

Lesson 4: Do Fat and Soap Have the Same Density?

Activity 4.2

Purpose

In this activity we will collect data to calculate the density of soap and fat.

Procedure

Measuring the density of soap:

1. Place the sample of soap on the balance scale. Record the **mass of the soap** on the first data table.
2. Fill a graduated cylinder about half full of alcohol. Record the volume of the alcohol on the first data table.
3. Carefully drop the soap into the graduated cylinder. Record the volume of the soap and alcohol on the first data table.
4. Subtract the volume of the alcohol from the volume of the soap and alcohol to find the volume of the soap. Record the **volume of the soap** on the first data table.
5. Divide the **mass of the soap** by the **volume of the soap** to find the **density of the soap**.

Measuring the density of fat:

1. Place the graduated cylinder of fat on the balance scale. Record the mass of fat and graduated cylinder on the second data table.
2. Read the mass of the empty graduated cylinder on the label. Record the volume of the empty graduated cylinder on the second data table.
3. Subtract the mass of the empty graduated cylinder from the mass of the fat and the graduated cylinder to find the **mass of the fat**. Record this on the second data table.
4. Look at the amount of fat that is in the graduated cylinder. Record the **volume of the fat** on the second data table.
5. Divide the **mass of the fat** by the **volume of the fat** to find the **density of the fat**.

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Data Table 1

Quantity	Measurements
Mass of Soap	
Volume of Alcohol	
Volume of Alcohol and Soap	
Volume of Soap	
Density of Soap	

Data Table 2

Quantity	Measurements
Mass of Fat and Graduated Cylinder	
Mass of Empty Graduated Cylinder	
Mass of Fat	
Volume of Fat	
Density of Fat	

Conclusion

In past labs you may have concluded that soap and fat are different substances. Which quantities in your data tables from this lab can be used to support that claim? Which quantities cannot? Explain why.

If you measured a large bar of soap and compared it to the measurements you made today, will their mass and volumes be the same? Would their densities be the same?
