

EXPLORING AND DISCOVERING WHAT IS DENSITY? RECORD SHEET

Part I: Combining Different Liquids

Exploration questions

When water, corn syrup, and oil are added to the same container, will they mix or separate? If they separate, which liquid will be on top? In the middle? On the bottom? Will the order of liquids depend on the amount of each liquid that is added?

Predictions and explanations

1. In what order would you expect the following liquids to arrange themselves if you put 10 ml of each in a single container: corn syrup, oil, water?

Top _____ Middle _____ Bottom _____

Explanation:

2. In what order would you expect these same liquids to arrange themselves if you increased the amounts to 25 ml of each?

Top _____ Middle _____ Bottom _____

Explanation:

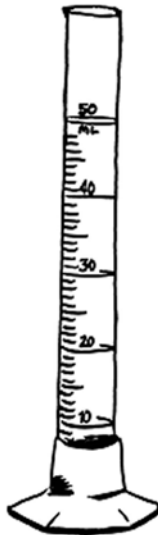
3. In what order would you expect the liquids to arrange themselves if you combined different amounts of each?

Top _____ Middle _____ Bottom _____

Explanation:

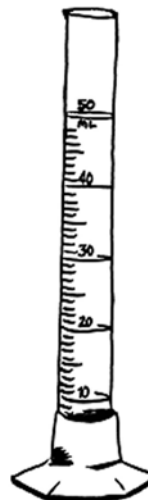
Data

1. Use the outline of this graduated cylinder to show how the liquids appeared when you combined 10 ml of each. Be sure to label each liquid.



2. Use the outline of this graduated cylinder to show how the liquids appeared when you added 25 ml of each. Make sure to label each liquid.

3. Use the outline of this graduated cylinder to show how the liquids appeared when you added different amounts of each. Make sure to label each liquid.



Questions

1. *Describe what happened when you put 10 ml of water, oil, and corn syrup into the same container.*

2. *Look back at your predictions for combining different amounts of each liquid. What really happened when you combined 5 ml of corn syrup, 25 ml of oil, and 10 ml of water? Why do you think that this happened?*

3. *What do you think would happen if you combined 5 ml of oil, 100 ml of water and 50 ml of corn syrup? Why?*

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Part II: Exploring Mass and Volume

My Group's Data Table

Measurements	Liquid		
	Water	Oil	Corn Syrup
Mass of cylinder and liquid			
Mass of cylinder			
Mass of liquid			
Volume			
Mass/Volume			

Class Group Data Table

Group	Density of Different Liquids		
	Water	Oil	Corn Syrup

Questions

1. *When you divided the mass of a liquid by its volume, you were determining that liquid's density. Density is the amount of mass an object or a material has per unit of volume. Which of the three liquids has the greatest density? The smallest density? How do you know?*

2. *How do these findings explain the results from the last investigation, when you combined different quantities of oil, water, and corn syrup in the same container?*

3. *Did every group get the same density for water? For oil? For corn syrup? Why or why not?*

LOOKING CLOSER**HOW DO TEMPERATURE DIFFERENCES INFLUENCE DENSITY-DRIVEN CURRENTS? RECORD SHEET****Exploration questions**

What will happen when cold food coloring is added to room temperature water?

What will happen when hot food coloring is added to room temperature water?

Prediction and explanation

1. When you add cold food coloring to room temperature water, what do you think will happen? Do you think it will move vertically? Horizontally? Explain your reasoning.

2. When you add hot food coloring to room temperature water, what do you think will happen? Do you think it will move vertically? Horizontally? Explain your reasoning.

Data

	Draw the Water's Path	Direction of Vertical Movement, if any	Speed of Vertical Movement, if any	Direction of Horizontal Movement, if any	Speed of Horizontal Movement, if any
Cold water to room-temperature water					
Hot water to room-temperature water					

EXPLORING AND DISCOVERING: WHAT IS DENSITY? CHECK FOR UNDERSTANDING RECORD SHEET



What is the main reason that this label has the instructions "Shake well before serving"?

- a. Chemical changes occur when different liquids are mixed.
- b. Salt does not quickly dissolve in a mixture.
- c. Oil does not easily mix with vinegar.
- d. Solutions containing suspended air have fewer calories.

Why did you make that choice?

