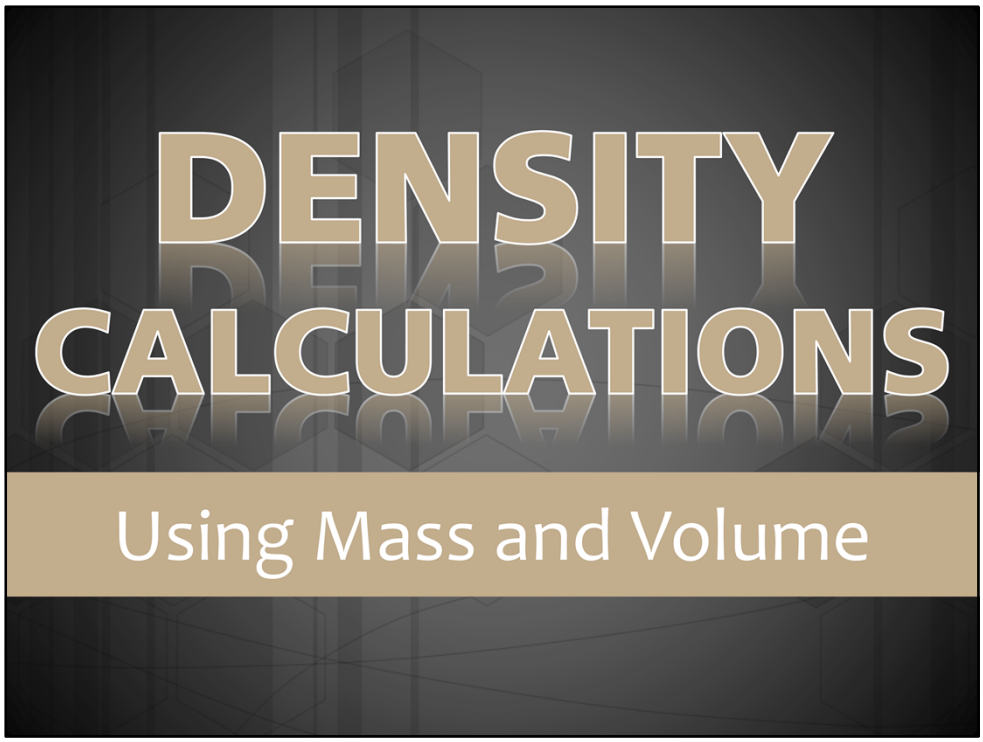
Module 1: What is Earth Science?
Topic 3 Content: Density Calculations Using Mass and Volume Presentation Notes



Density Calculations Using Mass and Volume

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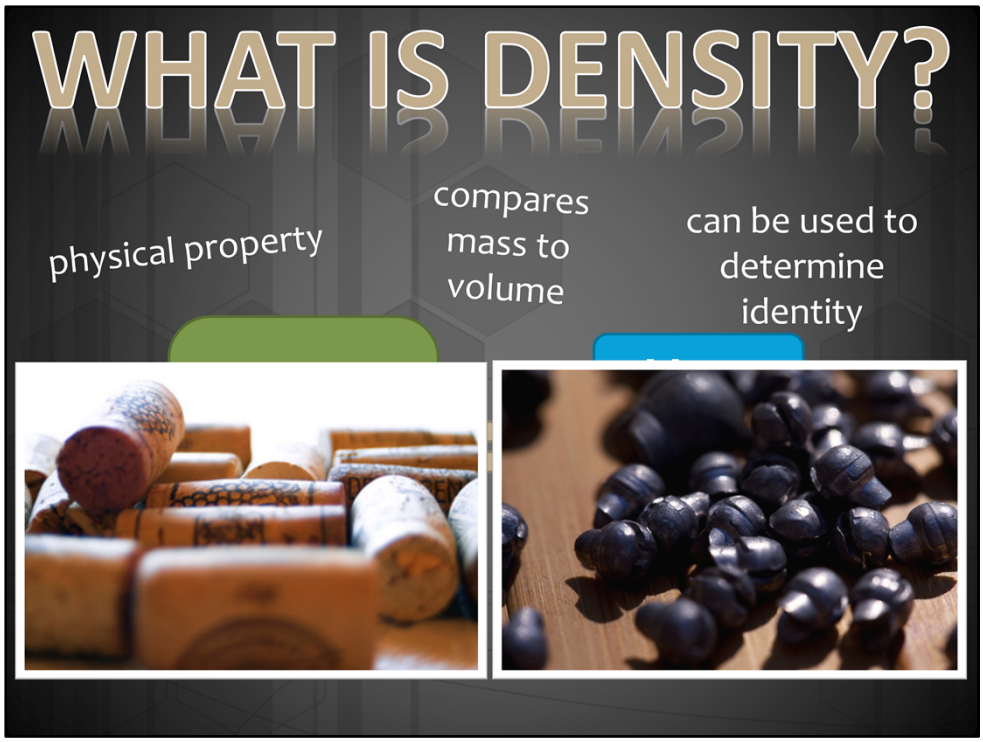

Consider how a piece of cork and a piece of lead of equal sizes would feel when held right after the other. The difference in the way they feel is due to the difference in their densities. Density is a physical property of matter that refers to how closely "packed" the material seems to be by comparing its mass to its volume. The density of a substance can be used to determine its identity. You can mathematically determine an object's density, indicated by the Greek letter rho, by dividing the object's mass by its volume.

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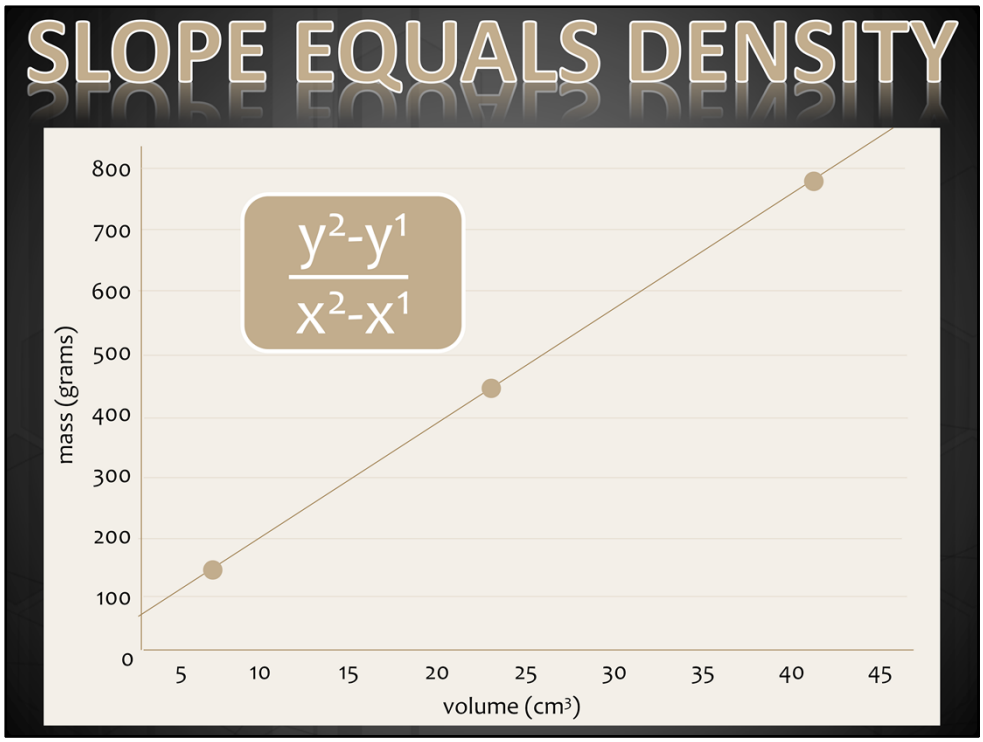
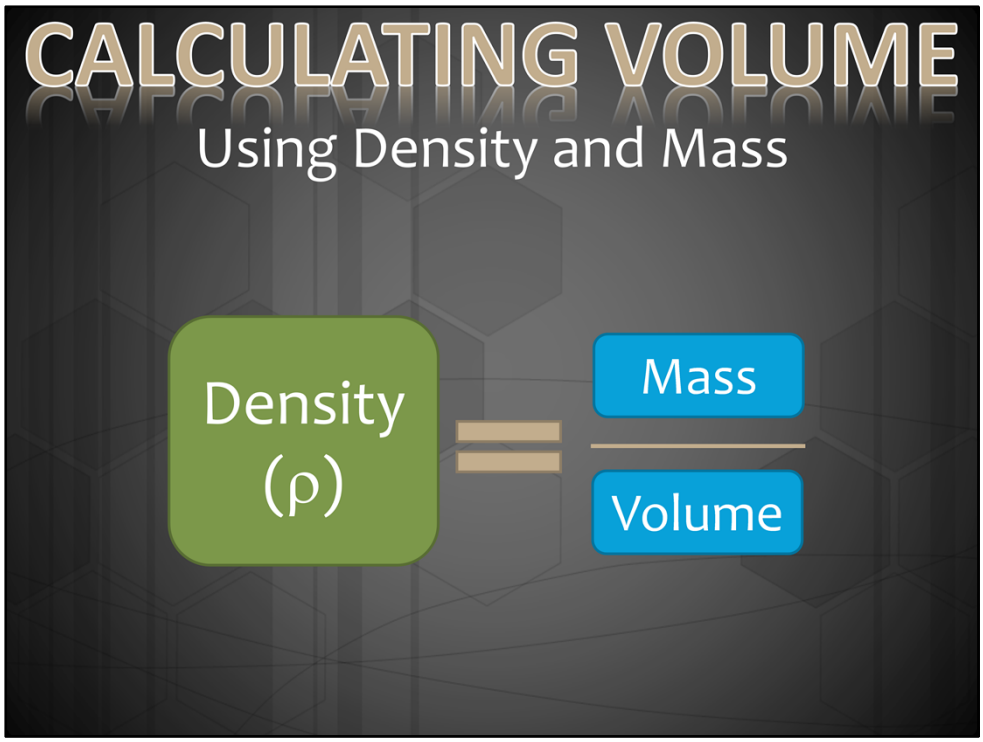


From your algebra classes, you know that the slope of a line can be determined by dividing the difference of two "y" points by the difference of two "x" points. On this graph, the y-axis of the graph represents mass, and the x-axis of the graph represents volume, you can see graphically that an object's mass divided by its volume equals its density. The slope of the line in the graph represents the density. You can use any of these coordinates to calculate the density because the slope of the line is consistent. As the volume increases, so does mass.



Since you know that density equals mass divided by volume, and mass and volume have a direct relationship, you can use the density and mass of a substance to determine its volume. When rearranged, the equation for volume becomes what is shown here.

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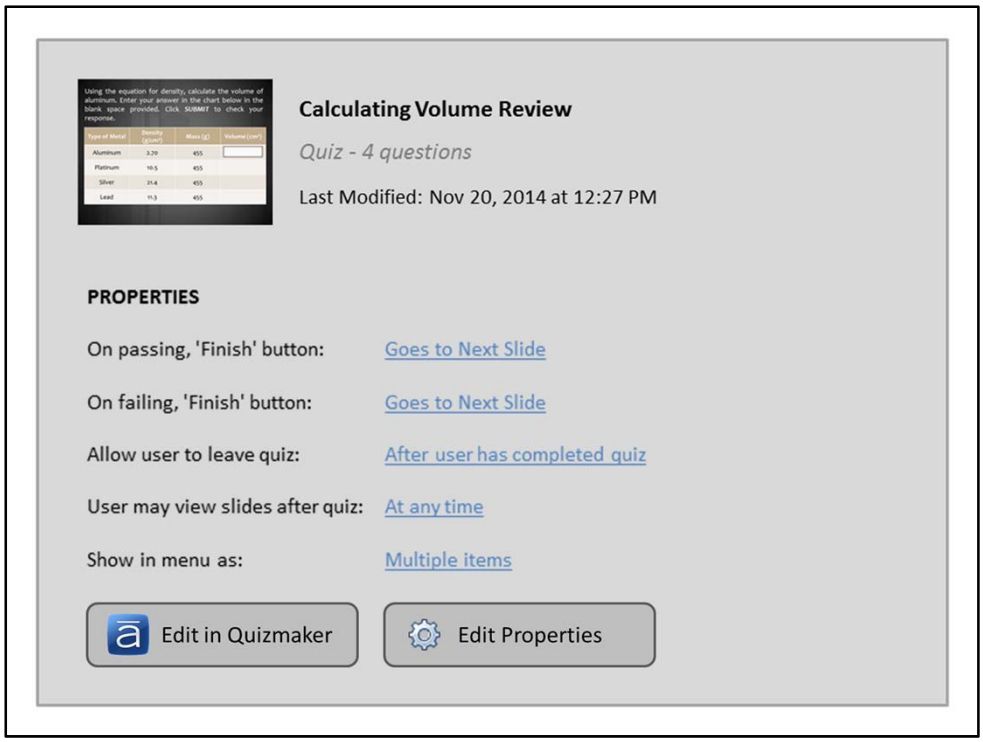

In this non-graded activity, calculate the volume of a substance using its density and mass. Calculate the volume of each of the metals shown in the chart and enter your answers in the blanks provided. Then, click SUBMIT to check your response.

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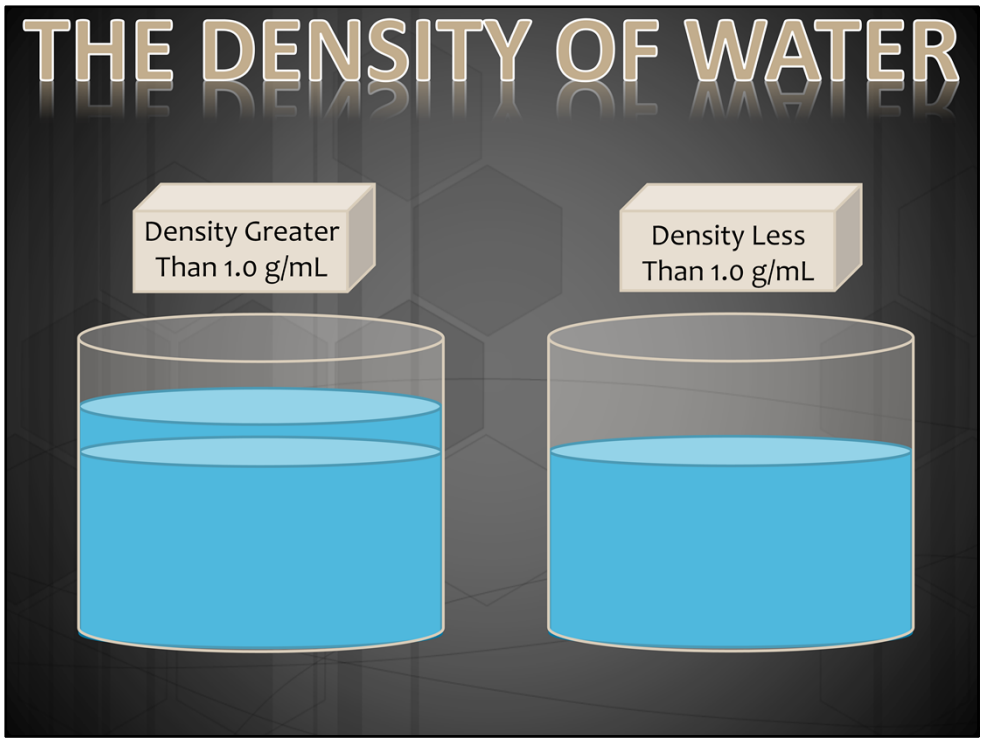

The world's most abundant liquid, water, has a density of 1.0 g/mL. Objects with a density greater than 1.0 g/mL will sink in water. Objects with a density less than 1.0 g/mL will float in water.