away from home, and then drive for a while at a constant rate. I then come to a red light and have to sit for a while. It turns green and I accelerate again up to my previous constant rate. Realizing I forgot something at home, I turn around and drive home at a constant rate.
4. A cold yam is placed in a 500 degree oven. Sketch a graph of the **temperature** of the yam as a function of **time** in the oven.

What are some of the advantages and some of the disadvantages of giving a graphical representation of a function? In what situations might it be preferable to other types of representations?