

# It's All About Density

## Lab Station 1 — Clear Liquid I

### Materials at Station

Clear Liquid I, 150 mL

Balance

Beaker, 250-mL (to hold liquid)

Graduated cylinders, 100-mL, 2

Paper towels

### Procedure

1. Place a *dry* 100-mL graduated cylinder on a balance and record the mass in grams (to the nearest .01 g).
  2. Carefully pour approximately 60 mL of the Clear Liquid I into the graduated cylinder.
  3. Mass the graduated cylinder again (with the added liquid) and record the mass in grams (to the nearest .01 g).
  4. Place the graduated cylinder on the tabletop. Read the actual volume of liquid to the nearest tenth of a milliliter. Record this volume.
  5. Pour the liquid back into the beaker and thoroughly dry the graduated cylinder.
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## Lab Station 2 — Clear Liquid II

### Materials at Station

Clear Liquid II, 20 mL

Beaker, 100-mL (to hold liquid)

Graduated cylinders, 10-mL, 2

Pipets, 2

Balance

Paper towels

### Procedure

1. Place a *dry* 10-mL graduated cylinder on a balance and record the mass in grams (to the nearest .01 g).
2. Carefully pour approximately 9 mL of the Clear Liquid II into the graduated cylinder. Use a pipet, if necessary.
3. Mass the graduated cylinder again (with the added liquid) and record the mass in grams (to the nearest .01 g).
4. Place the graduated cylinder on the tabletop. Read the actual volume of liquid to the nearest tenth of a milliliter. Record this volume.
5. Pour the liquid back into the beaker. Rinse and thoroughly dry the graduated cylinder.

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## Lab Station 3 — White Block

### Materials at Station

White blocks, 2

Metric rulers, 2

Balance

### Procedure

1. Use a metric ruler to measure the length, width, and height of the white block (to the nearest .01 cm). Record these measurements in the data table.
  2. Place the white block on the balance and read the mass. Record the mass in grams (to the nearest .01 g).
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## Lab Station 4 — Foam Block

### Materials at Station

Foam blocks, 2

Metric rulers, 2

Balance

### Procedure

1. Use a metric ruler to measure the length, width, and height of the foam block (to the nearest .01 cm). Record these measurements in the data table.
2. Place the foam block on the balance and read the mass. Record the mass in grams (to the nearest .01 g).

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## Lab Station 5 — Rubber Stopper

### Materials at Station

Rubber stoppers, 2  
Graduated cylinders, 100-mL, 2  
Tap water  
Balance  
Paper towels

### Procedure

1. Place the rubber stopper on the balance and read the mass. Record the mass in grams (to the nearest .01 g).
2. Fill a 100-mL graduated cylinder with approximately 50 mL of tap water. Read the volume to the nearest tenth and record the volume in mL in the data table.
3. Carefully—and without splashing water out of the cylinder—add the rubber stopper to the graduated cylinder by angling the cylinder and slowly sliding the stopper down the side.
4. Read the new volume (water plus rubber stopper) to the nearest tenth. Record the volume in mL in the data table.
5. Pour the water down the drain and dry off the rubber stopper.

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## Lab Station 6 — Glass Sphere

### Materials at Station

Glass spheres, 2	Graduated cylinders, 100-mL, 2
Beaker or cup (to hold spheres)	Tap water
Metric rulers, 2	Paper towels
Balance	

### Procedure. Using Water Displacement Method Technique

1. Place the glass sphere on the balance and read the mass. Record the mass in grams (to the nearest .01 g).
2. Fill a 100-mL graduated cylinder with approximately 50 mL of tap water. Read the volume to the nearest tenth and record the volume in mL in the data table.
3. Carefully—and without splashing water out of the cylinder—add the sphere to the graduated cylinder by angling the cylinder and slowly sliding the sphere down the side.
4. Read the new volume (water plus sphere) to the nearest tenth. Record the volume in mL in the data table.
5. Pour the water down the drain and dry off the sphere.

### Procedure. Using Linear Measurement Technique

6. Use a metric ruler to measure the diameter of the sphere (to the nearest .01 cm). Record this measurement in the data table.

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## Lab Station 7 — Metal Cylinder

*(Note: Perform both procedures for comparison purposes.)*

### Materials at Station

Metal cylinders, 2

Graduated cylinders, 100-mL, 2

Tap water

Metric rulers, 2

Balance

Paper towels

### Procedure. Using Water Displacement Method Technique

1. Place the metal cylinder on the balance and read the mass. Record the mass in grams (to the nearest .01 g).
2. Fill a 100-mL graduated cylinder with ~50 mL of tap water. Read the exact volume to the nearest tenth and record the volume in mL in the data table.
3. Carefully—and without splashing water out of the cylinder—add the metal cylinder to the graduated cylinder by angling the cylinder and slowly sliding it down the side. *(Note: Do not drop the metal piece into the graduated cylinder to avoid cracking the glass.)*
4. Read the new volume (water plus the metal cylinder) to the nearest tenth. Record the volume in mL in the data table.
5. Pour the water down the drain and dry off the metal cylinder.

### Procedure. Using Linear Measurement Technique

6. Use a metric ruler to measure the diameter and height of the cylinder (to the nearest .01 cm). Record these measurements in the data table.