



/30

Name

Period

Seat #

Tootsie Rolls, Pennies, and Blocks, Oh My!

PURPOSE:

The purpose of this lab is to discover different ways to calculate density in the laboratory, as well as to determine if density does, or does not, change based on the identity and/or shape of the material.

HYPOTHESIS: - what do you expect & why. Does NOT need to be an "if then" statement!

EQUIPMENT and MATERIALS:

Pennies (10 pre-1982 & 10 post-1982)

Large & small Tootsie Rolls

Ruler

Graduated Cylinder (100mL)

Water

Blocks

PROCEDURES: - record any data you take in the table below!!!!

- Using the items on your table, calculate the density of the each block. **Do NOT get them wet!**
- Using the items on your table, calculate the density of the tootsie rolls. **Do NOT use a ruler!**
- Using the items on your table, calculate the density of the pennies.

MAKE SURE TO KEEP THE PRE-1982 & POST-1982 PENNIES SEPARATE!

OBSERVATIONS/DATA:

GOLD COLORED Block	SILVER COLORED Block
SMALL Tootsie Rolls	LARGE Tootsie Rolls
PRE-1982 Pennies	POST-1982 Pennies

CALCULATIONS: (SHOW ALL WORK AND UNITS!!!)

GOLD COLORED Block	SILVER COLORED Block
SMALL Tootsie Rolls	LARGE Tootsie Rolls
PRE-1982 Pennies	POST-1982 Pennies

ANALYSIS:

- 1) What do you notice about the densities of the **BLOCKS? WHY?**
- 2) What do you notice about the densities of the **TOOTSIE ROLLS? WHY?**
- 3) What do you notice about the densities of the **PENNIES? WHY?**

APPLYING LAB CONCEPT TO PRACTICE PROBLEMS – Solve the following density problems on the lined notebook paper of page _____. This must be finished at the same time the lab handout is due.

Q #	<i>Answers are in parenthesis, but do not have units! You must show your work and include units!</i>
1	What is the equation for density?
2	If an object weighs 34.8-grams and has a volume of 22.8-mL, what is this objects density? (1.53)
3	A 150.0-mL balloon has 3.3-g of helium inside of it, what is the density of the helium? (0.022)
4	What is the density of an unknown metal weighing 120.0-g and taking up 58.3-cm ³ of space? (2.06)
5	Define Density in words, not an equation.
6	Most of the buildings on the Indiana University campus are made of limestone. Limestone has a density of 2.72 g/cm ³ . What is the mass of a 24.9 cm ³ block of limestone? (67.7)
7	Find the <u>volume</u> of a liquid which has a density of 1.85-g/mL and ‘weighs’ 5.56 g. (3.01)
8	Find the <u>mass</u> of 3.8-mL mercury in a thermometer. The density of Hg is 13.5-g/cm ³ (51)
9	What is the volume of a piece of tungsten if its density is 19.3-g/mL and the mass of the tungsten is 0.2305-kg? (11.9)
10	Write and solve your own density problem.