

## **Density Calculations Worksheet**

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Part 1: Foundational Knowledge	
What is the formula for calculating density?	
Hint: Think about how mass and volume relate to each other.	
○ Density = Mass × Volume	
O Density = Mass + Volume	
Opensity = Mass / Volume	
O Density = Volume / Mass	
Which of the following are common units for measuring density? (Select all that apply)	
Hint: Consider the units of mass and volume.	
☐ g/cm³	
☐ kg/m³	
□ m/s²	
☐ Ib/ft³	
Explain why it is important to use accurate measurements when calculating density.	
Hint: Consider the implications of errors in measurement.	
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List two tools commonly used to measure mass and two tools used to measure volume.



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Hint: Think about laboratory equipment.
1. List a tool for measuring mass.
2. List another tool for measuring mass.
2. List another tool for measuring mass.
3. List a tool for measuring volume.
List another tool for measuring volume.
Part 2. Understanding Density
Part 2: Understanding Density
If an object has a mass of 50 grams and a volume of 25 cm³, what is its density?
Hint: Use the density formula to calculate.
○ 0.5 g/cm³
○ 2 g/cm³
○ 25 g/cm³
○ 75 g/cm³
Which of the following statements are true about density? (Select all that apply)
Hint: Consider the properties and implications of density.
Density can help identify a substance.
Objects with higher density than water will float.
<ul> <li>Density is independent of temperature.</li> </ul>
Density is a measure of how much mass is contained in a given volume.
Describe how the water displacement method is used to measure the volume of an irregularly

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Hint: Think about how the water level changes.



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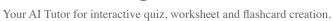
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Part 3: Applying and Analyzing Concepts
A metal cube has a side length of 3 cm and a mass of 81 grams. What is its density?
Hint: Calculate the volume of the cube first.
○ 3 g/cm³
○ 9 g/cm³
○ 27 g/cm³
○ 81 g/cm³
In which scenarios would you need to calculate density? (Select all that apply)
Hint: Think about practical applications of density.
Determining if an object will float in water.
Calculating the speed of a moving car.
ldentifying an unknown metal.
■ Measuring the temperature of a liquid.
A block of wood floats on water. Explain how you would determine its density using available tools and measurements.
Hint: Consider the tools you have at hand.



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Which factor is most likely to affect the density of a substance?
Hint: Consider physical properties of materials.
○ Color
○ Temperature
Shape
○ Texture
How does temperature affect the density of a substance? (Select all that apply)
Hint: Think about the relationship between temperature and volume.
☐ Increasing temperature generally decreases density.
☐ Decreasing temperature generally increases density.
☐ Temperature has no effect on density.
Density remains constant regardless of temperature changes.
Analyze the relationship between density and buoyancy, and explain why some objects float while others sink.  Hint: Consider the principles of buoyancy.
Part 4: Synthesis and Reflection
Which of the following materials would you expect to have the highest density?
Hint: Think about the properties of different materials.
○ Air
○ Water
○ Iron
○ Wood





apply)	
Hint: Consider the density of each object compared to water.	
☐ A plastic ball with a density of 0.8 g/cm³	
☐ A metal bolt with a density of 7.8 g/cm³	
☐ A wooden block with a density of 0.6 g/cm³	
☐ A glass marble with a density of 2.5 g/cm³	
Design an experiment to compare the densities of two unknown liquids. Describe the steps you would take and the equipment you would use.	I
Hint: Think about how you would measure and compare densities.	
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