

Volume of a Three-Dimensional Figure on the ISEE All Levels

LESSON GOAL: Find the volume of a three-dimensional figure when given its dimensions.

ISEE Lower-Level Volume Question:

The side length of a cube is 4 centimeters. What is its volume?

A) 16 cm³
B) 32 cm³
C) 64 cm³
D) 96 cm³



By definition, the length, width, and height of a cube are all equal. The volume of a cube is its side length cubed, or s x s x s. In this case, $4 \times 4 \times 4 = 64$. **The volume of the cube is 64 cm³**, **answer choice C**.

ISEE Middle-Level Volume Question:

The dimensions of a rectangular box are 5 in. by 10 in. by 1 foot. What is the volume of the box?

A) 50 in³
B) 300 in³
C) 500 in³
D) 600 in³



The solution: V rectangular prism = l x w x h

Use the formula for volume of a rectangular prism: *length X width X height*

Step 1: Make sure all your dimensions are in the same unit, converting units as necessary.

 $\frac{12 \text{ inches}}{1 \text{ foot } x} = 12 \text{ in.}$

Step 2: Multiply length by width by height.

 $5 \times 10 \times 12 = 600$

Helpful tip: The ISEE will sometimes give you two different units in a problem. Make sure to convert everything to the same unit before you multiply and/or before you choose the correct answer.

The correct answer is D) 600 in³

Helpful tip: To find the volume of any three-dimensional prism or cylinder, use the formula: Volume = (area of the base) x height



For example, if we know that the radius of a cylinder is 5 and the height is 7, the formula for the volume of the cylinder would be: V cylinder = $\pi r^2 h = \pi x 5^2 x 7 = 175\pi$

nore ISEE questions broken down and explained with examples: <u>latutors123.com/tutoring-resources/isee/concepts/</u>