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Density Lab Report #1

RESEARCH QUESTION

How are density units determined?
What is the real-world application of density?

INTRODUCTION

Density is defined mathematically as the ratio of a substance's mass and volume:

$$P = \text{mass} / \text{volume}$$

It uses derived units; in chemistry, the derived units are usually g/mL or g/cm³. The latter is equivalent to the former because 1 mL = 1 cm³.

PROCEDURES

First, we measured the mass of the grey plastic PVC sample using an electronic scale. We filled our graduated cylinder with 50 mL of water and then slid the sample into the cylinder. We then measured the new volume of the water, being careful each time to measure at the meniscus. Next, we subtracted these two volumes to obtain the sample's volume. The sample's mass was divided by its volume to obtain density. Each lab group then announced their findings and a comparison of these was made.

DATA/OBSERVATIONS

1. The mass of the PVC is 5.30
2. The volume of H₂O in the cylinder was 51.0 mL
3. The new volume of H₂O in the cylinder after we placed the PVC in was 55.0 mL
 $55.0 - 51.0 = 4.0 \text{ mL}$
 $\frac{5.30}{4.0} = 1.325 \text{ mL}$

CONCLUSION

These units of density are determined by the units used for mass and volume and then dividing those units with their respective quantities. These are derived units renowned by computation.

Density is a physical trait that determines if an object will sink or float in a liquid. If the object's density is greater than the liquid's density, it sinks. If the object's density is less than the liquid's density, it floats. The PVC had a greater density than the H₂O, and therefore it sank.