Volume of Rectangular Prisms

Volume of rectangular prisms: Applications and decisions

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Rectangular prism volume is $V = lwh$, in cubic units. With $l = 4, w = 3, h = 2$ cm, the base has $4 \times 3 = 12$ unit squares and 2 layers make 24 cm^3. Fractional edges work too: $3 \times 2 \times \frac{1}{2} = 3$ cm^3. A missing edge equals volume divided by the product of the other two.

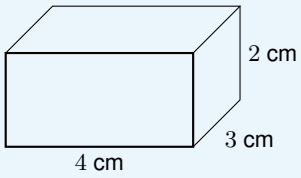
Worked example

Find the rectangular prism volume.

1. Base area $= 4 \times 3 = 12$ cm^2.

2. Volume $= 12 \times 2 = 24$ cm^3.

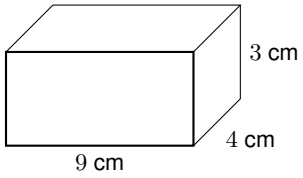
Answer: 24 cm^3.



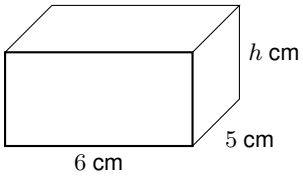
Practice Problems

Show your thinking.

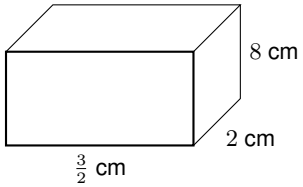
1. Find cubic centimeters of packing material needed to fill the box.



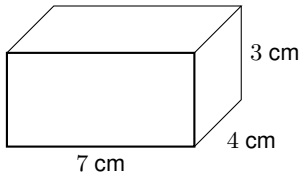
2. A container must hold the stated volume. Choose its height. Volume is 60 cm^3; find height h.



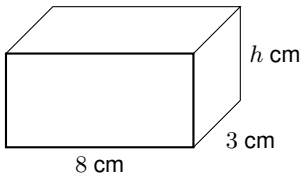
3. A narrow tank has these centimeter dimensions. Find capacity.



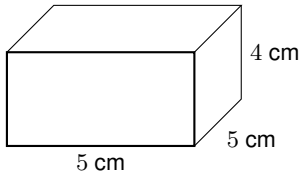
4. A label gives 56 cubic cm. Repair it using all three edges.



5. Recover height for a storage design with the stated volume. Volume is 96 cm^3; find height h.



6. Find volume and decide whether 110 cubic cm of filler is enough.



Answer Key

1. 108 cm^3.
2. 2 cm.
3. 24 cm^3.
4. 84 cm^3.
5. 4 cm.
6. 100 cm^3. Yes, with 10 cm^3 left.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Base area $= 9 \times 4 = 36$ cm^2.
2. Volume $= 36 \times 3 = 108$ cm^3.

Problem 2

1. Base area $= 6 \times 5 = 30$ cm^2.
2. $h = 60/30 = 2$ cm; check $30 \times 2 = 60$ cm^3.

Problem 3

1. Base area $= \frac{3}{2} \times 2 = 3$ cm^2.
2. Volume $= 3 \times 8 = 24$ cm^3.

Problem 4

1. Base area $= 7 \times 4 = 28$ cm^2.
2. Volume $= 28 \times 3 = 84$ cm^3.

Problem 5

1. Base area $= 8 \times 3 = 24$ cm^2.
2. $h = 96/24 = 4$ cm; check $24 \times 4 = 96$ cm^3.

Problem 6

1. Base area $= 5 \times 5 = 25$ cm^2.
2. Volume $= 25 \times 4 = 100$ cm^3.
3. $110 - 100 = 10$ cm^3 of filler remains.

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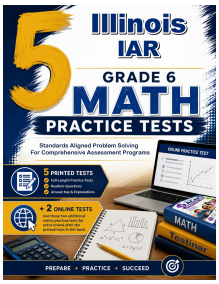

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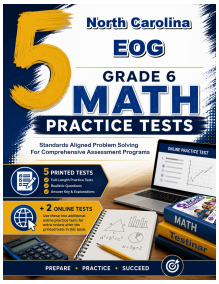

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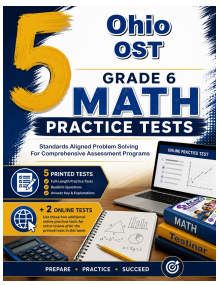

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