

LAM1 Week 1

Dear Parent/Guardian,

During Week 1, we will review and support mastery of the interpreting functions. Your child will work towards understanding how to interpret and sketch graphs showing key features given a verbal description of the relationship between two quantities. The table below lists this week's tasks and practice problems. Resource documents are included; there, your child can find targeted support for the lesson.

Additionally, students can access both Math Nation and the Pearson textbook through ClassLink. Both sites offer instructional support including video lessons, practice quizzes and more.

We also suggest that students have an experience with math each day. Practicing at home will make a HUGE difference in your child's school success! Make math part of your everyday routine. Choose online sites that match your child's interests. Online math games, when played repeatedly, can encourage strategic mathematical thinking, help develop computational fluency, and deepen their understanding of numbers.

Links for additional resources to support students at home are listed below:

<https://www.cpalms.org/Public/ResourceCollection/Preview/268> - Student Tutorials

<https://www.hoodamath.com/games/highschool.html>

<https://www.khanacademy.org/resources/teacher-essentials>

<http://www.learnalberta.ca/content/mejhm/index.html>

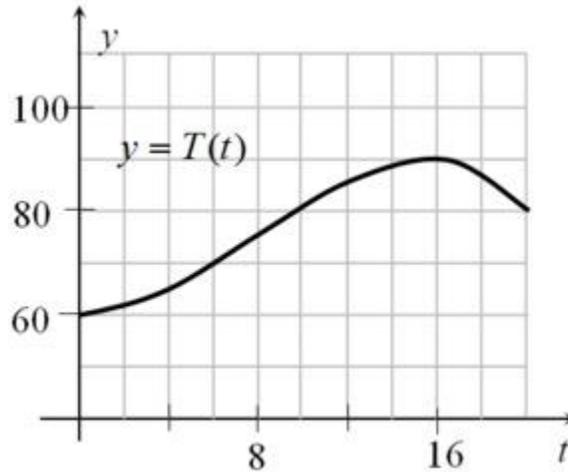
<https://www.mangahigh.com/en-us/games/wrecksfactor>

<http://www.xpmath.com/forums/arcade.php?do=play&gameid=115>

Week 1 At A Glance	
MAFS.912.F-IF.2.4	
Day 1	<input type="checkbox"/> Lesson Warming and Cooling - IM <input type="checkbox"/> Lesson Using Graphs to Relate Two Quantities <input type="checkbox"/> Bike Race
Day 2	<input type="checkbox"/> Uphill and Downhill - MFA\$ <input type="checkbox"/> Elevation Along a Trail - MFA\$
Day 3	<input type="checkbox"/> Practice Using Graphs to Relate Two Quantities
Day 4	<input type="checkbox"/> Lesson Using Tables to Relate Two Quantities <input type="checkbox"/> Taxi Ride - MFA\$
Day 5	<input type="checkbox"/> Surf's Up - MFA\$

Lesson - Warming and Cooling

The figure shows the graph of T , the temperature (in degrees Fahrenheit) over one particular 20-hour period in Santa Elena as a function of time t .



- Estimate $T(14)$.
- If $t = 0$ corresponds to midnight, interpret what we mean by $T(14)$ in words.
- Estimate the highest temperature during this period from the graph.
- When was the temperature decreasing?
- If Anya wants to go for a two-hour hike and return before the temperature gets over 80 degrees, when should she leave?

Commentary

This task is meant to be a straight-forward assessment task of graph reading and interpreting skills. This task helps reinforce the idea that when a variable represents time, $t = 0$ is chosen as an arbitrary point in time and positive times are interpreted as times that happen after that.



Solution

- a. $T(14)$ is a little less than 90 degrees Fahrenheit; maybe 88 or 89 degrees.
- b. The temperature was almost 90 degrees at 2:00 in the afternoon.
- c. The highest temperature was about 90 degrees.
- d. The temperature was decreasing between 4:00 p.m. and 8:00 p.m. It might have continued to decrease after that, but there is no information about the temperature after 8:00 p.m.
- e. The temperature reaches 80 degrees just before 10:00 a.m. If Anya wants to go for a two-hour hike and return before the temperature gets over 80 degrees, then she should start her hike before 8:00 a.m.



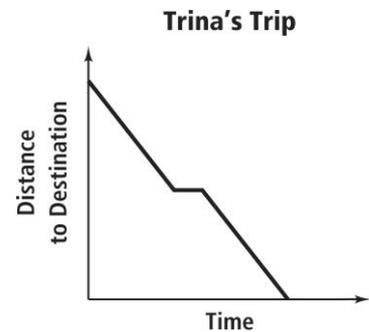
Lesson Using Graphs to Relate Two Quantities

An important life skill is to be able to read a graph. When looking at a graph, you should check the title, the labels on the axes, and the general shape of the graph.

Problem

What information can you determine from the graph?

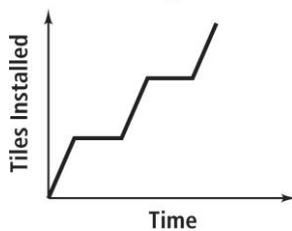
- The title tells you that the graph describes Trina's trip.
- The axes tell you that the graph relates the variable of time to the variable of distance to the destination.
- In general, the more time that has elapsed, the closer Trina gets to her destination. In the middle of the trip, the distance does not change, showing she stops for a while.



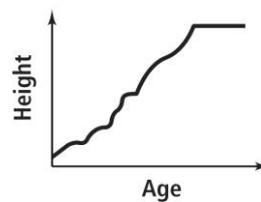
Exercises

What are the variables in each graph? Describe how the variables are related at various points on the graph.

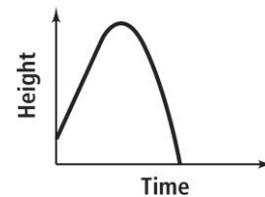
1. **Tiling Job**



2. **Dion's Growth Chart**



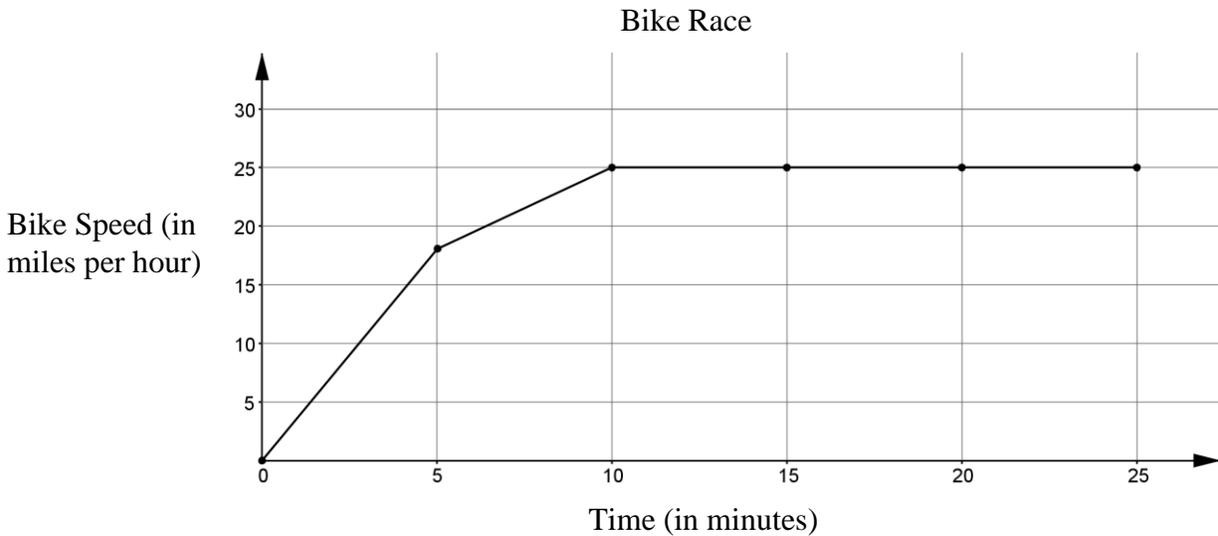
3. **Kicked Football**



Variables: Time and Tiles Installed
As time increases tiles are installed, then time increases and no tiles are installed (resting). Next, time increases and more tiles are installed, then time increases and no tiles are installed. In the end as time increases, more tiles are installed.

Name _____ Date _____

The graph displays the relationship between the passage of time and the speed at which Jake travels in the first 25 minutes of a bicycle race.

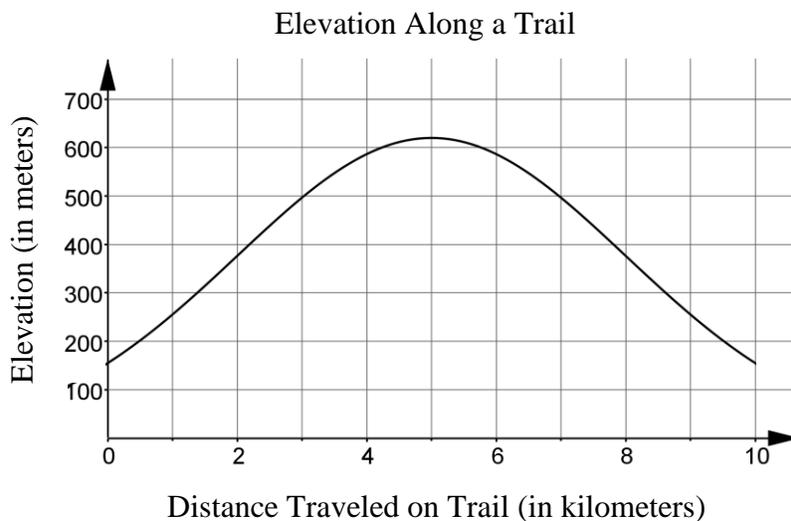


Evaluate each interpretation of the graph. Explain why each interpretation does or does not describe the graph.

- A) Jake starts the race and increases his speed. After 10 minutes, his bike tire goes flat, and he is unable to continue in the race.
- B) Jake starts the race and increases his speed. He then maintains a steady pace for the next portion of the race.
- C) Jake pedals up a hill and then pedals along a flat road on the top of the hill.

Name _____ Date _____

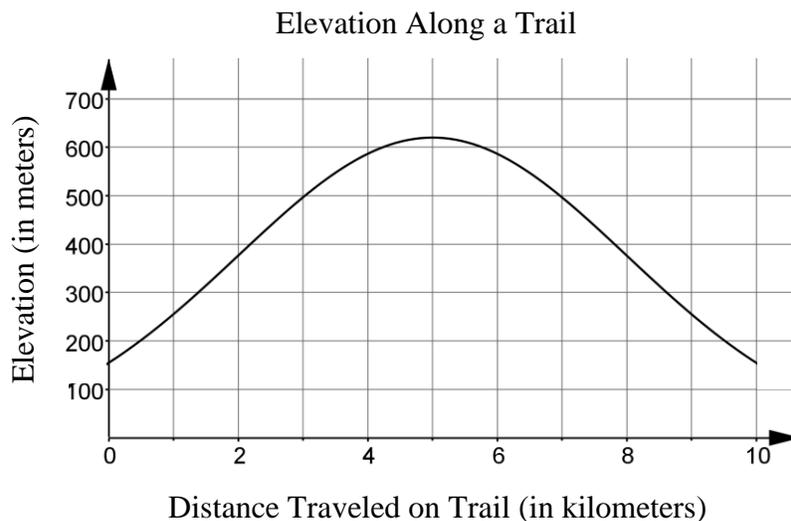
The Jones family walks along a trail, going uphill, then follows the same path downhill. The graph $y = f(x)$ depicts the elevation along the trail for the roundtrip.



1. Identify and interpret the intercepts of the graph of f .
2. Identify and interpret interval(s) in which the graph of f is increasing.
3. Is the graph of f periodic? Explain.

Name _____ Date _____

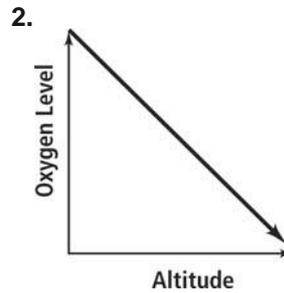
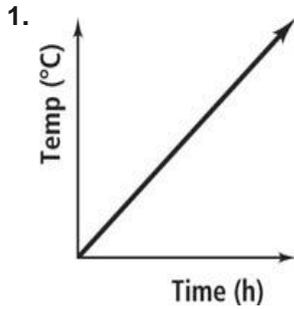
The Jones family went for a hike along a trail, first going uphill to the trail's end, then reversing their path, walking downhill back to the trail's start. The graph depicts their elevation during the roundtrip hike (out and back).



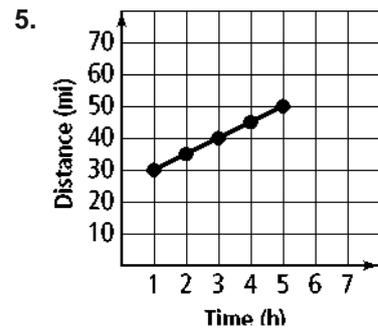
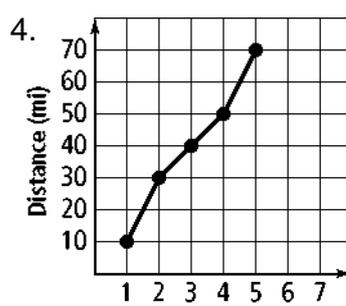
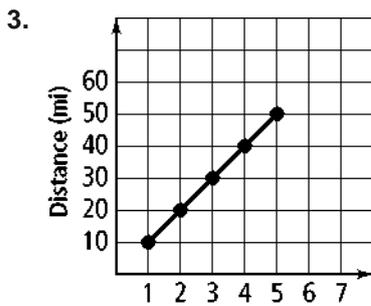
1. How long was the trail (one way)? Explain.
2. Is the graph symmetric? Explain why this is expected from the context.
3. Determine the change in elevation from the start to the end of the trail (i.e., the point where the family turned around and began walking back).

Practice Using Graphs to Relate Two Quantities

What are the variables in each graph? Describe how the variables are related at various points on the graph.



Match each graph with its related table.



A.

B.

C.

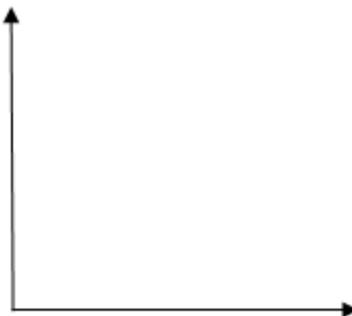
Time (h)	Distance (mi)
1	10
2	20
3	30
4	40
5	50

Time (h)	Distance (mi)
1	30
2	35
3	40
4	45
5	50

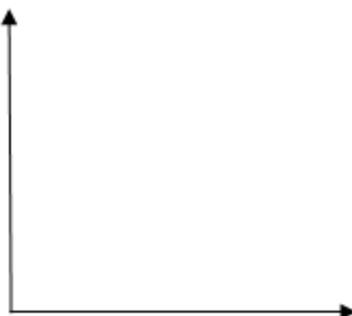
Time (h)	Distance (mi)
1	10
2	30
3	40
4	50
5	70

Sketch a graph to represent the situation.

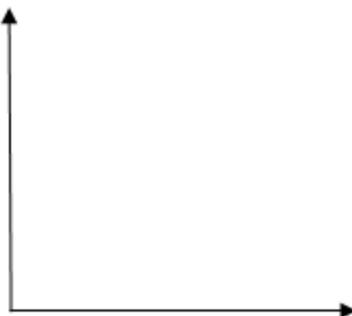
6. During a trip, your speed increases during the first hour and decreases over the next 2 hours.



7. The average temperature steadily decreases over the course of the football season.



8. The average test score of the class increased throughout the semester until it decreased slightly on the last test.



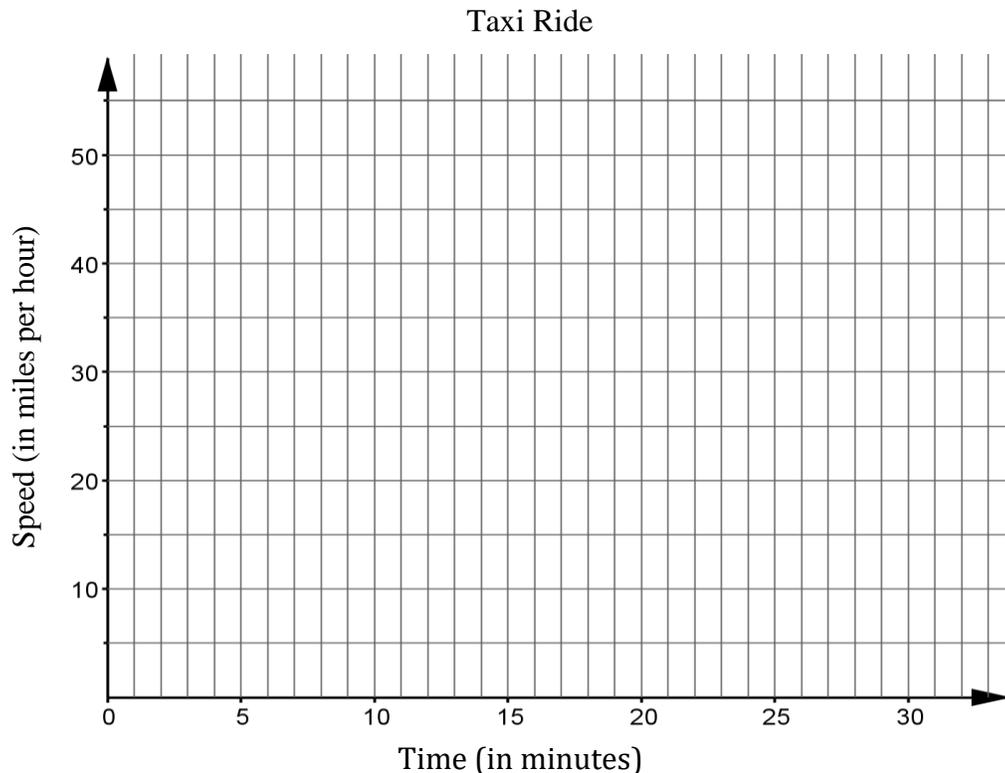
9. **Error Analysis** During the first 2 weeks of training, Shelly ran 15 miles per week. Then, she increased to 20 miles per week. Describe and correct the error in sketching a graph to represent the relationship between the weeks and the total number of miles she has run.



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Read the scenario below and sketch a graph that shows the relationship between the time spent traveling and the speed of the taxi.

A taxi cab in the city picks up a customer and pulls out into traffic. After accelerating gradually, the taxi achieves a speed of 30 mph and maintains that speed for 3 minutes. The taxi then slows down to stop at a red light. After two minutes, when the light turns green, the taxi turns onto a major road and accelerates steadily until reaching a speed of 45 mph. The taxi maintains the speed of 45 mph for 10 minutes. Finally, the taxi comes to a gradual stop and lets the customer out at the destination.



Lesson Using Tables to Relate Two Quantities

A graph can show the relationship described in a table.

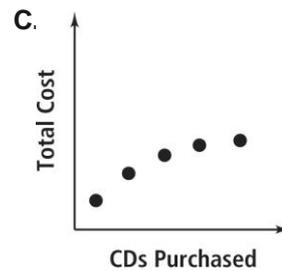
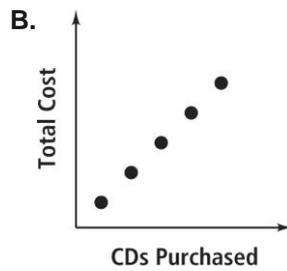
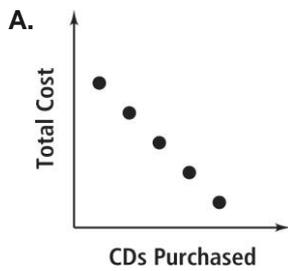
Problem

Which graph shown below represents the information in the table at the right?

Notice that for each additional CD purchased, the total cost increases by \$15. The points on the graph should be in a straight line that goes up from left to right. The graph that shows this trend is **Graph B**.

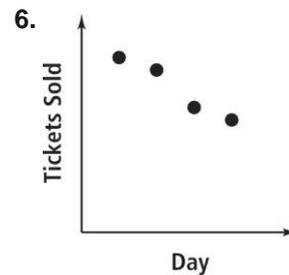
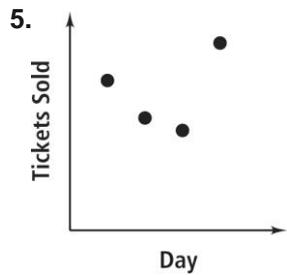
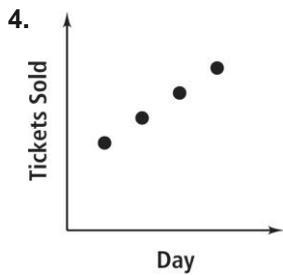
CDs Purchased	Total Cost
1	\$15
2	\$30
3	\$45
4	\$60
5	\$75

Arrows on the left indicate an increase of +1 in CDs Purchased for each row. Arrows on the right indicate an increase of +15 in Total Cost for each row.



Exercises

Match each graph with its related table. Explain your answers.



Graph A: as days increase ticket sales decrease until the 4th day.

A.

Day	Tickets Sold
1	60
2	45
3	40
4	75

B.

Day	Tickets Sold
1	70
2	65
3	50
4	45

C.

Day	Tickets Sold
1	35
2	45
3	55
4	65

