Cube Claim Check

Decide whether each volume claim matches the prism.

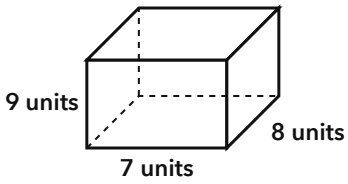
MA.5.GR.3.1 "Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes."

NAME _____ DATE _____

CORRECT VOLUME

The stated volume matches the number of unit cubes that fill the prism in complete layers with no gaps.

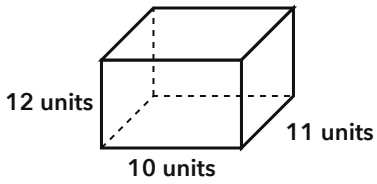
A prism that is 7 units by 8 units by 9 units has a volume claim of 504 cubic units.



INCORRECT VOLUME

The stated volume does not match the number of unit cubes that fill the prism in complete layers with no gaps.

A prism that is 10 units by 11 units by 12 units has a volume claim of 1,300 cubic units.



1 SORT

8 items

In Part 1, circle CORRECT or INCORRECT for each volume claim, and in Part 2, choose one item from each category and explain how the side lengths show how many unit cubes fit without gaps.

1.

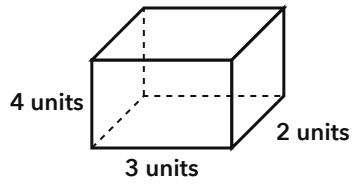


Figure 1: length 3 units, width 2 units, height 4 units. Volume claim: 24 cubic units.

CORRECT **INCORRECT**

2.

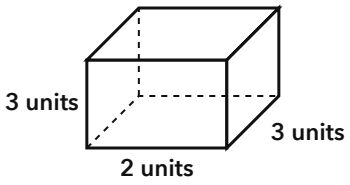


Figure 2: length 2 units, width 3 units, height 3 units. Volume claim: 12 cubic units.

CORRECT **INCORRECT**

3.

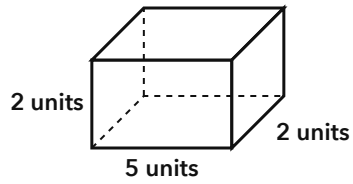


Figure 3: length 5 units, width 2 units, height 2 units. Volume claim: 25 cubic units.

CORRECT **INCORRECT**

4.

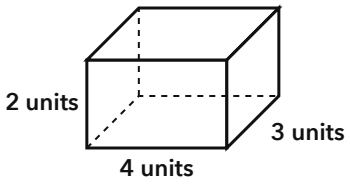


Figure 4: length 4 units, width 3 units, height 2 units. Volume claim: 24 cubic units.

CORRECT **INCORRECT**

5.

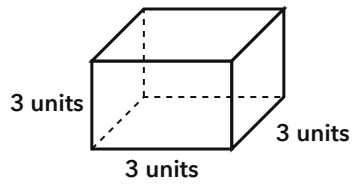


Figure 5: length 3 units, width 3 units, height 3 units. Volume claim: 27 cubic units.

CORRECT **INCORRECT**

6.

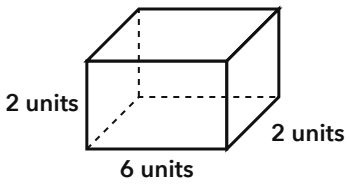


Figure 6: length 6 units, width 2 units, height 2 units. Volume claim: 16 cubic units.

CORRECT **INCORRECT**

7.

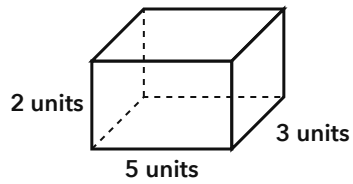


Figure 7: length 5 units, width 3 units, height 2 units. Volume claim: 30 cubic units.

CORRECT **INCORRECT**

8.

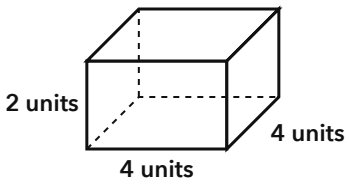


Figure 8: length 4 units, width 4 units, height 2 units. Volume claim: 32 cubic units.

CORRECT **INCORRECT**

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Teacher: provide 24 equal unit cubes per pair. First build Figure 1: pack a 3-by-2 base layer, then stack four complete layers without gaps or overlaps. Count cubes in each layer and in the whole prism; record both counts and the volume. Each partner checks the packing. Then keep your model nearby and write one new prism example for each category, with whole-number dimensions and a volume claim.

CORRECT

INCORRECT

CHALLENGE

A prism has a volume claim of 48 cubic units. Its length is 4 units and its width is 3 units. What height makes the claim correct? Explain how that height shows the number of unit cubes that fit with no gaps.

ANSWER KEY

Cube Claim Check

GRADE 5 · MA.5.GR.3.1

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1: length 3 units, width 2 units, height 4 units. Volume claim: 24 cubic units. (prism)	**CORRECT**	3 × 2 × 4 = 24 cubic units.
2	Figure 2: length 2 units, width 3 units, height 3 units. Volume claim: 12 cubic units. (prism)	**INCORRECT**	2 × 3 × 3 = 18 cubic units, not 12.
3	Figure 3: length 5 units, width 2 units, height 2 units. Volume claim: 25 cubic units. (prism)	**INCORRECT**	5 × 2 × 2 = 20 cubic units, not 25.
4	Figure 4: length 4 units, width 3 units, height 2 units. Volume claim: 24 cubic units. (prism)	**CORRECT**	4 × 3 × 2 = 24 cubic units.
5	Figure 5: length 3 units, width 3 units, height 3 units. Volume claim: 27 cubic units. (prism)	**CORRECT**	3 × 3 × 3 = 27 cubic units.
6	Figure 6: length 6 units, width 2 units, height 2 units. Volume claim: 16 cubic units. (prism)	**INCORRECT**	6 × 2 × 2 = 24 cubic units, not 16.
7	Figure 7: length 5 units, width 3 units, height 2 units. Volume claim: 30 cubic units. (prism)	**CORRECT**	5 × 3 × 2 = 30 cubic units.
8	Figure 8: length 4 units, width 4 units, height 2 units. Volume claim: 32 cubic units. (prism)	**CORRECT**	4 × 4 × 2 = 32 cubic units.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **CORRECT**: A prism is 2 units by 2 units by 6 units. Volume claim: 24 cubic units.
- **INCORRECT**: A prism is 3 units by 4 units by 3 units. Volume claim: 30 cubic units.

Challenge: The height is 4 units. A 4-by-3 base has 12 unit cubes in each layer, and 4 layers have 48 unit cubes with no gaps.

Items 1, 4, 5, 7, and 8 are CORRECT. Items 2, 3, and 6 are INCORRECT; in Part 2, look for multiplication of all three side lengths or an explanation using equal layers of unit cubes. Packing check: the actual 3-by-2 layer contains 6 cubes; four full layers contain 24 cubes, so volume is 24 cubic units. Observe the built prism for gaps/overlaps and listen to each learner count. Formula-only work does not replace this packing/counting stage.