

# Additive Volume (Composite Figures)

Grade 5 Math • Section 9.4

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 10

## Quick Review and Helpful Hints

**Additive volume:** A composite solid can be split into two or more rectangular prisms. Find the volume of each part, then add them together.

Look for ways to cut the shape into non-overlapping rectangular boxes.

Make sure the parts don't overlap and that you include all parts of the figure.

**Example:** An L-shaped room is made of two rectangular prisms. Prism A:  $6 \times 4 \times 3$ . Prism B:  $5 \times 4 \times 3$ . Find the total volume.

$V_A = 6 \times 4 \times 3 = 72$ .  $V_B = 5 \times 4 \times 3 = 60$ . Total =  $72 + 60 = 132$  cubic units.

**Answer:** 132 cubic units

## Practice Problems

Find the total volume of each composite figure.

1. Prism A:  $4 \times 3 \times 2$ . Prism B:  $5 \times 3 \times 2$ . Total volume = \_\_\_\_\_

2. Prism A:  $10 \times 5 \times 3$ . Prism B:  $6 \times 5 \times 3$ . Total volume = \_\_\_\_\_

3. Prism A:  $8 \times 4 \times 2$ . Prism B:  $8 \times 3 \times 2$ . Total volume = \_\_\_\_\_

4. Prism A:  $7 \times 7 \times 4$ . Prism B:  $3 \times 7 \times 4$ . Total volume = \_\_\_\_\_

5. Prism A:  $12 \times 6 \times 5$ . Prism B:  $8 \times 6 \times 3$ . Total volume = \_\_\_\_\_

6. Prism A:  $5 \times 5 \times 5$ . Prism B:  $5 \times 5 \times 5$ . Total volume = \_\_\_\_\_

7. A step-shaped figure: bottom  $10 \times 4 \times 2$ , top  $6 \times 4 \times 2$ . Total volume = \_\_\_\_\_

8. A T-shaped figure: base  $8 \times 3 \times 2$ , top  $4 \times 3 \times 3$ . Total volume = \_\_\_\_\_

## Word Problems

9. A building has a ground floor that is 20 m long, 10 m wide, and 4 m tall. A smaller second floor on top is 12 m long, 10 m wide, and 3 m tall. What is the total volume? \_\_\_\_\_

10. A swimming pool is shaped like an L. One section is  $8 \text{ m} \times 4 \text{ m} \times 2 \text{ m}$  and the other section is  $6 \text{ m} \times 4 \text{ m} \times 2 \text{ m}$ . What is the total volume of water the pool can hold? \_\_\_\_\_



## Answer Keys

- 54
- 240
- 112
- 280
- 504

- 250
- 128
- 84
- 1,160 m<sup>3</sup>
- 112 m<sup>3</sup>

### Step-by-Step Explanations

1. Start with the main idea. For additive volume (composite figures), add volumes:  $4 \times 3 \times 2 = 24$  and  $5 \times 3 \times 2 = 30$ , total 54. Volume counts cubic units, so the unit on the answer should be cubic units.

2. Keep the work tidy. For additive volume (composite figures),  $10 \times 5 \times 3 = 150$  and  $6 \times 5 \times 3 = 90$ , total 240. For rectangular prisms, multiply length, width, and height.

3. Look at what the numbers mean. For additive volume (composite figures),  $8 \times 4 \times 2 = 64$  and  $8 \times 3 \times 2 = 48$ , so the total volume is  $64 + 48 = 112$ . For composite figures, find each prism's volume first and then add.

4. Use the setup first. For additive volume (composite figures),  $7 \times 7 \times 4 = 196$  and  $3 \times 7 \times 4 = 84$ , total 280. Volume counts cubic units, so the unit on the answer should be cubic units.

5. Check the size of the answer. For additive volume (composite figures),  $12 \times 6 \times 5 = 360$  and  $8 \times 6 \times 3 = 144$ , total 504. For rectangular prisms, multiply length, width, and height.

6. Match the operation to the words. For additive volume (composite figures), each prism is  $5^3 = 125$ ;  $125 + 125 = 250$ . For composite figures, find each prism's volume first and then add.

7. Write the important values first. For additive volume (composite figures), bottom volume is  $10 \times 4 \times 2 = 80$  and top volume is  $6 \times 4 \times 2 = 48$ ; total 128. Volume counts cubic units, so the unit on the answer should be cubic units.

8. Follow the pattern carefully. For additive volume (composite figures), base volume is  $8 \times 3 \times 2 = 48$  and top volume is  $4 \times 3 \times 3 = 36$ ; total 84. For rectangular prisms, multiply length, width, and height.

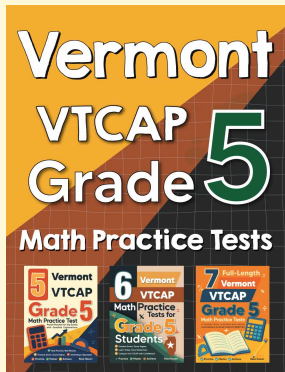
9. Start with the main idea. For additive volume (composite figures), ground floor volume is  $20 \times 10 \times 4 = 800$  and second floor volume is  $12 \times 10 \times 3 = 360$ ; total 1,160. For composite figures, find each prism's volume first and then add.

10. Keep the work tidy. For additive volume (composite figures), add the two sections:  $8 \times 4 \times 2 = 64$  and  $6 \times 4 \times 2 = 48$ , total 112. Volume counts cubic units, so the unit on the answer should be cubic units.



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