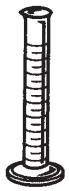
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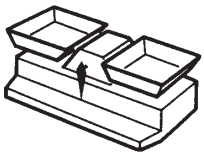
Investigate Log

Measuring the Densities of Liquids

Materials



graduate (cylinder)



balance



water



corn syrup



vegetable oil

Procedure

1. Make sure the cylinder is empty, clean, and dry. Then use the balance to find its mass. **Record** the mass.
2. Add 10 mL of water to the cylinder. **Measure** and **record** the mass of the graduate cylinder. Empty and dry the cylinder again.
3. Repeat Step 2, using 10 mL of vegetable oil.
4. Repeat Step 2, using 10 mL of corn syrup.
5. Subtract the mass of the empty cylinder from each of the masses you **measured** in Step 2. **Record** each result.
6. To find the densities, divide the mass of each liquid by its volume, 10 mL. **Record** and **compare** the densities.

Liquid	Mass (cylinder only) (g)	Mass (cylinder and liquid) (g)	Mass (liquid only) (g)	Volume (mL)	Density (g/mL)
Water				10	
Corn syrup				10	
Vegetable oil				10	

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Draw Conclusions

1. Which liquid has the greatest density? Which has the least? Compare the amount of matter in each liquid.

Corn syrup has the greatest density, and oil has the least. Students should understand that these results show that the corn syrup has more matter, or particles, than the oil or the water.

2. **Inquiry Skill—*Display Data*** Display data by making a bar graph that shows the density of each liquid you measured.

Students' bar graphs should show the liquids on the *x*-axis and the density measurements on the *y*-axis.

Inquiry Skill Tip

To **display data**, choose the appropriate graph for the data. Line graphs, for example, are useful for showing data that change over time. Bar graphs are useful for comparing objects or groups.

Investigate Self-Assessment	Agree	Not Sure	Disagree
I followed the directions for this investigation.			
I used the graduate and the balance to measure the mass and volume of each liquid.			
I **displayed data** by making a bar graph of the densities.			

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Independent Inquiry

Tint 10 mL of water red. Pour it into the cylinder. Then add 10 mL of corn syrup. Observe what happens. How do you explain your observation?

Materials

- graduate
- water
- red food coloring
- corn syrup

1. Predict what will happen when you put 10 mL of red water and 10 mL of corn syrup in the same graduated cylinder.

   Students may predict that the liquids will mix or that the liquids will form layers.

2. Describe what you observed during the investigation.

   Students should observe that the corn syrup and water formed distinct layers, with corn syrup on the bottom.

3. Use what you have learned about density to explain the results of this investigation.

   The water floats on top of the corn syrup because the water is less dense.

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Melt, Boil, Evaporate

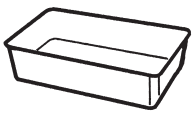
Materials



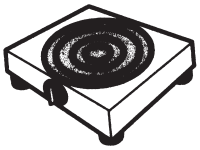
safety goggles



4 ice cubes



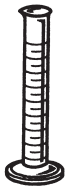
pan



hot plate



pot holders or oven mitts



graduate

Procedure

1. Draw the ice cubes. Describe their physical properties, including how they look and feel.
2. **Caution: Put on safety goggles**. Put the ice in the pan, and carefully heat the pan on the hot plate. If you must touch the pan, use a pot holder. **Predict** the changes you expect to see in the ice cubes.
3. When the ice cubes melt, pour the water into the cylinder. **Record** its volume. Use pot holders as you pour.
4. Pour the water back into the pan. Put it on the hot plate again, and let the water boil. **Predict** what will happen this time.

   Caution: Remember to turn off the hot plate. Remove the pan from the heat before it is dry. Place it on a burn-proof surface.

Description:	
Prediction:	
Volume:	
Prediction:	

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