

G.G.11: Volume: Know and apply that two prisms have equal volumes if their bases have equal areas and their altitudes are equal

- 1 A carpenter made a storage container in the shape of a rectangular prism. It is 5 feet high and has a volume of 720 cubic feet. He wants to make a second container with the same height and volume as the first one, but in the shape of a triangular prism. What will be the number of square feet in the area of the base of the new container?
 - 1) 36
 - 2) 72
 - 3) 144
 - 4) 288
- 2 A rectangular prism has a base with a length of 25, a width of 9, and a height of 12. A second prism has a square base with a side of 15. If the volumes of the two prisms are equal, what is the height of the second prism?
 - 1) 6
 - 2) 8
 - 3) 12
 - 4) 15
- 3 Two prisms have equal heights and equal volumes. The base of one is a pentagon and the base of the other is a square. If the area of the pentagonal base is 36 square inches, how many inches are in the length of each side of the square base?
 - 1) 6
 - 2) 9
 - 3) 24
 - 4) 36
- 4 Tim has a rectangular prism with a length of 10 centimeters, a width of 2 centimeters, and an unknown height. He needs to build another rectangular prism with a length of 5 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.
- 5 Two prisms with equal altitudes have equal volumes. The base of one prism is a square with a side length of 5 inches. The base of the second prism is a rectangle with a side length of 10 inches. Determine and state, in inches, the measure of the width of the rectangle.

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Answer Section

1 ANS: 3

$$720 = 5B$$

$$144 = B$$

REF: 081524ge

2 ANS: 3

$$25 \times 9 \times 12 = 15^2 h$$

$$2700 = 15^2 h$$

$$12 = h$$

REF: 061323ge

3 ANS: 1

If two prisms have equal heights and volume, the area of their bases is equal.

REF: 081321ge

4 ANS:

4

REF: 011030ge

5 ANS:

$$5 \cdot 5 = 10w$$

$$25 = 10w$$

$$2.5 = w$$

REF: 061432ge