Lab – Density/ Potato Lab

Objective: Students will examine the scientific view of the nature of matter. Students will be able to calculate density when given a means to determine a substance's mass and volume.

Hypothesis:

_____

_____

Materials:

- Medium to large potato per group
- plastic knife and cutting board to prep potatoes
- A couple of buckets filled with water
- Goggles
- Scales with a protective piece of plastic or small foam plate
- Calculator

Procedure:

1. Carefully cut the potato into a *rectangular prism*, making sure there is no skin left on the piece of potato and that sides are parallel and square.
2. Record, in a data table, the length, width, and height of the potato, measuring to the closest tenth of a centimeter.
3. Calculate the volume of the potato and record it in another column.
4. Using a balance, the piece of potato should be massed and the mass recorded in the table as well.
5. **Write a prediction as to whether they believe the potato will sink or float.**
6. Test your prediction.
7. Cut the potato in half. Repeat 2-3 two more times, being sure you first make a prediction prior to placing the potato into the bucket of water.
8. Cut the potato to the size where they finally think they can get it to float. It will probably get it too small to measure its dimensions accurately, so no measurements are necessary.
9. Calculate density for each sample size and record answer on your data table.

Data Sheet:

Predict: Can you make a potato float in water? Why?

_____

_____

Observe:

Potato piece	***Mass (g)***	***Length (0.1 cm)***	***Width (0.1 cm)***	***Height (0.1 cm)***	***Volume LxWxH (0.1 cm^3)***	***Prediction: Will it sink or float?***	***Observation: Did it sink or float?***	***Density Mass/ vol***
#1								
#2								
#3								
#4								

Conclusion:

- What seems to be the relationship between mass and volume for the potato?

_____

_____

- What do you think this relation is called? _____
- What happens to the density of the potato when the potato is cut smaller?

_____

_____

- Does the volume of the sample change the density? Does the mass of the sample change the density?_____

_____

- What do the results of cutting the potato very small say about the density of a substance?

_____

_____

- Why were the calculations of density not *exactly* the same for the different pieces of potato?

_____

_____

- What can you say about the density of a substance? Is density dependent on the size of the sample? Why or why not?

_____

_____

TOD Assessment

Name: _____ Class Period: _____

Answer the following question: “Elaborate on the relationship between the property of a substance and its size?” Do not write in first or second person (Don’t say me, I, we, you).

_____

_____

_____

_____

_____

_____

_____

_____

_____

TOD Assessment

Name: _____ Class Period: _____

Answer the following question: “Elaborate on the relationship between the property of a substance and its size?” Do not write in first or second person (Don’t say me, I, we, you).

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____