


Grade 8 Mathematics

Data Analysis, Probability, and Discrete Math:

Lesson 9

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol () by them.

Purpose of Lesson 9:

- In this lesson, the tutor and the students will
 - ✓ read a line graph accurately to answer questions, and
 - ✓ draw conclusions based on data given in a line graph.

Equipment/Materials Needed:

- Copies of Student Sheets 117 and 118
- Paper and pencils
- Chalkboard

Preparations before beginning Lesson 9:

- Run one copy of Student Sheets 117 and 118 for each student.
- Have paper and pencils available.

Lesson 9: Data Analysis

Say:

In this lesson, you will look at line graphs. *Line graphs* are used to show trends or changes over time. On line graphs, time is usually shown on the horizontal axis. Time can be measured in seconds, minutes, hours, days, weeks, months, years, etc.

 Give students Student Sheet 117.

Say:

Let's look at the first graph. Discuss the title, labels, scales, points, and lines.

 Have students answer questions 1 – 5.

Answers:

1. the daily high temperatures for one week
2. Thursday
3. Saturday
4. 100° F
5. It increased by 6F°.

Say:

When you look at the lines in a line graph, you can tell whether something has increased, decreased, or stayed the same over time. Let's look at the second graph.

 Have students answer questions 6 – 15.

Answers to 6 – 15.

6. hiking in the Smokies
7. time
8. Time is increasing. It is getting later.
9. distance from the Rangers' station
10. Every 2 miles is listed.
11. The distance increased by 8 miles.
12. The distance stayed the same. The group may have had lunch.
13. The distance decreased by 2 miles.
14. The distance stayed the same. The group may have made a camp for the night.
15. 12 miles

Say:

Sometimes graphs are labeled, but do not have scales. Sometimes one axis may have a scale and the other will not. You can still learn a lot of information from these types of graphs.


 Give students Student Sheet 118.

Say:

In the graphs on Student Sheet 118, there is no scale on the vertical or y-axis. You must assume that as you move from the bottom of the y-axis to the top, the number of ice cream cones sold gets larger.

Answers:

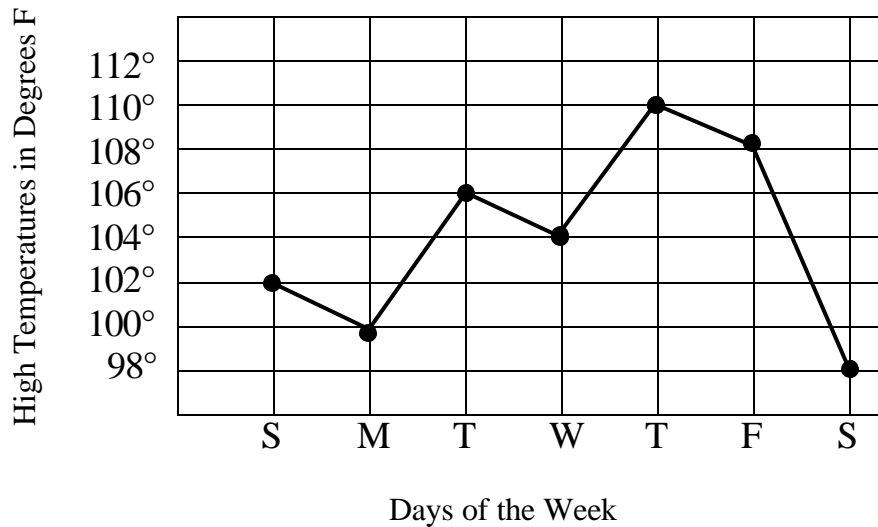
1. B 2. D 3. C 4. F 5. A 6. E

 Have one student summarize today's lesson. Emphasize that line graphs are used to show changes over time.

Student Sheet 117 (Data Analysis: Lesson 9)

Each part of a line graph has a purpose. Look at the line graph below.

Daily high temperatures for one week in Phoenix in July



The **title** of the graph tells what it's about.

The **labels** on the bottom and the side of the graph tell what kinds of facts had been gathered.

The **scales** along the bottom and side tell how much or how many.

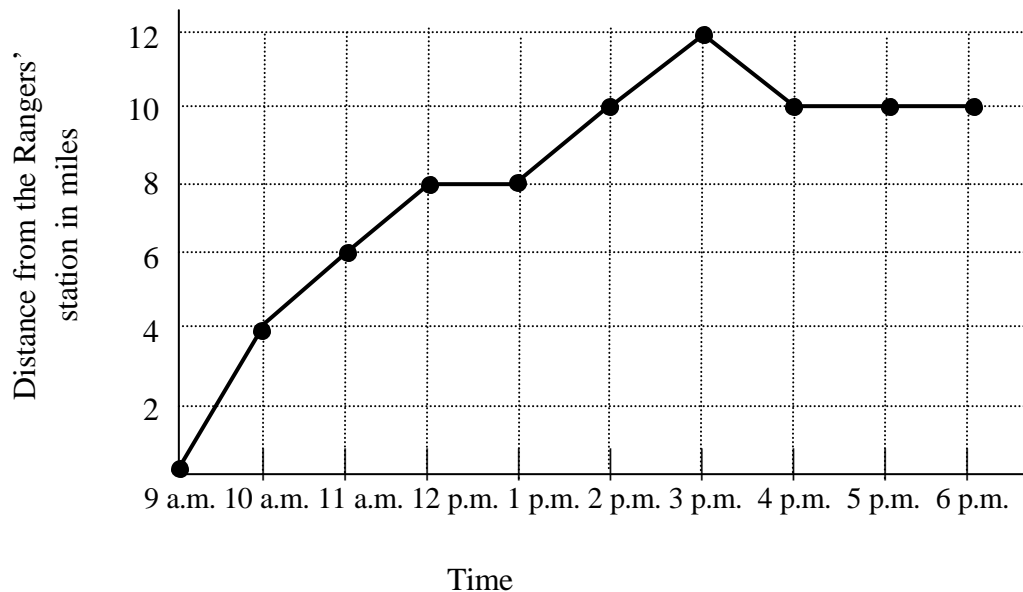
The **points**, or dots, tell the facts.

The **lines** connecting the points give estimated values about the line graph.

1. What is the graph about?
2. Which day had the greatest high temperature?
3. Which day has the lowest high temperature?
4. What was the high temperature on Monday?
5. What happened to the temperature between Monday and Tuesday?

Student Sheet 117 (Data Analysis: Lesson 9) continued

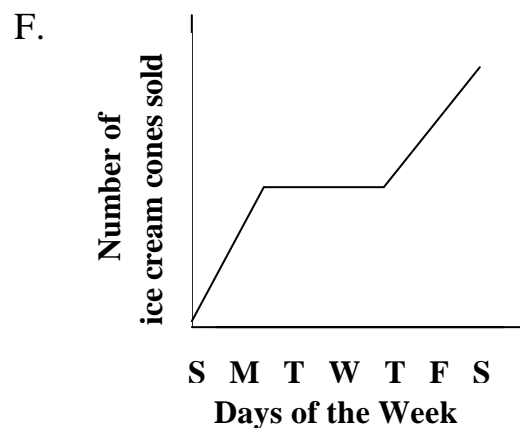
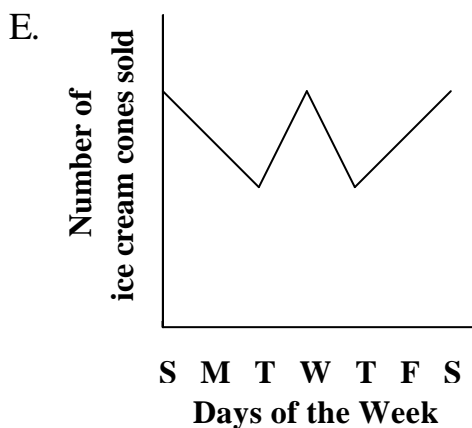
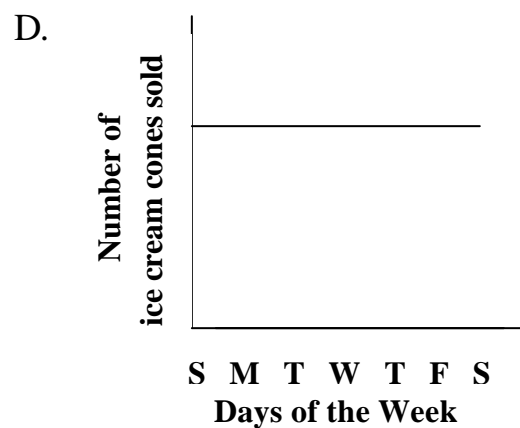
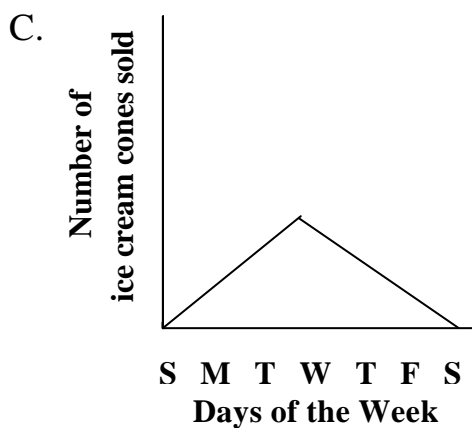
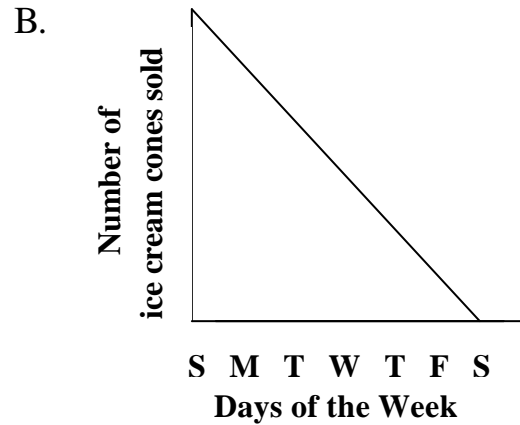
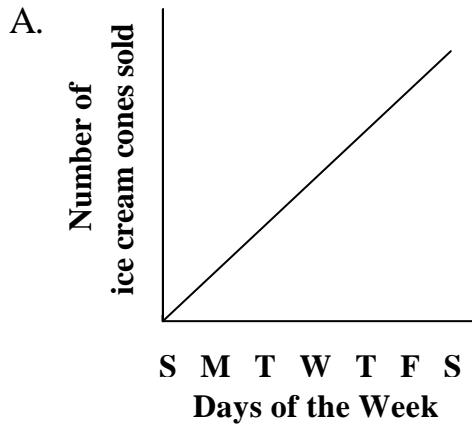
Hiking in the Smokies



6. What is the graph about?
7. What is shown on the horizontal axis?
8. What is happening to time on the graph?
9. What is shown on the vertical axis?
10. What is the scale for distance from the Rangers' station?
11. From 9:00 a.m. to 12:00 p.m., what happened to the distance from the Rangers' station?
12. What happened to the distance from the Rangers' station between 12 p.m. and 1:00 p.m.? What might be the reason?
13. What happened to the distance from the Rangers' station between 3:00 p.m. and 4:00 p.m.?
14. What happened from 4:00 p.m. until 6:00 p.m.? What might be the reason?
15. How many miles were hiked from 9:00 a.m. to 3:00 p.m.?

Student Sheet 118 (Data Analysis: Lesson 9)

The graphs below show the average number of ice cream cones sold in one week. Answer the questions on the next page about the graphs.



Student Sheet 118 (Data Analysis: Lesson 9) continued

Use the graphs on the previous page to answer the following questions.

1. Which graph shows that the number of ice cream cones sold decreased as the week went by?
2. Which graph shows that the number of ice cream cones sold stayed constant during the week?
3. Which graph shows that the number of ice cream cones sold increased and then decreased at mid-week?
4. Which graph shows that the number of ice cream cones sold increased, then stayed constant for awhile, and then began to increase again?
5. Which graph shows that the number of ice cream cones sold increased as the week went by?
6. Which graph shows that the number of ice cream cones sold decreased, then increased, then decreased, and finally increased?