

Student Guide

Fill It Up (SG p. 406)  
Questions 1–5

1–5.\* See Part 1 in the lesson for two possible strategies students may use to find the volume of a container. Figure 2 provides a sample drawing.

Homework (SG p. 407)  
Questions 1–4

1. A. 504  
B. 109  
C. 20
2. A. No  
B. Jar B  
C. Jar C  
D. Jar C; it only takes 6 Jar As to fill Jar B, but it takes 8 Jar As to fill Jar C.
3. A. 8 small containers; 20 cc more will be needed.  
B. Sentences will vary.  
Possible sentence:  $8 \times 25 + 20 = 220$  cc
4. Explanations will vary. Possible response: Fill the container to the top with water. See how many 250 cc graduated cylinder I can fill. Pour the last bit of water into the cylinders and measure that. Add the number of 250 ccs with this last amount for the total.

**Fill It Up**

Lee Yah found two jars with unusual shapes.

**Help Lee Yah make a plan to find out which jar has a greater volume.**

**Use a container, a graduated cylinder, an eye dropper, and some water. Pretend that the container is one of Lee Yah's jars. How can you use the graduated cylinder and the water to find the volume of the container?**

1. Draw a picture of your plan on a piece of paper.
2. Follow your plan. What is the volume of the container?

**There is more than one way to find the volume. Think of another way to use the graduated cylinder and the water to find the volume.**

3. Draw a picture of a second plan on the other side of your paper.
4. Follow your plan. Did you get the same volume as before?
5. Which plan do you think gave you a more accurate volume? Why?

Use the *Fill It Up Lab* pages in the *Student Activity Book* to measure the volume of at least three containers. Later you will use this information to estimate and find the volume of a Mystery Jar.

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**Homework**

**Complete the questions.**

1. Find the median:  
A. 505, 504, 504  
B. 111, 109, 108, 110, 109  
C. 21, 20, 19, 18, 21

2. Miguel has these three jars.  
A. Do Jar B and Jar C have the same shape?  
B. Which is taller, Jar B or Jar C?  
C. Which is wider, Jar B or Jar C?  
D. It takes 6 of Jar A to fill Jar B. It takes 8 of Jar A to fill Jar C. Which has a greater volume, Jar B or Jar C? Why do you think so?

3. Frank has a small container with a volume of 25 cc and a larger container with a volume of 220 cc.  
A. How many full small containers of water can he pour into the larger one? How much more water does he need to fill the large container to the top?  
B. Write a number sentence for your answer.

4. How would you use a graduated cylinder to find the volume of a jar that is larger than the cylinder? Use a drawing and words to explain. Explain your plan to a family member or a friend.


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

Name \_\_\_\_\_ Date \_\_\_\_\_

### Fill It Up Lab



1. Draw a picture that shows how you will find the volume of your containers. In your picture, show the sizes and shapes of your containers and the names you will give them in the data table.


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Name \_\_\_\_\_ Date \_\_\_\_\_

### Collect




2. Find the volume of at least three containers of different sizes. Your measurements may contain some experimental error, so you should measure the volume of each container at least three times and find the median. Record your data in a table like the one below.

Container	Volume in _____ <small>(unit)</small>			
	Trial 1	Trial 2	Trial 3	Median

Find the median:

- Order the numbers from least to greatest.
- The "middle" number is the median.



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## Student Activity Book

### Fill It Up Lab (SAB pp. 547–551) Questions 1–10


1–3. Responses to *Questions 1–3* will vary. See Figures 2–4 and discussion in the lesson.

The answers to *Questions 4–6* are based on the data in *Questions 1–3*.

4. jelly jar
5. oil jar
6. **A.\*** 6 jelly jars would give 1380 cc.  
**B.** We need 170 cc more to fill the large container.  
**C.** Answers will vary.  
**D.** Answers will vary.  
**E.\*** Answers will vary.
7. **A.** 578 cc  
**B.**  $125 + 125 + 125 + 125 + 78 = 578$  cc  
**C.**  $125 \times 4 + 78 = 578$  cc
8.  $80 + 80 + 80 + 80 + 55 = 375$  cc
9. **A.** 5 small jars will give 200 cc.  
**B.** 30 cc more will be needed.  
**C.** Sentences will vary. Possible sentence:  
 $40 \times 5 + 30 = 230$  cc
10. **A.\*** Estimates will vary.  
**B.\*** You can fill 5 jars full and part of a 6th jar.  
**C.\*** 15 cc  
**D.\***  $240 \div 45 = 5$  R15


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

Name \_\_\_\_\_ Date \_\_\_\_\_



3. Graph the median volume data on a sheet of *Centimeter Graph Paper*.

- Will you make a bar graph or a point graph?
- What variable will you put on the horizontal axis?
- What variable will you put on the vertical axis?
- Remember to title the graph, number the axis, and include units.
- How will you number the axis so that your data will fit?



Use the data shown in your graph and data table to answer each question.

4. Which container has the smallest volume? \_\_\_\_\_

5. Which container has the largest volume? \_\_\_\_\_

For Question 6, try to make your predictions as accurate as possible.

6. A. Use your graph or your data table to predict the number of full small containers you can pour into your large container. \_\_\_\_\_  
Explain how you made your prediction.

B. How many more cubic centimeters of water do you think you will need to fill the large container the rest of the way? \_\_\_\_\_  
Explain your prediction.

C. Check your prediction. How many full small containers did you pour into your largest container without it overflowing?

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Name \_\_\_\_\_ Date \_\_\_\_\_

D. How many more cubic centimeters of water did you need to fill the large container completely?


E. Was your prediction close to the actual result? Why or why not?

7. Luis poured 4 full small jars of 125 cc into his large jar. Then he filled the large jar with another 78 cc of water.


A. What is the volume of Luis's large jar?

B. Write an addition sentence for the volume of the large jar.

C. Write your number sentence a different way. This time use multiplication and addition.



8. Keenya fills her 80 cc graduated cylinder with water and empties it into a jar four times. The jar is still not full. She fills the graduated cylinder again. She uses this water to fill the jar to the top. Her graduated cylinder still has 25 cc of water in it. What is the volume of the jar? Show your work.



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Name \_\_\_\_\_ Date \_\_\_\_\_

9. Natasha has a small jar with a volume of 40 cc and a big jar with a volume of 230 cc.

A. How many full small jars of water can Natasha pour into her big jar?

B. How much more water does she need to fill the big jar to the top? Show your work.

C. Write a number sentence for your answer.

10. A container has a volume of 240 cc. You have many small jars, each with a volume of 45 cc. You want to pour all the water from the big container into the small jars.

A. About how many jars do you think you can fill? \_\_\_\_\_

B. Solve the problem to find out how many jars you can fill.

C. How much water will be in the last jar?

D. Write a division sentence for the problem.

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