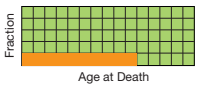
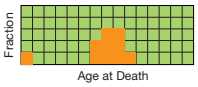
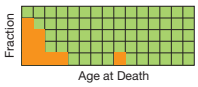
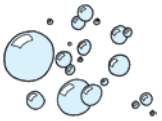
1. Following are three graphs that show the age at which these animals are most likely to die. Find the graph that matches the description for each animal: humans, American robins, and oysters.

A. 

B. 

C. 

Experimenting with Soap Bubbles



You will collect data on the life spans or "age at death" of soap bubbles to simulate the life spans of population of animals. You will then compare the patterns in this data to the life span data patterns graphs in Question 1.

2. Try out your bubble solution. Observe the bubbles. Catch some with your wand and observe them until they pop. What variables are involved in the experiment? What variables do you think affect the life span of a soap bubble?
3. Develop a plan for collecting reliable data on the life spans of soap bubbles. Consider the following:
   - **A.** When does a bubble's "life" begin and end? When will you start and stop the timer?
   - **B.** What variables should be held fixed?
   - **C.** Sometimes, many bubbles are made at once. Which bubbles will be part of your sample?
   - **D.** How many bubbles will you time? How many bubbles will be in your sample?
   - **E.** What will each member of your group do to help collect the data?

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4. Draw a picture of the experiment. Label the important variables. Show your procedure.

5. Time a few bubbles. Will you need to bin your data?
6. You will make a bar graph of the life spans of soap bubbles. Use what you have learned from Question 5 to predict what your bar graph will look like. Make a sketch or write a description for your prediction. Use these questions to help you:
   - Will all the bars be about the same height or will some bars be much taller than others?
   - Where will the tallest bars be—at the beginning, middle, or end of the graph?
   - Will your graph look like one of those shown for humans, robins, or oysters?
7. Draw a data table like the one that follows or use the *Soap Bubbles Data Table* page from the *Student Activity Book*. Choose time intervals such as 5 or 10 seconds to bin the data. Fill in the first column of the data table with the intervals. Be sure the intervals do not overlap and are the same size.

Life Spans of Soap Bubbles

t Time in Seconds	Tallies	*N* Number of Bubbles	Fraction of Bubbles	
			Common Fraction	Decimal Fraction

8. Collect and organize the data in your data table.

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Live Soap Bubbles (SG pp. 385–387)
Questions 1–12

1. **A.*** robins
   B.* humans
   C.* oysters
2.* Time at which the bubbles pop and percent of bubbles that pop after any given number of seconds. Other variables which affect the life span of a bubble: Type of bubble solution, whether the bubble is held on a wand or allowed to drop to the ground, ventilation in the room, air temperature, humidity, and size of bubble.
3.* See Lesson 6 for a description of possible procedures.
4.* See Figure 2 in the lesson for a sample picture.
5.* Yes, intervals will vary.
6. Descriptions and sketches will vary.
7*–8.* See Figure 3 in the lesson for a sample data table.

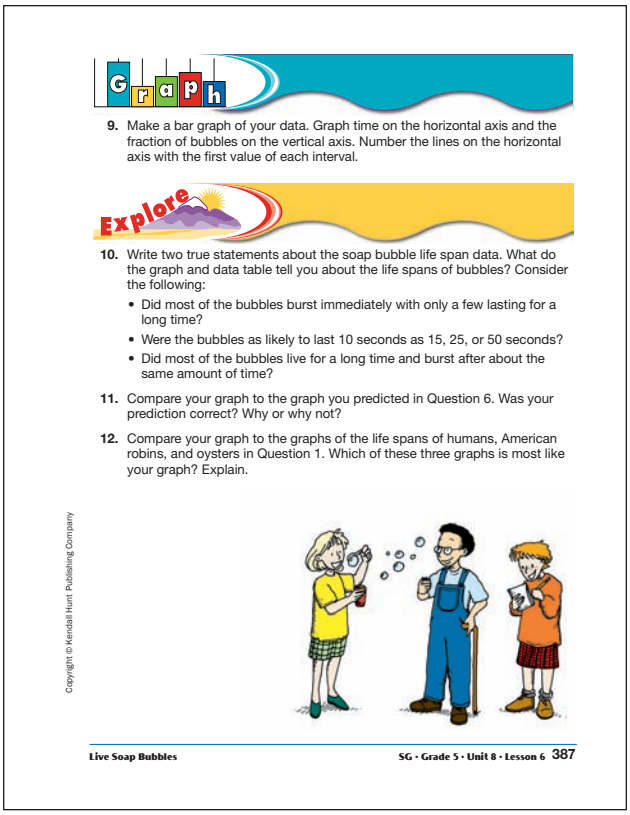
***Answers and/or discussion are included in the lesson.**

9.* See Figure 4 in the lesson for a sample graph.

10.* For the sample graph in Figure 4, all the bars lie between 30 and 70 seconds and three of the four bars are similar in height. The bubbles all lived for a long time and all burst after about the same amount of time. See Figure 5 in the Lesson for more sample statements.

11. Answers will vary.

12.* Answers will vary. This graph is similar to the graph for humans in Figure 1 in the lesson.



Graph

9. Make a bar graph of your data. Graph time on the horizontal axis and the fraction of bubbles on the vertical axis. Number the lines on the horizontal axis with the first value of each interval.

Explore

10. Write two true statements about the soap bubble life span data. What do the graph and data table tell you about the life spans of bubbles? Consider the following:
- Did most of the bubbles burst immediately with only a few lasting for a long time?
- Were the bubbles as likely to last 10 seconds as 15, 25, or 50 seconds?
- Did most of the bubbles live for a long time and burst after about the same amount of time?

11. Compare your graph to the graph you predicted in Question 6. Was your prediction correct? Why or why not?

12. Compare your graph to the graphs of the life spans of humans, American robins, and oysters in Question 1. Which of these three graphs is most like your graph? Explain.

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***Answers and/or discussion are included in the lesson.**