

Name: _____

Partner(s): _____

DENSITY INVESTIGATION of UNKNOWN LIQUIDS

Objective: To determine the densities of three different unknown liquids.

Materials: Triple Beam Balance
1 – 100 ml Graduated Cylinder
Liquid Gravitational Dropper
50 ml beaker of Liquid A
50 ml beaker of Liquid B
50 ml beaker of Liquid C
Cork
Rubber
Food Coloring (Blue and Red)

Part A

Procedure: Write a detailed procedure outlining the steps you must take to solve the lab objective. Record all of your measurements on the Data Table provided. Note that the recommended sample volume of 20 ml is already stated in the Data Table. Be sure to include this volume in your procedure steps.

DATA TABLE 1

| Sample | Graduated Cylinder Mass (g) (A) | Volume of Sample (ml) (B) | Graduated Cylinder + Sample mass (g) (C) | Sample Mass (g) (D) = C-B | Sample Density (g/ml) (E) = D÷B |
|-----------------|---|---|--|---|---|
| Liquid A | | 20 ml | | | |
| Liquid B | | 20 ml | | | |
| Liquid C | | 20 ml | | | |

Part B

Procedure:

1. Gently place the small piece of rubber into the cylinder with the three liquids.
2. Observe where the rubber piece settles in the cylinder.
3. Based on the settling location of the rubber piece, relative to the three liquids,
 - a. Is the density of the rubber **more** or **less** dense than the density of:
Liquid A? _____
Liquid B? _____
Liquid C? _____
4. Gently place the small piece of cork into the cylinder with the three liquids.
5. Observe where the cork piece settles in the cylinder.
6. Based on the settling location of the cork piece, relative to the three liquids,
 - a. Is the density of the cork **more** or **less** dense than the density of:

Liquid A? _____

Liquid B? _____

Liquid C? _____
7. Using the picture of the graduated cylinder on the right margin of this page, sketch all materials (liquids, rubber, cork) as they appear in your graduated cylinder to the correct volume.

8. List all materials (liquids, rubber, cork) in order of increasing density:

9. If the size of the cork is increased, what will be the effect upon its density?

10. If the temperature of the liquids is increased, what will be the effect upon their densities?

11. Obtain and record below the actual densities of the liquids from your instructor.

Blue Colored Fresh Water: _____

Seawater: _____

Red Colored Isopropyl Alcohol: _____

12. Determine the percent deviation using your calculated density values from Part A. Identify each of the liquids on the lines below based on their density values.

a. Liquid A is: _____

i. Percent Deviation (Show all Work)

b. Liquid B is: _____

i. Percent Deviation (Show all work)

c. Liquid C is: _____

i. Percent Deviation (Show all Work)

