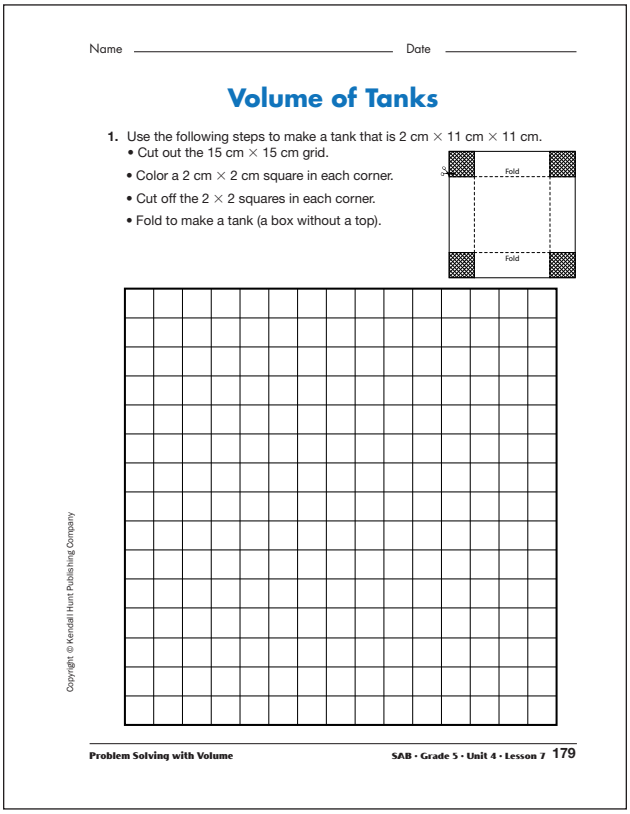
Student Activity Book

Volume of Tanks (SAB pp. 179–182)
Questions 1–6

1. Students will construct a 2 cm × 11 cm × 11 cm tank.



Name _____ Date _____

Volume of Tanks

1. Use the following steps to make a tank that is 2 cm × 11 cm × 11 cm.
   - Cut out the 15 cm × 15 cm grid.
   - Color a 2 cm × 2 cm square in each corner.
   - Cut off the 2 × 2 squares in each corner.
   - Fold to make a tank (a box without a top).

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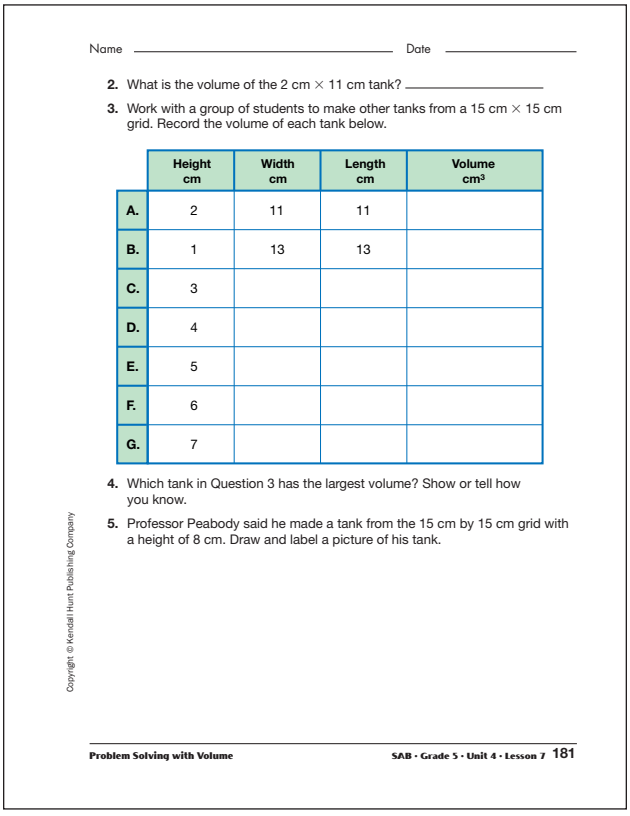
2. 242 cm^3
3. **A.** 242 cm^3
   B. 169 cm^3
   C. 243 cm^3; The width and length are 9 cm.
   D. 196 cm^3; The width and length are 7 cm.
   E. 125 cm^3; The width and length are 5 cm.
   F. 45 cm^3; The width and length are 3 cm.
   G. 7 cm^3; The width and length are 1 cm.
4. The tank that is 3 cm tall has the greatest volume because 3 cm × 9 cm × 9 cm = 243 cm^3.
5. * Possible response: Professor Peabody cannot make that box from a 15 cm × 15 cm grid. The paper needs to be a least 16 cm × 16 cm.



Name _____ Date _____

2. What is the volume of the 2 cm × 11 cm tank? _____
3. Work with a group of students to make other tanks from a 15 cm × 15 cm grid. Record the volume of each tank below.

	Height cm	Width cm	Length cm	Volume cm^3
A.	2	11	11	
B.	1	13	13	
C.	3			
D.	4			
E.	5			
F.	6			
G.	7			

4. Which tank in Question 3 has the largest volume? Show or tell how you know.
5. Professor Peabody said he made a tank from the 15 cm by 15 cm grid with a height of 8 cm. Draw and label a picture of his tank.

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

Name _____ Date _____

6. Use a calculator to complete the table. Each shape is a box.

	Height	Width	Length	Volume
A.	5 cm	15 cm	15 cm	
B.	10 yd.	12 yd.	yd.	960 yd.^{3}
C.	in.	45 in.	70 in.	47, 250 in.^{3}
D.	117 ft.	98 ft.	ft.	573, 300 ft.^{3}
E.	50 cm	cm	50 cm	125,000 cm^3
F.	m	6.5 m	5.5 m	429 m^3

G. Show or tell how you solved Question 6B.

H. A tank is 5.1 cm × 15.2 cm × 15.2 cm. Circle the best estimate for the volume. Explain your thinking.

1125 cm^3 1200 cm^3 2000 cm^3

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6. A. 1125 cm^3

B. 8 yd.

C. 15 in.

D.* 50 ft.

E. 50 cm

F. 12 m

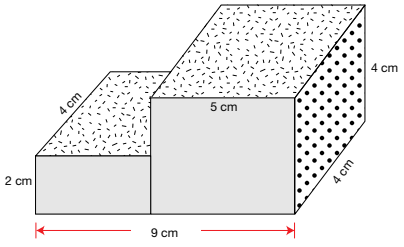
G. 960 ÷ 10 ÷ 12 = 8 yd.

H. 1200 cm^3 seems most reasonable. The lengths are close to 5 × 15 × 15 = 1125

Name _____ Date _____

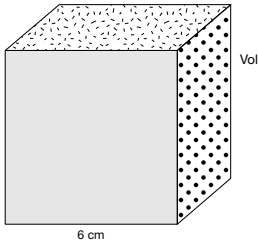
Volume Problems

1. Two boxes are put together in the following sketch. Find the volume of the boxes in the sketch.



Volume _____

2. Find the volume of the cube in the sketch.



Volume _____

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Volume Problems (SAB pp. 183–186)
Questions 1–7

1. 112 cm^3

2. 216 cm^3

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

3. 1000 cm^3

4. The volume of this cube is a little larger than 1000 cm^3.

5. length = 3 cm; width = 3 cm; height = 3 cm

Name _____ Date _____

3. What is the volume of a 10 cm cube?

Volume _____

4. A cube has an edge length of 10.5 cm. Choose your best prediction for the volume of this cube.

_____ The volume of this cube is a little smaller than 1,000 cm^3.

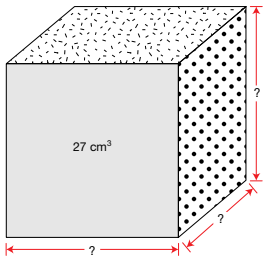
_____ The volume of this cube is much smaller than 1,000 cm^3.

_____ The volume of this cube is 1,000 cm^3.

_____ The volume of this cube is a little larger than 1,000 cm^3.

_____ The volume of this cube is much larger than 1,000 cm^3.

5. The volume of this cube is 27 cm^3. Find the length, width, and height of the cube. Include units.



length _____

width _____

height _____

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6. A. 27 cm^3

B. 72 cm^3 − 27 cm^3 = 45 cm^3

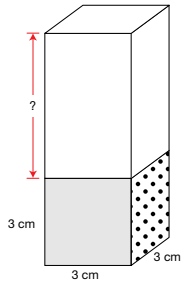
C. 3 cm

D. 3 cm

E. 5 cm

Name _____ Date _____

6. The following shape is built from a white box and a shaded cube. The volume of the shape is 72 cm^3.



Use the following steps to find the height of the white box. Include units.

A. Find the volume of the cube. _____

B. Find the volume of the white box. _____

C. What is the length of the white box? _____

D. What is the width of the white box? _____

E. Find the height of the white box. _____

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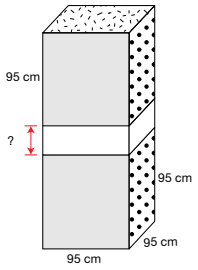
Name _____ Date _____

7. The shape in the sketch is built from two identical cubes and a small white box. The volume of the shape is 1,985,500 cm^3. Find the height of the small white box. Show your work.



Height of the white box _____

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7.* 30 cm

Name _____ Date _____

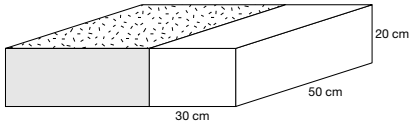
Multiply to Find Volume

Homework

1. Find the volume to complete the table. Include labels.

	Height	Width	Length	Volume
A.	15 ft.	5 ft.	30 ft.	
B.	24 cm	15 cm	5 cm	
C.	39 m	12 m	9 m	
D.	200 in.	500 in.	50 in.	
E.	42 yd.	8 yd.	21 yd.	
F.	25 m	10 m	40 m	

2. The shape in the sketch is built from two smaller boxes. The shape has a volume of 80,000 cm^3.



Find the volume of the shaded box.

Volume _____

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Multiply to Find Volume (SAB pp. 187–188)
Homework
Questions 1–5

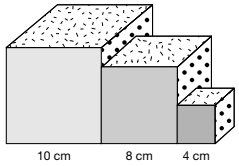
1. **A.** 2250 ft^3.
   B. 1800 cm^3
   C. 4212 m^3
   D. 5,000,000 in^3.
   E. 7056 yd^3.
   F. 10,000 m^3
2. 50,000 cm^3

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

3. 1576 cm^3; $10^3 + 8^3 + 4^3$
4. 342 in^3; $6^3 + 5^3 + 1^3$
5. Possible response: The shape in Question 4. The boxes are a lot larger than those in Question 3.

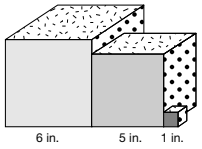
Name _____ Date _____

3. The figure is built from three cubes. Find the volume of the entire figure. Show your work and include unit.



Volume _____

4. Another figure is built from three cubes. Find the volume of the entire figure. Show your work and include units.



Volume _____

5. Look at the shapes in Questions 3 and 4. Which shape will hold more water? Explain your thinking.

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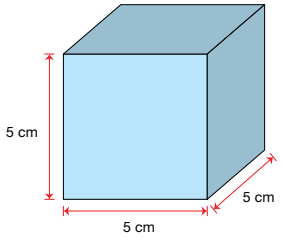
Teacher Guide

Confused Contessa Finds Volume (TG)

* Contessa is incorrect. To find the volume of a 5 cm cube, she incorrectly multiplies × 3, but that is not the same as 5 × 5 × 5.

Confused Contessa Finds Volume

Contessa is finding the volume of this cube.



Here is her thinking:

The width is 5 cm.
The height is 5 cm.
The length is 5 cm.
So the volume is 5 cm × 3 = 15 cm^3.

Discuss Contess's solution with a partner. Do you agree with Contessa? Why or why not?

Teacher Guide

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