

Task Model 1a	Prompt Features: The student is prompted to determine the volume of a right rectangular prism with whole-number side lengths by counting unit cubes.
Response Type:	
Equation/Numeric	• Items are limited to right rectangular prisms with whole-
	number edge lengths.
DOK Level 2	 Right rectangular prisms can be filled or partially filled with customany unit cubes
5.MD.C.3	 The volume of a single unit cube is provided.
Recognize volume as an attribute of solid figures	
and understand	TM1a
measurement.	stimulus: The student is presented with a model of a completed right rectangular prism and a diagram of the individual layers of
length 1 unit called a	the prism.
"unit cube," is said to have "one cubic unit" of	Example Stem: The layers of a rectangular prism are shown to the right of the prism.
volume, and can be	
used to measure	
volume.	
can be packed without	
gaps or overlaps using <i>n</i>	
unit cubes is said to	
have a volume of <i>n</i>	
cubic units.	
5.MD.4	
Measure volumes by counting unit cubes,	
using cubic cm, cubic in,	Kara
cubic ft, and improvised	Кеу
	represents 1 cubic cm
Evidence Required:	
1. The student	Enter the volume, in cubic centimeters, of the rectangular prism
determines the volume	Encer the volume, in cubic continueurs, or the rectangular prism.
of a right rectangular	
number side lengths by	Rubric: (1 point) The student correctly enters the volume of the completed restangular price $(a, c, -24)$
counting or packing unit	completed rectangular prism (e.g., 24).
cubes.	Response Type: Equation/Numeric
Tools: None	

Accessibility Note: Care should be given to

dimensions of the prism

make sure the

and layers can be adequately Brailled.



Task Model 1b-c

Response Type: Equation/Numeric

DOK Level 2

5.MD.C.3

Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.

5.MD.C.4

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

Evidence Required:

1. The student determines the volume of a right rectangular prism with wholenumber side lengths by counting or packing unit cubes.

Tools: None

Accessibility Note:

Care should be given to make sure the dimensions of the prism and layers can be adequately Brailled.

TM1b

Stimulus: The student is presented with the model of the bottom layer of a right rectangular prism and the number of layers in the completed prism.

Example Stem: Elias is building a rectangular prism. The bottom layer of the rectangular prism is shown.





He builds a prism that has 4 layers. Enter the volume, in cubic centimeters, of the **completed** rectangular prism.

TM1c

Stimulus: The student is presented with a model of a completed right rectangular prism.

Example Stem: The rectangular prism shown is solid.



Enter the volume, in cubic centimeters, of the rectangular prism.

Rubric: (1 point) The student correctly enters the volume of the completed rectangular prism (e.g., 24; 60).

Response Type: Equation/Numeric

Note: TM1d has been retired.



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Grade 5 Mathematics Item Specification CI II Assessment Consortium	
Task Model 2a-b	Prompt Features: The student is prompted to apply the formulas $V = I \times w \times h$ and $V = b \times h$ to solve real-world and
Response Type: Equation/Numeric	 Stimulus Guidelines: The student is presented with right rectangular prisms in a
DOK Level 1	mathematical or real-world context.Items may or may not include a visual model.
5.MD.C.5 Relate volume to the operations of	 Item difficulty can be adjusted via these example methods: Area of base and height given as whole number
addition and solve real- world and mathematical	 values Length, width, and height given as whole number values
problems involving volume. b. Apply the formulas $V = I \times w \times h$ and $V = b \times v$	TM2a Stimulus: The student is presented with the model of a right rectangular prism in a mathematical context, with the height and area of the base labeled.
<i>h</i> for rectangular prisms to find volumes of right rectangular prisms with whole-number edge	Example Stem: The area of the base of this right rectangular prism is 18 square centimeters and the height is 4 centimeters.
lengths in the context of solving real-world and mathematical problems.	4 cm
Evidence Required:	Area of base = 18 cm^2
2. The student applies the formulas $V = I \times w$ $\times h$ and $V = b \times h$ to	Enter the volume, in cubic centimeters, of this prism.
solve real-world and mathematical problems involving volumes of right rectangular prisms.	TM2b Stimulus: The student is presented with the model of a right rectangular prism in a real-world context, with the height and area of the base labeled.
Tools: None	Example Stem: Sam has a small box in the shape of a right rectangular prism.
Accessibility Note:	The area of the base of the box is 18 square centimeters.The height of the box is 4 centimeters.

Include the dimensions in the stem to increase access.

Area of base = 18 cm²

Enter the volume, in cubic centimeters, of Sam's box.

Rubric: (1 point) The student correctly enters the volume of the right rectangular prism (e.g., 72; 72; 72; 72; 2080).

Response Type: Equation/Numeric

4 cm



Response Type: Equation/Numeric

Task Model 2c-e

DOK Level 1

5.MD.C.5

Relate volume to the operations of multiplication and addition and solve realworld and mathematical problems involving volume.

b. Apply the formulas $V = I \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.

Evidence Required:

2. The student applies the formulas $V = I \times w$ $\times h$ and $V = b \times h$ to solve real-world and mathematical problems involving volumes of right rectangular prisms.

Tools: None

Accessibility Note:

Include the dimensions in the stem to increase access.

TM2c

Stimulus: The student is presented with the height and area of the base of a right rectangular prism in a real-world context.

Example Stem: Sara has a small box in the shape of a right rectangular prism.

- The area of the base of the box is 18 square centimeters.
- The height of the box is 4 centimeters.

Enter the volume, in cubic centimeters, of Sara's box.

TM2d

Stimulus: The student is presented with a model of a right rectangular prism in mathematical context, with all three dimensions labeled.

Example Stem: The edge lengths, in centimeters, of the right rectangular prism shown are 4, 3, and 6.



Enter the volume, in cubic centimeters, of this prism.

TM2e

Stimulus: The student is presented with a model of a right rectangular prism in a real-world context, with all three dimensions labeled.

Example Stem: Danny has a fish tank, in the shape of a right rectangular prism. The edge lengths of the prism, in inches, are 8, 13, and 20.



Enter the volume, in cubic inches, of the fish tank.

Rubric: (1 point) The student correctly enters the volume of the right rectangular prism (e.g., 72; 72; 2080).

Response Type: Equation/Numeric



Response Type: Equation/Numeric

DOK Level 2

Task Model 2f

5.MD.C.5

Relate volume to the operations of multiplication and addition and solve realworld and mathematical problems involving volume.

b. Apply the formulas $V = I \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.

Evidence Required:

2. The student applies the formulas $V = l \times w$ $\times h$ and $V = b \times h$ to solve real-world and mathematical problems involving volumes of right rectangular prisms.

Tools: None

Accessibility Note:

Include the dimensions in the stem to increase access. **Prompt Features:** The student is prompted to calculate the volume of two non-overlapping right rectangular prisms of given dimensions.

Stimulus Guidelines:

- All dimensions are whole numbers using the same units.
- All dimensions must be given in the stem and/or labeled on the prisms.

TM2f

Stimulus: The student is presented with a model showing two non-overlapping right rectangular prisms with whole number dimensions in a mathematical context and all dimensions given/labeled.

Example Stem: Right rectangular prisms A and B are combined to create this model.

- The dimensions of Prism A are 4 by 3 by 20 millimeters.
- The dimensions of Prism B are 6 by 9 by 4 millimeters.



Enter the combined volume, in cubic millimeters, of Prisms A and B.

Rubric: (1 point) The student correctly enters the combined volume in the specified units (e.g., 456).

Response Type: Equation/Numeric



Task Model 2g

Response Type: Equation/Numeric

DOK Level 2

5.MD.C.5

Relate volume to the operations of multiplication and addition and solve realworld and mathematical problems involving volume.

b. Apply the formulas $V = I \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.

Evidence Required:

2. The student applies the formulas $V = l \times w$ $\times h$ and $V = b \times h$ to solve real-world and mathematical problems involving volumes of right rectangular prisms.

Tools: None

Accessibility Note:

Include the dimensions in the stem to increase access.

TM2g

Stimulus: The student is presented with a model showing two non-overlapping right rectangular prisms with whole number dimensions in a real-world context.

Example Stem: Sally uses Block A and Block B to create this model of a building.

- The dimensions of Block A are 3 by 3 by 5 inches.
- The dimensions of Block B are 1 by 3 by 4 inches.



Enter the combined volume, in cubic inches, of the entire model.

Rubric: (1 point) The student correctly enters the combined volume in the specified units (e.g., 57).

Response Type: Equation/Numeric



Task Model 2h	Prompt Features: The student is prompted to identify methods for finding the volume of a right rectangular prism.
Response Type:	Stimulus Guidelines:
Matching Tables	All dimensions are whole numbers using the same units.All items must use the same five equations in the table;
DOK Level 2	only change the numbers in the equations to create an item.
5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real- world and mathematical	TM2h Stimulus: The student is presented with a visual model showing the dimensions of a right rectangular prism.
problems involving	6 centimeters, width 3 centimeters, and height 4 centimeters.
b. Apply the formulas $V = I \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.	$ \begin{array}{c} $
Evidence Required:	(V) of this prism. Select Yes or No for each equation.
2. The student applies the formulas $V = l \times w$ $\times h$ and $V = b \times h$ to solve real-world and mathematical problems involving volumes of right rectangular prisms.	Yes No $V = 18 \times 4$ $V = (6 + 3) \times 4$ $V = 6 \times 3 \times 4$ $V = 9 \times 4$ $V = 6 \times (3 \times 4)$
Tools: None	Dubrie: (1 point) The student correctly colorts all of the
Accessibility Note: Include the dimensions in the stem to increase	equations that show a variety of ways volume can be determined with given dimensions, including $V = I \times w \times h$ and $V = b \times h$ (e.g., Y, N, Y, N, Y).

Response Type: Matching Tables

access.