

**Calculating Density**

**Density Formula**

density = mass ÷ volume

$$\rho = \frac{m}{V}$$

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density = mass ÷ volume  
mass = density × volume  
volume = mass ÷ density

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**Solving with the Density Equation**

**Density**  
Denoted by the Greek letter rho ( $\rho$ )  
Density describes the mass ( $m$ ) present within a specified volume ( $V$ )

Density  
 $D = \frac{m}{V}$

Mass from Density  
 $m = D \cdot V$

Volume from Density  
 $V = \frac{m}{D}$

$m = \rho \times V$

$V = \frac{m}{\rho}$

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**Solving with the Density Equation**

Density in Real Life Applications  
*Volume of a solid – Measurement Technique*

Solids with a defined shape can be measured using a ruler to find their volume through direct measurement of the solid and using the equation for the shape of the solid

$V = \frac{b \cdot h \cdot l}{2}$  (Triangular prism)  
 $V = \pi r^2 h$  (Cylinder)  
 $V = \frac{\pi r^2 h}{3}$  (Cone)  
 $V = \frac{l \cdot w \cdot h}{3}$  (Pyramid)  
 $V = \frac{4}{3} \pi r^3$  (Sphere)  
 $V = l \cdot w \cdot h$  (Rectangular prism)

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**Solving with the Density Equation**

Density in Real Life Applications  
*Volume of a solid – Volume by Difference / Displacement*

**Displacement Method for Measuring Volume**

1. Add water to a measuring container such as a graduated cylinder. Record the volume of the water.
2. Place the object in the water in the graduated cylinder. Measure the volume of the water with the object in it.
3. Subtract the first volume from the second volume. The difference represents the volume of the object.

Solids without a defined shape can have their volume measured using the difference between the liquid before and after placing the object in a graduated cylinder

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