

Student Guide

Measuring Volume of Solid Objects
(SG p. 409)

Question 1

1. A. 16 cc B. *27 cc
C. 18 cc D. 15 cc

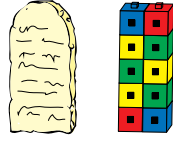
Homework (SG pp. 411–412)

Questions 1–4

1. A. 21 cc
B. 24 cc
C. 48 cc
D. 28 cc
2. Explanations will vary. Possible response:
1 layer is 4 cubes by 3 cubes. That is 12 cubes.
There are 2 layers.
 $12 \text{ cubes} + 12 \text{ cubes} = 24 \text{ cc}$.
3. 16 cc. The water level started at 50 cc and rose to 66 cc, so the volume of the clay is 16 cc.
 $66 \text{ cc} - 50 \text{ cc} = 16 \text{ cc}$.
4. Josh is not correct. He read the volume of the water and the model. The volume of the model is 8 cc.


"A graduated cylinder measures volume in cubic centimeters, so we will use centimeter connecting cubes to build the models," Tess suggested.

Professor Garcia built this model for this artifact, a small stone tablet:

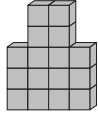


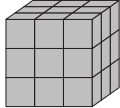
The total volume of these centimeter connecting cubes is 10 cc, so the volume of the tablet is about 10 cc.

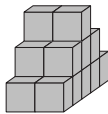
1 cubic centimeter (cc)

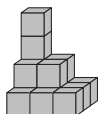


1. Sam and Tess built the models below of Professor Garcia's artifacts. Build these shapes with your cubes. Find the volume by counting the number of cubes. The volume will be in cubic centimeters.

A. 

B. 

C. 

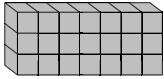
D. 

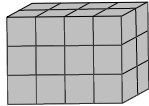
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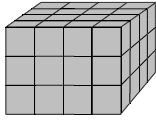
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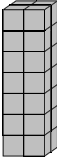
Homework

1. Find the volume of the models by counting the cubes. Include the label cubic centimeters.

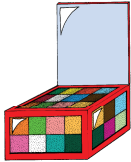
A. 

B. 

C. 

D. 

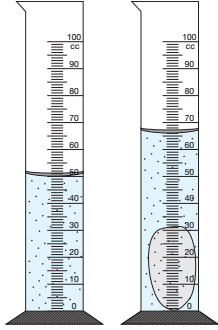
2. Sam used centimeter cubes to find the volume of this box. He found the volume was 24 cubic centimeters. Explain how he found the volume.



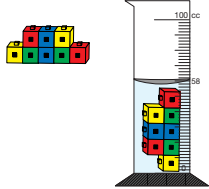
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3. Yolanda put a piece of clay under water in a graduated cylinder. What was the volume of the clay? Explain how you figured it out. Include a number sentence.



4. Josh put this cubic centimeter model under water in a graduated cylinder. He looked at the water level in the cylinder and said, "The volume of the model is 58cc."



After

Do you agree with Josh? Why or why not?

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

Student Activity Book

Yolanda Measures Volume by Displacement (SAB pp. 553–554)

Questions 1–3

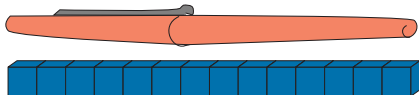
- 1.* Items' estimated volumes will vary. See Figure 2 in the lesson for a sample data table.
- 2.* Possible response: The water level started at 50 cc. Josh slid the marker into the cylinder and the marker pushed the water level up to 62 cc. The marker displaced its volume in the water. $62\text{cc} - 50\text{cc} = 12\text{ cc}$. The marker's volume is 12 cc.
- 3.* Items' actual volumes will vary. See Figure 2 in the lesson for a sample data table.

Name _____ Date _____

Yolanda Measures Volume by Displacement


Estimating Volume

Yolanda estimated the volume of a marker by building a model of it with her centimeter connecting cubes. She counted the cubes and estimated that the volume was about 14 cubic centimeters.



1. Use centimeter connecting cubes to estimate volumes as Yolanda did. Make models of at least four objects. Your teacher will help you choose objects. One of your objects should be 10 centimeter connecting cubes as shown in the table below. Record your estimates in the data table. Yolanda's data for the marker is shown.

Volume By Displacement

O Object	E Estimated Volume from Cube Model	V Volume by Displacement
Marker 	14 cc	12 cc

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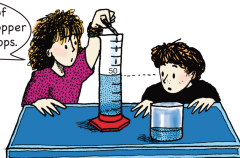
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Name _____ Date _____

Using Displacement

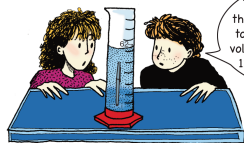
To find the volume of the marker, Yolanda and Josh first put 50 cubic centimeters of water into a graduated cylinder.

Let's start with 50 cc of water. I will use an eyedropper to put in the last few drops.



Then they tilted the graduated cylinder and slowly slid the marker down the side so the water would not splash.

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



The marker makes the water rise from 50 to 62. That means the volume of the marker is 12 cubic centimeters.

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2. Explain how Josh found the volume of the marker.
3. Measure the actual volume of each of the objects you used in Question 1 by putting each object under water in a graduated cylinder. How much does the water rise? Record each volume in the last column of your data table.

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