

FINDING VOLUME

Volume measures the amount a solid figure can hold. Volume is measured in terms of units³ and can be measured in inches, feet, meters, centimeters, and millimeters.

- The formula for the volume of a rectangular prism is V = I · w · h, where I is the length, w is the width, and h is the height.
- The formula for the **volume of a cube** is $V = s^3$, where s is a side of the square.
- The volume of a triangular prism is $V = (1/2) \cdot I \cdot w \cdot h$.
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- The **volume of a cone** is $V = (1/3)\pi r^2 \cdot h$, where r is the radius and h is the height.
- The **volume of a sphere** is $V = (4/3)\pi r^3$, where r is the radius and π is 3.14.
- The figures of prisms, cylinders, pyramids, cones and spheres are all 3-D figures. The **3-D figures are made up of edges**, **faces and vertices**. The edge is where two faces meet. The face is the side of the figure. The vertex is the point where the edges meet.



How to use finding volume

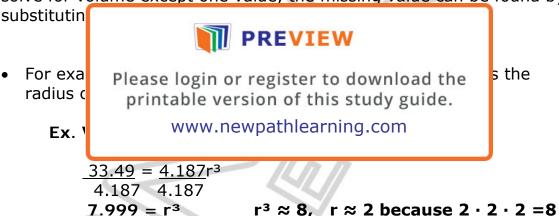
The **volume** of 3-D figures can be determined by using the formula that corresponds to the figure. The volumes of all figures can be determined as long as the needed information is given.

 For example, what is the volume of a cone with a radius of 6 cm and a height of 15 cm?

Ex.
$$V_{cone} = (1/3)\pi r^2 \cdot h$$

= $(1/3)(3.14)(6^2)(15)$
 $V_{cone} = (1/3)(3.14)(36)(15) = 565.2 \text{ cm}^3$

If the volume of a figure is given, as well as the information needed to solve for volume except one value, the missing value can be found by



The radius of the sphere is approximately 2 m. A 3-D figure is made up of faces, edges and vertices. A rectangular prism has 6 faces, 12 edges and 8 vertices.



Try This!

- 1. What is the **volume** of the rectangular prism with a length of 3m, a width of 5 m and a height of 11m? $V = I \cdot w \cdot h$
- 2. What is the **volume of a triangular prism** with a length of 6 cm, a width of 7 cm and a height of 2 cm? $V = (1/2) \cdot I \cdot w \cdot h$
- 3. What is the **volume of a cylinder** with a radius of 4 ft and a height of 9 ft? $V = \pi r^2 \cdot h$
- 4. What is the **volume of a pyramid** with a height of 12 cm and a base of



5. What is 18 in.? Please login or register to download the printable version of this study guide. www.newpathlearning.com

a height of

- 6. What is the **volume of a sphere** with a radius of 27 cm and a height of 33cm? $V = (4/3)\pi r^3$
- 7. If the volume of a rectangular prism is 288 cm³ and the length is 9 cm and the width is 8 cm, what is the height? $V = I \cdot w \cdot h$
- 8. If the volume of a triangular prism is 81 ft³ and the width is 6 ft and the height is 3 ft, what is the length? $V = (1/2) \cdot I \cdot w \cdot h$
- 9. If the volume of a cylinder is 1230.88 m³ and the radius is 7 m, what is the height? $V = \pi r^2 \cdot h$



- 10. If the volume of a pyramid is 125cm^3 and the height is 15 cm, what is the radius? $V = (1/3) b^2 \cdot h$
- 11. If the volume of a cone is 1780.38 in.³ and the radius is 9 in., what is the height? $V = (1/3)\pi r^2 \cdot h$
- 12. If the volume of a sphere is 113.04ft, what is the radius? $V = (4/3)\pi r^3$
- 13. How many faces does a pyramid have?
- 14. How



15. How

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