Unit 6, Lesson 5

Even More Graphs of Functions

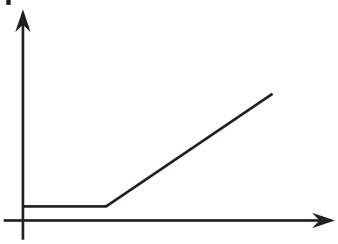
Let's draw a graph from a story.

5.1 Dog Run

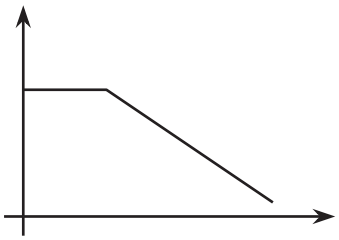
Here are five pictures of a dog taken at equal intervals of time.

Diego and Lin drew different graphs to represent this situation:

Diego's graph



Lin's graph



They both used time as the independent variable. What do you think each one used for the dependent variable? Explain your reasoning.

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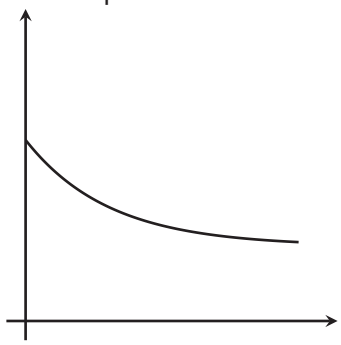
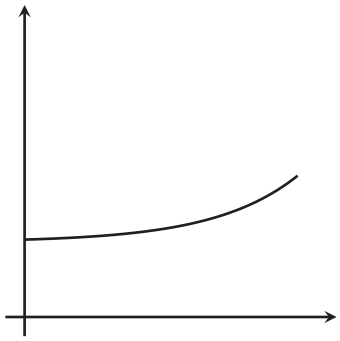
5.2 Which Graph Is It?

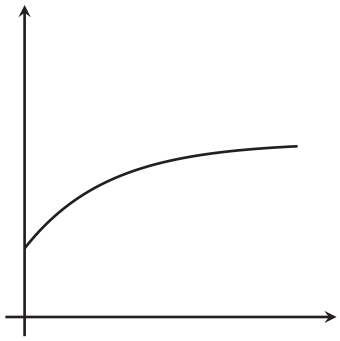
For each situation,

- Name the independent and dependent variables.
- Pick the graph that best fits the situation, or sketch the graph if one isn't provided.
- Label the axes.
- Answer the following question: Which quantity is a function of which? Be prepared to explain your reasoning.

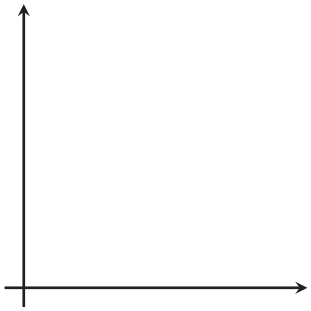
1. Jada is training for a swimming race. The more she practices, the less time it takes for her to swim one lap.







2. Andre adds some money to a jar in his room each week for 3 weeks and then takes some out in week 4.



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5.3 Sketching a Story about a Boy and a Bike

Your teacher will give you tools for creating a visual display. With your group, create a display that shows your response to each question.

Here is a story: “Noah was at home. He got on his bike and rode to his friend’s house and stayed there for a while. Then he rode home. Then he rode to the park. Then he rode home again.”

1. Create a set of axes, and sketch a graph of this story.
2. What are the two quantities? Label the axes with their names and units of measure. (For example, if this were a story about pouring water into a pitcher, one of your labels might say “volume (liters).”)
3. Based on your graph, is his friend’s house or the park closer to Noah’s home? Explain how you know.
4. Read the story and all your responses again. Does everything make sense? If not, make changes to your work.

Are you ready for more?

It is the year 3000. Noah’s descendants are still racing around the park, but thanks to incredible technological advances, now with much more powerful gadgets at their disposal. How might their newfound access to teleportation and time-travel devices alter the graph of stories of their daily adventures? Could they affect whether or not the distance from home is a function of the time elapsed?

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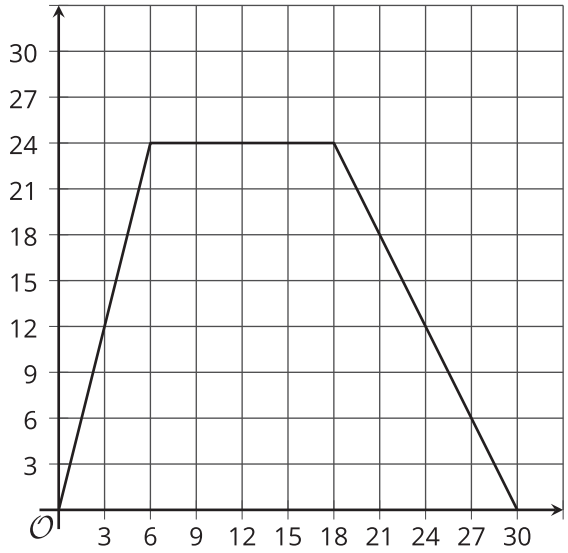
5.4 Dog Bath

Elena filled up the tub and gave her dog a bath. Then she let the water out of the tub.



1. The graph shows the amount of water in the tub, in gallons, as a function of time, in minutes. Add labels to the graph to show this.

2. When did she turn off the water faucet?

3. How much water was in the tub when she bathed her dog?

4. How long did it take for the tub to drain completely?

5. At what rate did the faucet fill the tub?

6. At what rate did the water drain from the tub?

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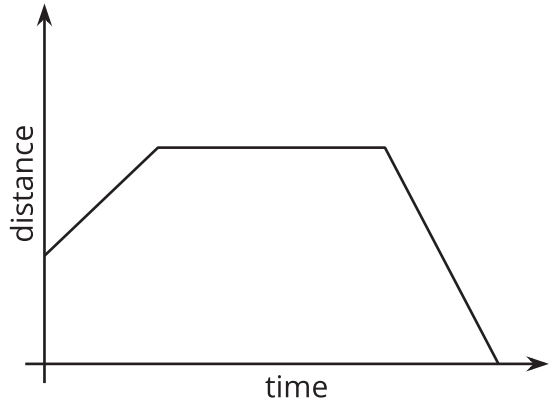
Lesson 5 Summary

Here is a graph showing Andre's distance as a function of time.



For a graph representing a context, it is important to specify the quantities represented on each axis. For example, if this is showing distance from home, then Andre starts at some distance from home (maybe at his friend's house), moves farther away (maybe to a park), then returns home.

If instead the graph is showing distance from school, the story may be Andre starts out at home, moves farther away (maybe to a friend's house), then goes to school.

What could the story be if the graph is showing distance from a park?

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