



GRADE 5 · MEASUREMENT & DATA · PRACTICE

VOLUME AND CUBIC UNITS

Today's goal: I can recognize volume as an attribute of solid figures; understand cubic units and measure volumes by counting unit cubes.



Pick your peppers!

Everyone does Mild & Medium. Then climb as high as you can.



Mild

Tan the Turtle



Medium

Digit the Fox



Spicy

Blaze the Dragon



Extra Spicy

Pi the Owl

WATCH MR DJ SOLVE

Find the volume by counting layers: a $5 \times 2 \times 3$ prism.

- 1 The base layer is $5 \times 2 = 10$ cubes.
- 2 Three layers, so 30 cubic units.

Answer: 30 cubic units



REMEMBER Volume is a count of unit cubes packed with no gaps. Count by layers so nothing needs to be visible. Volume is the space inside; surface is the skin.



MILD

Tan the Turtle: Slow and steady. Warm up!

- 1 Find the volume by counting layers: a $4 \times 3 \times 2$ prism.

Answer

- 2 Find the volume by counting layers: a $6 \times 2 \times 2$ prism.

Answer

- 3 Find the volume of a $3 \times 3 \times 3$ cube.

Answer

- 4 Find the volume of a $4 \times 4 \times 4$ cube.

Answer



OOPS ALERT

Careful on #1! The slip Mr DJ sees most: Added the three dimensions instead: $4 + 3 + 2 = 9$. Volume counts cubes in a block, and a block 4 by 3 by 2 plainly holds more than 9 of them.



MEDIUM

Digit the Fox: Stretch your brain.

- 5 Two solids are $6 \times 2 \times 2$ and $4 \times 3 \times 2$. Which holds more cubes?

Answer



SPICY

Blaze the Dragon: Bring the heat!

- 6 How many cubes are completely hidden in a $4 \times 4 \times 4$? What shape do the hidden cubes make?

Answer

- 7 Count a $4 \times 3 \times 2$ in layers three different ways. Do you get the same answer each time?

Answer

- 8 A $2 \times 2 \times 2$ cube has volume 8 cubic units. How many unit squares cover its outside? Why are the two answers different?

Answer

- 9 Why does a $2 \times 2 \times 2$ never show the hidden-cube problem?

Answer

- 10 A box is filled with unit cubes but they are stacked loosely with gaps. Does the count of cubes give the box's volume? Explain.

Answer



EXTRA SPICY

Pi the Owl: Big-brain challenge.

- 11 Why is counting by layers better than counting the cubes in a drawing?

Answer



How did this sheet feel?

☐ Easy for me ☐ Just right ☐ Made me think

Stuck? Watch Mr DJ explain it

Step-by-step video lessons on YouTube: [youtube.com/@MathWithMrDJ](https://www.youtube.com/@MathWithMrDJ)

Brain break: daily puzzles

Three new math puzzles every day, free: puzzles.mathwithmrdj.com