Name & Surname: _____ Class: _____ Date: _____

VOLUME: SPACE INSIDE

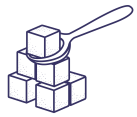
Count cubes and multiply to measure space.

About 45 minutes Level ★★★☆☆

Volume Means Space Inside

A solid figure takes up space. **Volume** is a measure of that **space**.

- **Volume** tells how much **space** a solid takes up or can hold.
- Measure volume in **cubic units**, like cubic centimeters (cm^3).
- For a rectangular prism: **volume** = length × width × height.
- A 10 cm × 10 cm × 10 cm cube holds 1000 cm^3, which is 1 liter.



Task A

Example done for you

/5

Tick true or false for each volume statement.

Statement	True	False
Volume tells how much space is inside a solid figure.	✓	
Volume is measured in **square** units like cm^2.		
Two different **shapes** can have the same volume.		
To find **volume** you always add all the numbers you see.		
A 1-cm **cube** has a volume of 1 cubic centimeter (cm^3).		
Finding the flat **top** of a box is the same as finding its volume.		

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COUNT THE CUBES

Practice counting unit cubes to find volume.

Key words

volume: amount of space inside a solid

solid figure: a 3D shape with length, width, and height

rectangular prism: a box shape with rectangles on all sides

cubic unit: a small cube used to measure volume

capacity: how much a container can hold

Task B

/10

Count cubes to find volume in cubic units.

WARM UP

1. A small tower is made of 7 unit **cubes**. What is its volume?

   Answer: _____

2. A solid is made of 12 unit **cubes**. What is its volume?

   Answer: _____

3. One flat **layer** has 3 rows with 5 unit cubes in each row. How many cubes are in the layer?

   Answer: _____

4. The layer from the last question is doubled to make 2 **layers**. How many cubes are there now?

   Answer: _____

PRACTISE

5. A box bottom holds 4 × 6 unit **cubes**. It is 2 cubes high. What is its volume in cubic units?

   Answer: _____

6. A **prism** is built from 3 layers with 10 cubes in each layer. What is its volume?

   Answer: _____

7. Student A says two solids made of 20 cubes each must look the **same**. Is Student A right? Answer yes or no.

   Answer: _____

PROBLEM SOLVING

8. A storage box can hold 5 cubes along its **length** and 3 cubes along its width. One layer is 15 cubes. With 4 layers, what is the volume?

   Answer: _____

9. A fish tank can hold 24 one-liter **boxes**. What is its capacity in liters?

   Answer: _____

10. Explain how you know volume is measured in **cubic** units, not square units.

    Answer: _____

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USE LENGTH TIMES WIDTH

Use multiplication to find the volume of boxes.

Task C

/10

Multiply length × width × height to find volume.

WARM UP

1 Work out the **volume** of a box that is 5 cm long, 2 cm wide, and 3 cm high.

Answer: _____

2 Work out 4 cm × 3 cm × 2 cm. Give the **volume** in cm^3.

Answer: _____

3 A cube has each **edge** 3 cm long. Work out 3 × 3 × 3 to find its volume.

Answer: _____

4 A box is 10 cm × 10 cm × 10 cm. What is its **volume** in cubic centimeters? This box holds 1 L.

Answer: _____

PRACTISE

5 A book box is 6 in long, 4 in wide, and 5 in high. What is its **volume** in in^3?

Answer: _____

6 A rectangular **prism** is 7 cm long, 3 cm wide, and 2 cm high. What is its volume?

Answer: _____

7 A box has a bottom **area** of 20 cm^2 and a height of 4 cm. Multiply to find its volume.

Answer: _____

PROBLEM SOLVING

8 A shipping box is 8 cm long, 5 cm wide, and 4 cm high. What **space** does it take up?

Answer: _____

9 A small pool model is 9 m long, 3 m wide, and 2 m high. What is its **volume** in m^3?

Answer: _____

10 Student B finds the volume of a 4-cm cube by working out 4 + 4 + 4 = 12. Explain why this **method** is wrong and give the correct volume.

Answer: _____

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AREA OR VOLUME?

Tell area, perimeter, and volume apart.

Task D

/4

Find the area or perimeter of each shape.

1



Area: _____ cm²

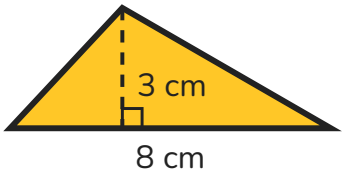
Perimeter: _____ cm

2



Area: _____ cm²

3



Area: _____ cm²

Task E

Example done for you

/7

Color each box by measurement type.

Volume: color it blue or draw ● **Area or perimeter**: color it orange or draw ▲

space inside a lunch box ●	water a bottle can hold	cubes that fill a toy chest	soil to fill a planter
paint to cover a wall	fence around a garden	carpet to cover a floor	trim around a picture

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TABLES AND EXAMPLES

Complete the table and follow the worked steps.

Task F

/4

Complete the table to find each missing volume.

Length	Width	Height	Volume
4 cm	3 cm	2 cm	
5 cm	5 cm	4 cm	
6 in	3 in	2 in	
10 cm	2 cm	5 cm	

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VOLUME: SPACE INSIDE

Task G

/2

Follow the steps to find volume.

WORKED EXAMPLE

Find the volume of a box 6 cm long, 4 cm wide, and 3 cm high.

1. Write the rule: volume = length × width × height
2. Put in the numbers: 6 × 4 × 3
3. Multiply: 6 × 4 = 24, then 24 × 3 = 72, so 72 cm^3

Answer: 72 cm^3

YOUR TURN

Find the volume of a box 7 cm long, 3 cm wide, and 2 cm high.

Answer: _____

WORKED EXAMPLE

The bottom of a prism holds 15 cubes and it is 4 cubes high. Find the volume.

1. Volume = cubes in one layer × number of layers
2. 15 × 4 = 60
3. Volume is 60 cubic units

Answer: 60 cubic units

YOUR TURN

The bottom of a prism holds 20 cubes and it is 3 cubes high. Find the volume.

Answer: _____

How did I do?

Circle a face for each line.

I can explain what volume means.	☹	😐	☺
I can measure volume in cubic units.	☹	😐	☺
I can find the volume of a rectangular prism.	☹	😐	☺

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Answer sheet: Volume: Space Inside

Task A

1. True
2. False
3. True
4. False
5. True
6. False

Task B

1. 7 cubic units
2. 12 cubic units
3. 15 cubes
4. 30 cubes
5. 48 cubic units
6. 30 cubic units
7. no
8. 60 cubic units
9. 24 L
10. Cubic units fill space with length, width, and height, while square units only cover a flat surface.

Task C

1. 30 cm^3
2. 24 cm^3
3. 27 cm^3
4. 1000 cm^3
5. 120 in^3
6. 42 cm^3
7. 80 cm^3
8. 160 cm^3
9. 54 m^3
10. Adding only joins lengths. Volume needs length × width × height, so 4 × 4 × 4 = 64 cm^3.

Task D

1. area = 24 cm^2, perimeter = 20 cm
2. area = 25 cm^2
3. area = 12 cm^2

Task E

Volume (blue ●): space inside a lunch box, water a bottle can hold, cubes that fill a toy chest, soil to fill a planter
Area or perimeter (orange ▲): paint to cover a wall, fence around a garden, carpet to cover a floor, trim around a picture

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Task F

4 cm | 3 cm | 2 cm | 24 cm^3

5 cm | 5 cm | 4 cm | 100 cm^3

6 in | 3 in | 2 in | 36 in^3

10 cm | 2 cm | 5 cm | 100 cm^3

Task G

1. 42 cm^3
2. 60 cubic units

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