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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Partner(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Determining the Density of Tomato Juice

Skills: Planning and Conducting

Purpose: To determine the density of tomato juice.

Materials: Tomato Juice, 25ml graduated cylinder, triple beam balance

Procedure:

1. Determine the mass of an empty graduated cylinder. Record on line below.
2. Add 5 mL of tomato juice to the graduated cylinder and determine the mass of tomato juice + graduated cylinder.
3. Add another 5 mL (total = 10 mL) of tomato juice to the cylinder and determine the mass of tomato juice + graduated cylinder.
4. Add another 5 mL (total = 15 mL) of tomato juice to the cylinder and determine the mass of tomato juice + graduated cylinder.
5. Determine the mass of tomato juice only for step 2-4 and then find the density (show all your work in the table).
6. Wash out the cylinder and hang on the drying rack. Put everything away.

Observations:

Mass of empty graduated cylinder: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Volume of tomato juice | Mass of tomato juice + graduated cylinder | Mass of tomato juice only | Density of tomato juice (show all your work) |
| 5 mL |   |   |   |
| 10 mL |   |   |   |
| 15 mL |   |   |   |

Questions: (Show all your work.)

1. Calculate the **average density** for your tomato juice sample.
2. Suppose an empty graduated cylinder has a mass of 55 g. When 27 mL of an unknown liquid is added the mass of the graduated cylinder + liquid is now 108 g. Calculate the **density of the unknown liquid**.
3. What happens to the density of the unknown liquid above when only HALF the amount is used? Justify your answer.
4. Evaluate: Were your density calculations EXACTLY the same every time? What could account for any differences?
5. Self Assess: Give yourself a score from 1-4 (4 being best) on how well you participated in conducting this investigation.