

Title: **Mystery Liquid**

Purpose: To use physical properties to identify an unknown liquid.

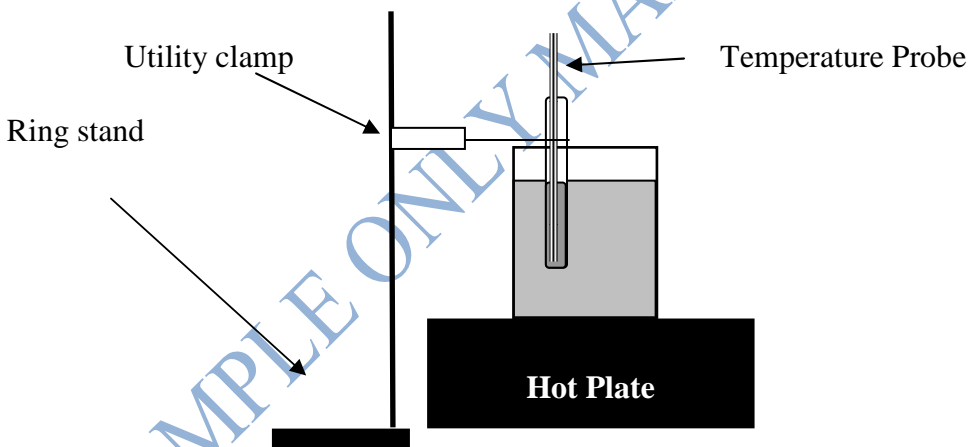
Unknown Sample # _____

Materials:

- Pipette
- Hot Plate
- 400mL Beaker
- Graduated Cylinder
- Lab Quest
- 2 temperature probes
- Electronic Balance
- 5 mL of unknown substance
- Well plate or mixing sheet.
- Small Test tube
- Boiling stone
- Ring Stand
- Utility Clamp

Procedure

Boiling Point Test:



Gather materials

Assemble a hot water bath as shown above

Connect probes and set the labquest to record for 17 minutes with samples every 20 seconds.

Place a boiling stone in the test tube.

Place ~3 mL of unknown liquid in the small test tube.

Turn on the hot plate, and stir the water and the unknown every 20 seconds

Record the boiling point of the unknown liquid in the data table.

Freezing Point:

Set up a cold water bath similar to the hot water bath above.

Remove the hot plate and use ICE water.

Record the Freezing point in the data table (if attained)

Density:

Accurately mass a 25 mL graduated cylinder and record in data table

Accurately measure 25 mL of Unknown liquid and record in data table

Measure the mass of the combined liquid and graduated cylinder and record in data table

Subtract the mass of the graduated cylinder from the mass of the combined liquid and cylinder and calculate the density.

Solubility:

Place 3 drops of liquid in a small test tube.

Add 3 drops of water

Record if the liquids are soluble (they mix) or insoluble (don't mix) in the data table.

Data Table:

Boiling Point	
Freezing Point	
Mass of empty cylinder	
Volume of liquid	
Mass of liquid + cylinder	
Mass of (liquid + cylinder) - cylinder	
Density	
Solubility with water	Solubility with Ethyl Alcohol