Lesson: Lava Lamp Experiment	Name:
Teacher:	Date:

Exploring Density and Chemical Reactions

Part A: Multiple Choice (Choose the best answer)

1. Which liquid is **densest** in the Lava Lamp experiment?
   A. Vegetable oil
   B. Water
   C. Vinegar
   D. Food coloring
2. Why does vegetable oil float on water?
   A. It reacts chemically with water
   B. It is less dense than water
   C. It is heavier than water
   D. It mixes evenly with water
3. What type of reaction occurs when baking soda is added to vinegar?
   A. Physical reaction
   B. Acid-base reaction
   C. Oxidation reaction
   D. Combustion reaction
4. What gas is produced during the reaction between baking soda and vinegar?
   A. Oxygen
   B. Hydrogen
   C. Carbon dioxide
   D. Nitrogen
5. What is the purpose of adding food coloring?
   A. To change the density of liquids
   B. To make bubbles rise faster
   C. To make the reaction visually striking
   D. To stop the chemical reaction

Part B: True or False

6. ___ The oil sinks below the water because it is denser.
7. ___ The CO_2 bubbles rise because gas is less dense than the liquids.
8. ___ Vinegar reacts with baking soda to produce water, carbon dioxide, and sodium acetate.
9. ___ This experiment demonstrates both density differences and a chemical reaction.
10. ___ The layering of liquids is not affected by density.

Part C: Short Answer

11. Describe what happens to the bubbles after they reach the top of the oil layer:

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12. Explain why the vinegar-water mixture sinks or floats when poured into the oil:

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13. What does this experiment teach you about gases and their behavior in liquids?

Part D: Fill-in-the-Blank

14. The reaction between baking soda and vinegar produces _____ gas.
15. Density is a measure of how much _____ is contained in a given volume.

Answer Key – Suggested Answers

Multiple Choice:

1. B – Water
2. B – It is less dense than water
3. B – Acid-base reaction
4. C – Carbon dioxide
5. C – To make the reaction visually striking

True/False:

6. False – Oil floats because it is less dense than water
7. True
8. True
9. True
10. False – Layering is affected by density

Short Answer:

11. Bubbles rise through the oil because CO_2 gas is less dense than the liquids; they carry small amounts of colored water upward.
12. Vinegar-water mixture may sink or layer depending on its density relative to oil; water is denser and sinks below oil.
13. Gases are less dense than liquids and rise, forming bubbles that move through denser substances.

Fill-in-the-Blank:

14. Carbon dioxide
15. Mass