

Density of Liquids

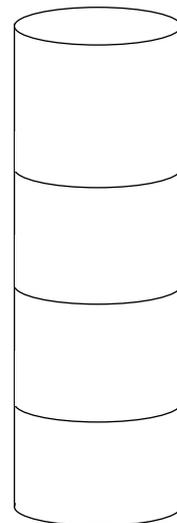
How does density affect how water, vegetable oil, and dish soap layers in a container?

Prediction: How do you think the liquids will layer when poured in a container?

Materials:

50 mL of each liquid: water, vegetable oil, and dish soap
 tall, clear cylindrical container
 graduated cylinder
 scale that measures in grams

Prediction



Procedure:

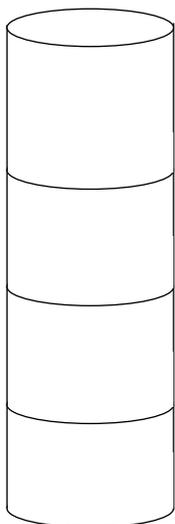
1. Place the graduated cylinder on the scale and press tare.
2. Add 50 mL water to the graduated cylinder and record the mass of the water.
3. Record the volume of the water.
4. Calculate the density of the water.
5. Repeat steps 1-4 for the dish soap and oil.

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

$$1 \text{ mL} = 1 \text{ cm}^3$$

	Water	Dish Soap	Oil
A) Mass of liquid (g)	50.0	50.7	45.1
B) Volume of liquid (mL)	50	50	50
Density of liquid (g/cm ³) (A÷B)	_____ ÷ _____ = _____	_____ ÷ _____ = _____	_____ ÷ _____ = _____

Observed



How do the densities you calculated explain the order of the liquids?

Changing the Density of Water

1. What did the carrot do when you dropped it into the water? sank floated

The carrot is more dense less dense than water.

2. What did the carrot do when you dropped it into the saltwater? sank floated

The carrot is more dense less dense than saltwater.

3. Does adding salt change the density of the water? Yes No

4. How do you know?

5. What would you expect if you placed equal volumes of water and saltwater on opposite ends of a balance?

mass of the water is more than saltwater

mass of the saltwater is more than water

6. How does warm and cold water layer?

cold water on top of warm water

warm water of top of cold water

7. Warm water is more dense less dense than cold water.