Density Worksheet Answer Key PDF

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Part 1: Foundational Knowledge

What is the formula for calculating density?

undefined. Density = Mass + Volume
undefined. Density = Mass / Volume ✓
undefined. Density = Volume / Mass
undefined. Density = Mass * Volume

The correct formula for calculating density is Density = Mass / Volume.

Which of the following are common units for measuring density? (Select all that apply)

undefined. g/cm³ ✓
undefined. kg/m³ ✓
undefined. m/s²
undefined. N/m²

Common units for measuring density include g/cm³ and kg/m³.

Define density in your own words.

Density is the mass of a substance divided by its volume.

List two factors that can affect the density of a substance.

1. Factor 1
Temperature

2. Factor 2
Pressure

Factors that can affect density include temperature and pressure.

Part 2: comprehension

If the mass of an object is 200 grams and its volume is 50 cm^3, what is its density?

undefined. 2 g/cm^3

undefined. 4 g/cm^3 ✓

undefined. 5 g/cm^3

undefined. 10 g/cm^3

The density is calculated as 4 g/cm^3.

Which statements are true about the relationship between mass, volume, and density? (Select all that apply)

undefined. Increasing mass while keeping volume constant increases density. ✓

undefined. Increasing volume while keeping mass constant decreases density. ✓

undefined. Density is independent of mass and volume.

undefined. Density is directly proportional to volume.

Increasing mass while keeping volume constant increases density, and increasing volume while keeping mass constant decreases density.

Explain why ice floats on water in terms of density.

Ice floats on water because it is less dense than liquid water.

Part 3: Application

A metal cube has a side length of 2 cm and a mass of 32 grams. What is its density?

undefined. 2 g/cm^3

undefined. 4 g/cm^3

undefined. 8 g/cm^3 ✓

undefined. 16 g/cm^3

The density of the cube is 8 g/cm³.

You have two liquids, A and B. Liquid A has a density of 0.8 g/cm³, and Liquid B has a density of 1.2 g/cm³. Which of the following are true? (Select all that apply)

undefined. Liquid A will float on Liquid B. ✓
undefined. Liquid B will float on Liquid A.
undefined. Both liquids have the same density.
undefined. Neither liquid will float on the other.

Liquid A will float on Liquid B because it is less dense.

Describe a real-world scenario where understanding the density of a material is crucial.

Understanding density is crucial in designing ships to ensure they float.

Part 4: Analysis

Which of the following changes would increase the density of a gas?

undefined. Increasing temperature while keeping pressure constant
undefined. Decreasing temperature while keeping pressure constant ✓
undefined. Increasing volume while keeping mass constant
undefined. Decreasing mass while keeping volume constant

Decreasing temperature while keeping pressure constant increases the density of a gas.

Consider a sealed container with a fixed volume. Which factors could lead to an increase in the density of the gas inside? (Select all that apply)

undefined. Adding more gas to the container ✓
undefined. Heating the gas
undefined. Cooling the gas ✓
undefined. Removing some gas from the container

Adding more gas to the container or cooling the gas can increase its density.

Analyze how the concept of density is applied in designing ships to ensure they float.

Density is crucial in ship design to ensure that the ship's overall density is less than that of water.

Part 5: Evaluation and Creation

Which material would be best suited for constructing a lightweight, floating platform?

undefined. Steel (density = 7.8 g/cm³)
undefined. Aluminum (density = 2.7 g/cm³)
undefined. Balsa wood (density = 0.16 g/cm³) ✓
undefined. Lead (density = 11.3 g/cm³)

The best material for a lightweight, floating platform is Balsa wood, as it has the lowest density.

Evaluate the following scenarios and select which would result in an object sinking in water. (Select all that apply)

undefined. An object with a density of 0.5 g/cm³
undefined. An object with a density of 1.0 g/cm³
undefined. An object with a density of 1.5 g/cm³ ✓
undefined. An object with a density of 2.0 g/cm³ ✓

Objects with a density greater than 1.0 g/cm³ will sink in water.

Propose a method to measure the density of an irregularly shaped object and justify your approach.

A common method is to use water displacement to measure the volume of the object and then calculate density.