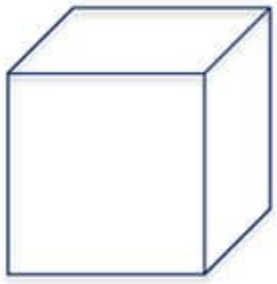
Volume of a Three-Dimensional Figure on the ISEE

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 cm^3
B) 32 cm^3
C) 64 cm^3
D) 96 cm^3

The solution: V *cube* = s^3

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 × 4 × 4 = 64. ***The volume of the cube is 64 cm^3, 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 in^3
B) 300 in^3
C) 500 in^3
D) 600 in^3

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.

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

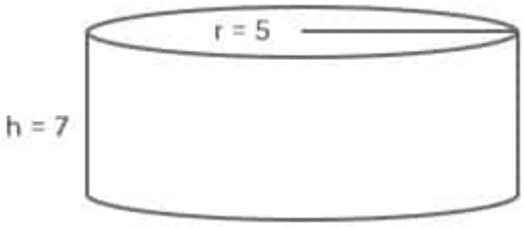
Helpful tip: The ISEE will sometimes give you two different units in a problem. Make sure to convert everything to the same unit before you multiply and/or before you choose the correct answer.

Step 2: Multiply length by width by height.

5 × 10 × 12 = 600

The correct answer is D) 600 in^3

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* = $\pi r^2 h$ = π x 5^2 x 7 = 175π

More ISEE questions broken down and explained with examples: latutors123.com/tutoring-resources/isee/concepts/