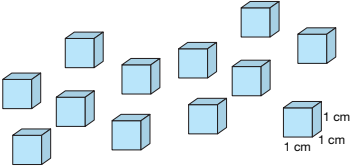
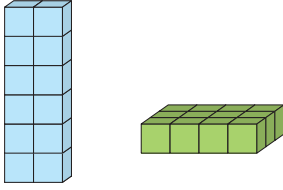


Problem Solving with Volume

Volume of Boxes
 Here are 12 cubic centimeters. A **cubic centimeter** is the volume of cube that is 1 centimeter long on each side.



These 12 cubic centimeters can be put together face-to-face to make several different shapes.



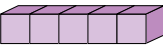
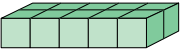
Each of the shapes above has a **volume** of 12 cubic centimeters. This is sometimes written 12 cm^3 . You can think of volume as the space in an object.

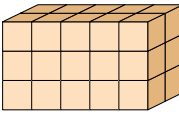
- Use 12 cubes to make two more shapes with a volume of 12 cm^3 .

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- Five centimeter cubes are put together to form one row.
 
 - What is the volume of the row?
 - What is the length of the row?
- Two rows of 5 centimeter cubes are put together to form a layer.
 

What is the volume of one layer?
- Three of these layers are stacked.
 

What is the volume of this box?

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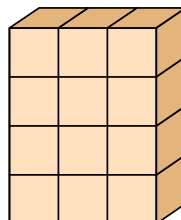
*Answers and/or discussion are included in the lesson.

Student Guide

**Problem Solving with Volume
 (SG pp. 195–197)**

Questions 1–8

1.* Shapes will vary but each must have a volume of 12 cm^3 . One sample shape:



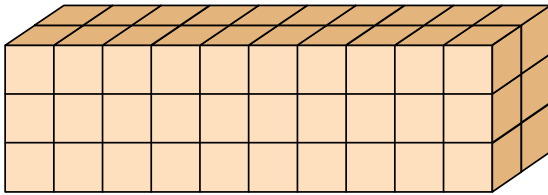
- A. 5 cm^3
 B. 5 cm
- 10 cm^3
- 30 cm^3

5. A.* 3
 B.* 3
 C.* 9 cm^3
 D.* 4
 E.* 36 cm^3

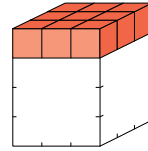
6.* 12 cubes

7. A.* 12 cm^3
 B.* 60 cm^3

8. Boxes will vary but should have a volume of 60 cm^3 . One sample box:



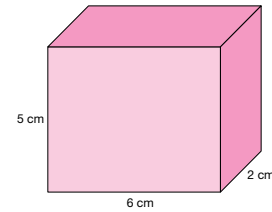
5. Find the volume of the box pictured below.



- A. How many centimeter cubes are in one row?
 B. How many rows are in one layer?
 C. What is the volume of one layer?
 D. How many layers are in the box?
 E. What is the volume of the box?

6. The volume of a box is 60 cm^3 . The box has 5 layers of centimeter cubes. How many centimeter cubes are in each layer?

7. Find the volume of the box pictured below.



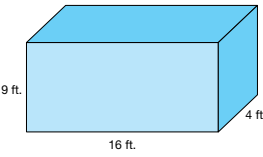
- A. Find the volume of one layer.
 B. Find the volume of box.

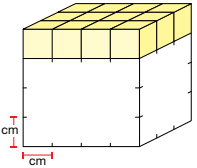
8. Find a different way to organize 60 cm^3 into a box. Draw a sketch of your box.

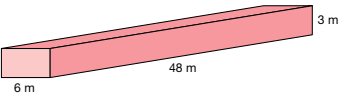
Use the *Volume of Tanks* pages in the *Student Activity Book* for more practice with finding volume.

Homework

Find the volume of each box.

1. 

2. 

3. 

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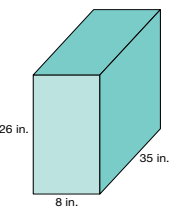
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Homework Section (SG pp. 198–199)

Questions 1–5

1. 576 ft.³
2. 48 cm³
3. 864 m³
4. 7280 in.³
5. **A.** 126 cm³
B. 5 cm
C. 10 cm
D. 3 cm
E. 1872 cm³
F. $5 \times 4 \times \boxed{10} = 200$
G. 210 cm³ is a reasonable estimate. The numbers are close to $5 \times 4 \times 10 = 200$.

4. 

5. Copy and complete the table.

	Height cm	Width cm	Length cm	Volume cm ³
A.	3	6	7	
B.		4	5	100
C.	5	4		200
D.	11		3	99
E.	18	13	8	

F. Show or tell how you solved Question 5C.

G. A box is 5.1 cm × 4.2 cm × 9.8 cm. Which is the best estimate for the volume? Explain your thinking.

200 cm³ 210 cm³ 230 cm³

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