Lesson 5-5 · Session 1

Volume of Rectangular Prisms

Name _____ Date _____ Period _____

Maryland Standard 6.GR.2 · Learning target — I can find the volume of a rectangular prism by multiplying length, width, and height.
Show a model, calculation, or explanation. Answer every part and label units when needed.

Exercises 1–12 earn 1 point for a correct response and 1 for supporting work. Spiral Review and Test Practice earn 1 point each.

Learn from a model

REMEMBER

- Volume of a rectangular prism = length x width x height (V = l x w x h).
- Volume is measured in cubic units (like cubic inches or cubic cm).
- Watch out — area uses square units and volume uses cubic units. Do not mix them.
- Check it — all three edge measures must use the same unit before you multiply.

WORKED EXAMPLE

Finding the Volume of a Rectangular Prism A storage box is 8 cm long, 6 cm wide, and 9 cm tall. Find its volume.
Step 1 Name the three dimensions. l = 8 cm w = 6 cm h = 9 cm
Step 2 Find the base area first — that is one layer of cubes. 8 × 6 = 48
Step 3 Stack the layers by multiplying by the height. 48 × 9 = 432
Answer The volume of the box is 432 cubic centimeters (432 cm^3).

Practice

1. A box has a length of 5 in, width of 3 in, and height of 4 in. Find its volume.

Answer _____

SHOW YOUR THINKING

2. A fish tank is 20 cm long, 10 cm wide, and 15 cm tall. Find its volume.

Answer _____

SHOW YOUR THINKING

3. If you double the height in problem 1, what happens to the volume? Explain.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

4. Find the volume of each rectangular prism. Use $V = l \times w \times h$.

a. 6 cm by 4 cm by 2 cm _____ cm^3
b. 9 in. by 5 in. by 3 in. _____ in^3
c. 10 ft by 7 ft by 6 ft _____ ft^3
d. 12 m by 2 m by 8 m _____ m^3

Answer _____

SHOW YOUR THINKING

5. Toy Bin. A toy bin is a rectangular prism 18 in. long, 9 in. wide, and 7 in. tall. Find its volume.

Answer _____

SHOW YOUR THINKING

6. Compost Box. A compost box is 4 ft long, 3 ft wide, and 2 ft tall. Find its volume.

Answer _____

SHOW YOUR THINKING

7. Cereal Carton. A cereal carton has a base area of 44 cm^2 and a height of 9 cm. Find its volume.

Answer _____

SHOW YOUR THINKING

8. A bin is 7 cm long, 5 cm wide, and 4 cm tall. Jaden says its volume is 35 cm^3. Explain his mistake, then give the correct volume.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. A prism is 7 cm by 5 cm by 4 cm. Find its volume.

Answer _____ cm^3

SHOW YOUR THINKING

10. A prism has base area 36 in^2 and height 9 in. Find its volume.

Answer _____ in^3

SHOW YOUR THINKING

11. Packing Boxes. A box is 12 in. long, 8 in. wide, and 6 in. tall. Find its volume, then find the volume of 15 such boxes.

Answer _____ one box and fifteen boxes

SHOW YOUR THINKING

12. Find the Mistake. For a prism 4 m by 3 m by 2 m, Lee wrote 24 m^2. Explain the mistake.

Answer _____ the mistake

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 5-4 Session 2. Two joined shapes of 30 cm^2 and 16 cm^2 give what total area?

Answer _____

SHOW YOUR THINKING

14. From Lesson 5-2 Session 1. A triangle has base 10 ft and height 11 ft. Find its area.

Answer _____

SHOW YOUR THINKING

15. From Lesson 4-5 Session 1. If 42 is 70% of a number, find the number.

Answer _____

SHOW YOUR THINKING

Test practice

16. A prism 6 in. by 2 in. by 5 in. has volume —

□ A. 30 in³	□ B. 13 in³
□ C. 60 in²	□ D. 60 in³

17. V = B × h works when B is the —

- □ A. base area
- □ B. base perimeter
- □ C. base length
- □ D. bottom face count

18. A prism 10 cm by 10 cm by 10 cm has volume —

□ A. 100 cm³	□ B. 1000 cm³
□ C. 300 cm³	□ D. 30 cm³

Check and revise

CHECK YOUR MATHEMATICS

Volume uses cubic units. An edge length uses linear units.

Every part answered / Work shown / Units labeled when needed

HOW DID IT GO?

I can do this:
Independently / With a hint / With help

Question to revisit: _____

One correction or question I want to discuss: _____

Check each labeled measure and required face or region. Use square units for area and cubic units for volume.