FLINN SCIENTIFIC

Name_____

Earth Science Density Kit Worksheet

Data Table 1

	Length (cm)	Width (cm)	Height (cm)	Volume (cm^3)	Mass (g)	Density (g/cm^3)
Cube 1						
Cube 2						
Bar						

Data Table 2

Sphere	Observations	Mass (g)	Initial Volume of Water (mL)	Volume of Water & Sphere (mL)	Volume of Sphere (cm^3)	Density (g/cm^3)
1						
2						

Data Table 3

Mineral Sample	Mass (g)	Initial Volume of Water (mL)	Volume of Water & Mineral Sample (mL)	Volume of Mineral Sample (cm^3)	Density (g/cm^3)
1					
2					
3					

Post-Lab Questions

Part 1

1. How do the densities of Cube 1, Cube 2, and the Bar compare?

2. From the data collected, are any or all of the three objects (Cube 1, Cube 2, Bar) composed of the same material? How do you know?

3. Use the density table below to identify the composition of the objects.

Density of Common Substances (at 20 °C) g/cm^3			
Gold	19.30	Aluminum	2.70
Lead	11.40	Glass	2.60
Copper	8.92	Cork	0.24
Steel	7.87		

Likely Identity

Cube 1 _____

Cube 2 _____

Bar _____

4. Once each object has been identified, use the following equation to determine the accuracy of your calculated density measurements. Use the equation below.

$$\text{Percent Error} = \frac{|\ \text{Calculated Density} - \text{Actual Density}\ |}{\text{Actual Density}} \times 100 = \_\_\_\_\_$$

5. What are some possible errors in the density determination?

Part 2

6. Was the same amount of water displaced by each of the spheres? Why or why not?

7. Given your results, are the two spheres composed of the same material? Explain.

8. What is the composition of the spheres? Use the density chart from Question 3 to determine the answer.

Part 3

9. Compare the densities of the mineral samples. Do the shapes of the minerals have any effect on their densities?

10. If the density of a mineral ten times the size of one of the samples you tested was measured, would it have the same density as the smaller mineral? Explain.

11. What are some possible sources of error when measuring the density of the mineral samples by water displacement?

12. In general, which method (direct measurement and calculation or displacement) do you think gives the best volume measurement? Why?