

Lesson 3: Density Predictions

Science Focus Question

Can the density of a substance be used to predict whether it will sink or float in another substance?

Getting Started

Table 1: Results of Floating and Sinking Observations

Substance	Density (g/cm ³)	Predictions (Float or Sink?)	Prediction Reason	Results (Float or Sink?)
Wax Block				
White Plastic Block				
Transparent Plastic Block				
Aluminum Block				
Steel Screw				
Copper Cylinder				
Nylon Spacer				
Water				

2. Describe the relationship between the density of a substance and whether it floats or sinks in water. _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Inquiry 3.1

Using Density to Make Predictions

Table 2: Calculating Density

A	B	C	D	E	F
Liquid	Volume of liquid (ml)	Mass of graduated cylinder (g)	Mass of graduated cylinder with liquid (g)	Mass of liquid (g)	Density of liquid (g/ml)
Vegetable Oil					
Corn Syrup					
Water	25ml	X	X	X	

Prediction

Explain what you **predict** will happen when you **combine** the vegetable oil, corn syrup, and water? _____

Before you combine the liquids, fill in the prediction cylinder below. After completing lab step 7, fill in the observation cylinder below.

Prediction Cylinder

Observation Cylinder

Laboratory Questions

1) Do the liquids mix together or form distinct layers? _____

2) What is the relationship between the density of a liquid and its position in the graduated cylinder? _____

Results

Table 3: Density Column Predictions

Substance	Density (g/ml)	Predictions	Prediction Reason	Results
Copper Cylinder				
Nylon Spacer				

Record your results in the diagram of the observation cylinder above. Label each object and write down its density.

Reading: Why Did the *Titanic* Float?

1) Even though the titanic was made of steel, which is about 8 times denser than water, it still floated. Explain how this was possible. _____

2) If you were designing a PFD, what factors would you need to take into account?

3) Draw a diagram of a PFD of your own design. Label it, explaining the role of each of its parts, and be sure to include the word “density” somewhere in your explanation.