Name: Date: Class Period

Density: The Formula

In the last video we learned that density has to do with how _____ together or how _____ apart the particles in something are. Objects like this rock have particles that are closer together making them more _____ while objects like this styrofoam have particles that are spread _____ apart with lots of space between them making them _____ dense.

Write the density formula _____ = _____/_____

The density formula is actually extremely practical. It makes a lot of _____ in the real world. When objects are all different sizes it makes them really hard to _____. In a world with no math, one way to solve this problem would be to cut objects up into _____ sized pieces.

Video break: Cutting styrofoam, wood and stone into equal blocks

In the video, the styrofoam, wood and stone are cut into what size blocks? In other words what is the standard volume used?_____

Now write how much matter was in each standard sized block

-How much matter (mass) was in the standard styrofoam block? _____

-How much matter (mass) was in the standard wood block? _____

-How much matter (mass) was in the standard stone block? _____

Now write the density (with correct units) of the three types of material

-Styrofoam _____

-Wood _____

-Stone_____

Big Idea: The density formula eliminates all the hard work of cutting materials into standard sizes! If you can find the total mass and total volume of any object, the formula will tell you how much mass is in one standard unit of that material. This allows us to precisely compare different materials.

Now let's see if the density formula could have saved all that work of cutting up the materials:

-Total mass of the original styrofoam block _____

-Total volume of the original styrofoam block = Length x Width x Height

a. Length = _____

b. Width = _____

c. Height = _____

Total Volume = _____

Now calculate the density of the styrofoam. Show your work in the space below.

Density = Mass/Volume

The small difference between the density as found the hard way and the density as calculated by the formula were likely because of

_____

_____

If you can find the total mass and total volume of any object you can find out how much _____ is in one standard unit of that material. And that is what _____ is!

Practice:

***Important note: In science we use the S.I. system of measurements which is based on the metric system. Instead of a cubic inch we would use the cubic centimeter for our unit of volume and the gram for our unit of mass for smaller objects.**

A steel block has a mass of 2,355 grams and a volume of 300 cubic centimeters. What is its density with correct units?

A gold bar has a mass of 1,449 grams and a volume of 75 cubic centimeters. What is its density with correct units?