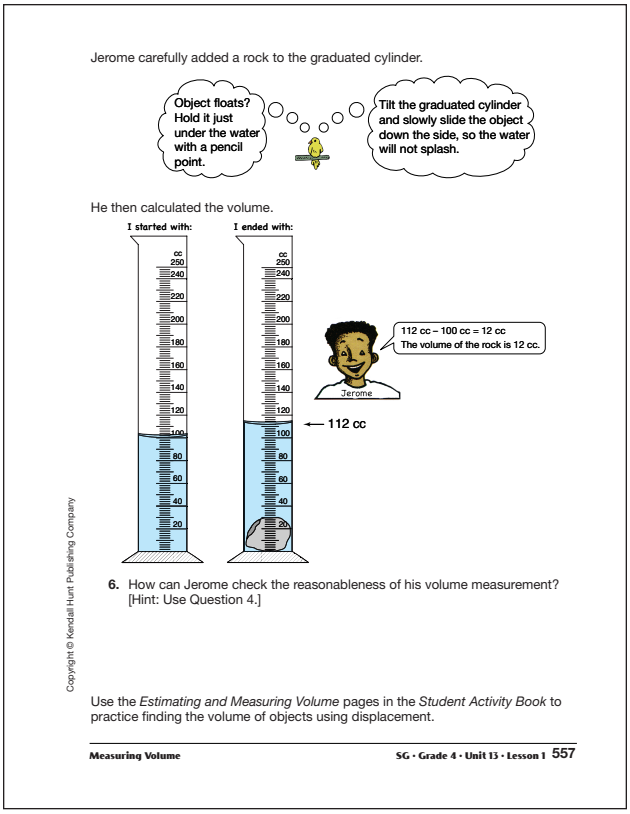
6. Jerome should compare his measurement to his estimate.



Jerome carefully added a rock to the graduated cylinder.

Object floats? Hold it just under the water with a pencil point.

Tilt the graduated cylinder and slowly slide the object down the side, so the water will not splash.

He then calculated the volume.

I started with:

I ended with:

112 cc – 100 cc = 12 cc
The volume of the rock is 12 cc.

Jerome

← 112 cc

6. How can Jerome check the reasonableness of his volume measurement? [Hint: Use Question 4.]

Use the *Estimating and Measuring Volume* pages in the *Student Activity Book* to practice finding the volume of objects using displacement.

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Student Activity Book

Estimating and Measuring Volume (SAB pp. 541–542)

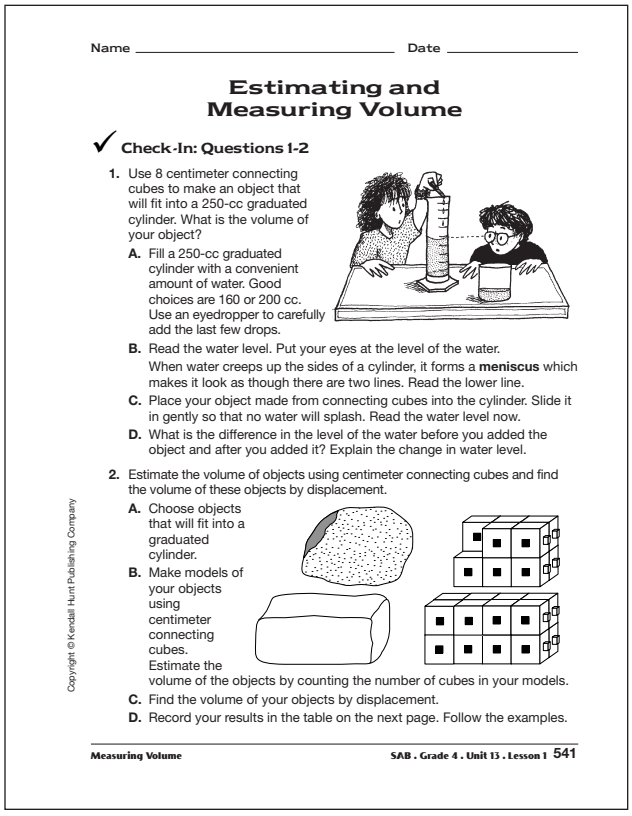
Questions 1–4

1. 8 cc

A–C. Observe students as they follow directions.

D.* 8 cc; The cubes displaced or pushed away 8 cc of water, so the water level went up.

2. Estimates and volumes will vary based on models made.



Name _____ Date _____

Estimating and Measuring Volume

✓ Check-In: Questions 1-2

1. Use 8 centimeter connecting cubes to make an object that will fit into a 250-cc graduated cylinder. What is the volume of your object?
   - **A.** Fill a 250-cc graduated cylinder with a convenient amount of water. Good choices are 160 or 200 cc. Use an eyedropper to carefully add the last few drops.
   - **B.** Read the water level. Put your eyes at the level of the water. When water creeps up the sides of a cylinder, it forms a **meniscus** which makes it look as though there are two lines. Read the lower line.
   - **C.** Place your object made from connecting cubes into the cylinder. Slide it in gently so that no water will splash. Read the water level now.
   - **D.** What is the difference in the level of the water before you added the object and after you added it? Explain the change in water level.
2. Estimate the volume of objects using centimeter connecting cubes and find the volume of these objects by displacement.
   - **A.** Choose objects that will fit into a graduated cylinder.
   - **B.** Make models of your objects using centimeter connecting cubes. Estimate the volume of the objects by counting the number of cubes in your models.
   - **C.** Find the volume of your objects by displacement.
   - **D.** Record your results in the table on the next page. Follow the examples.

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

Name _____ Date _____

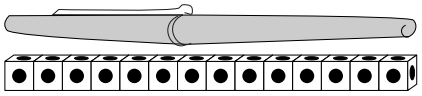
Volume Data Table

Object	Estimated Volume from Cube Model	Volume by Displacement
Rock	11 cc	12 cc
Clay	16 cc	15 cc

3. A. Were your estimates close to your measured volumes? Why or why not?

B. Which estimates were closest to the measured volumes? Why?

4. Frank made a model of a marker using centimeter connecting cubes. By counting the cubes, he estimated that the marker has a volume of 14 cc. When he measured the volume using a graduated cylinder, he found the volume to be 11 cc. Why do you think there is a 3 cc difference?



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3. A.* Answers will vary. Possible response: Some of my estimates were not close to my measured volumes. It was difficult to make the centimeter connecting cube model look exactly like the object I was measuring.

B.* Possible response: The estimates for the objects that more closely resembled the connecting cube models were easier for me to build and to use to estimate the measured volume.

4.* Answers will vary. The marker is slightly thinner than one cm and the marker tapers off at the ends. There may also be measurement error.

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

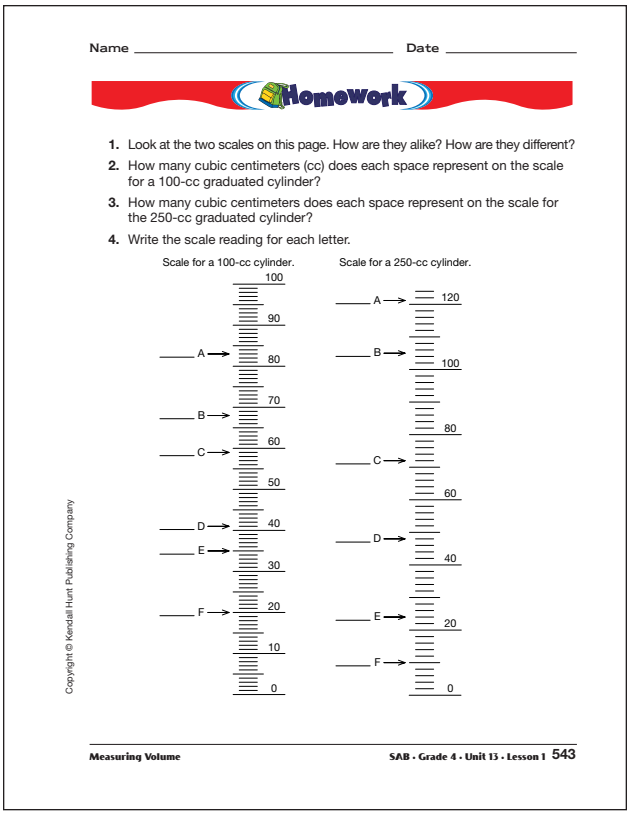
Student Activity Book

Homework (SAB pp. 543–544)

Questions 1–5

1. Answers will vary. Students may notice that each scale goes up to about 100 and that they both start at zero. On the 100-cc scale, the multiples of 10 are written on the scale. On the 250-cc scale, the multiples of 20 are written on the scale.
2. 1 cc
3. 2 cc
4. 100 cc cylinder:
   A=83 cc
   B=68 cc
   C=59 cc
   D=41 cc
   E=35 cc
   F=20 cc

   250 cc cylinder:
   A=121 cc
   B=105 cc
   C=72 cc
   D=48 cc
   E=24 cc
   F=10 cc
5. 16 cc. The water rose from 50 cc to 66 cc.
   66 – 50 = 16 cc.


Name _____ Date _____

Homework

1. Look at the two scales on this page. How are they alike? How are they different?
2. How many cubic centimeters (cc) does each space represent on the scale for a 100-cc graduated cylinder?
3. How many cubic centimeters does each space represent on the scale for the 250-cc graduated cylinder?
4. Write the scale reading for each letter.

Scale for a 100-cc cylinder. Scale for a 250-cc cylinder.

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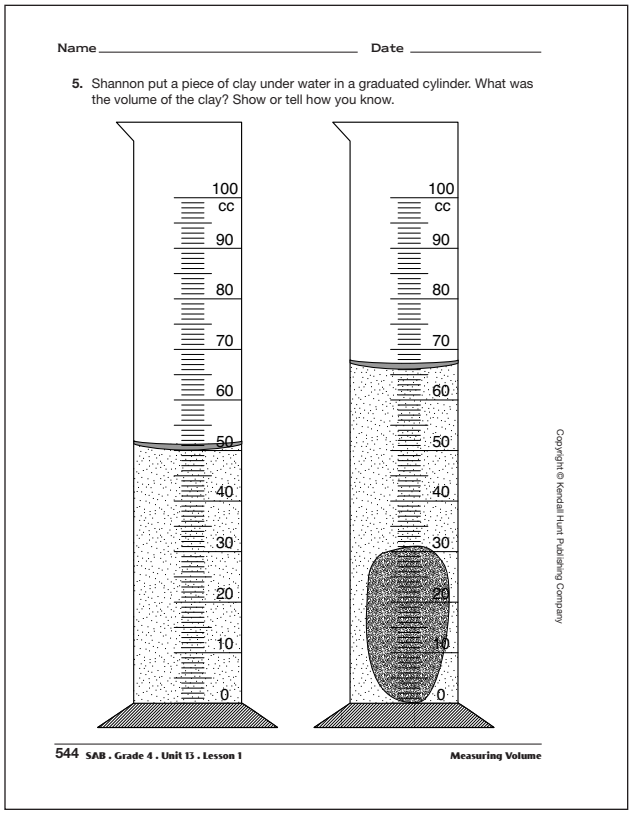
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5. Shannon put a piece of clay under water in a graduated cylinder. What was the volume of the clay? Show or tell how you know.

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