

Name: _____ Period: _____ Date: _____

Activity 14 – 2: Glass Evidence – Density and Refractive Index

Background: In this activity, you will be asked to determine the density and refractive index of glass found at the crime scene and the density and refractive indices of glass found on suspects. If these two characteristics do not match, you might be able to disqualify a suspect. Note glass is class evidence.

Purpose:

Procedure:

Part 1. Observation of Glasses

Observe the glasses collected from each suspect. Write your observaton.

Part 2. Density of Glasses

- a. Take the mass of one type of glass beads using the electronic balance. Record the mass.
- b. Place small amount of water in the graduated cylinder about 3mL (initial volume).
- c. Place all of the same type beads in the graduated cylinder and read the volume (final volume). Determine final volume by subtrating initial from final volume. Record.
- d. Divide mass by volume to obtain density of each glass type of glass.

Part 3. Refractive Index of Glasses

- a. Pour the refractive index solution #1 into the cup from the vial.
- b. Place one type of glass beads. Write your observation (visible – appears larger or smaller, disappers).
- c. Pour the refractive index solution #1 back into the vial.
- d. Place the glass beads on a paper towel, clean, and place back in the vial.
- e. Repeat the procedure for second and third types of beads.

- f. Repeat steps a – e for Refractive Index solution #2 and #3 for all glass beads.

Data :

Table 1. Observation of Glass

	Type of Glass	Observation
Suspect 1 (S1)	Borosilicate	
Suspect 2 (S2)	Flint	
Suspect 3 (S3)	Soda-lime	
Crime Scene		

Table 2. Density of Glass

Sample	Mass (g)	Volume (mL)	Density (g/mL)
S1 Borosilicate			
S2 Flint			
S3 Soda-lime			
Crime Scene			

Table 3. Refractive Index

	Refractive Index Solution #1	Refractive Index Solution #2	Refractive Index Solution #3
S1 Borosilicate			
S2 Flint			
S3 Soda-lime			
Crime Scene			

Analysis:

1. Did the density of the glass found on any of the four suspects match the density of the glass found at the crime scene? Explain your answer.

2. Explain why glass is considered a class evidence.

Conclusion: