



# Density Straws (Guide)

## Leading questions:

- What do you think causes something to sink or float?  
**Explain:** An object or mass will float if its mass is less than the mass of a corresponding volume of the material surrounding it. **Demonstrate** with a cork in water.
- What would it tell you if one liquid could float on another?  
**Explain:** The top liquid is less dense than the bottom liquid.

## What to do:

**Demonstrate and practice:** Have each student practice drawing liquid into a straw using plain water. Emphasize the need to hold a **finger tight** on the top of the straw.

- Dip the tip of a straw into one of the three colored liquids and allow a small amount of the liquid to enter the straw.
- Tightly hold your finger over the top of the straw.
- Lower the tip of the straw into the second liquid.
- Lift your finger to allow the second liquid into the straw. Cover the tip of the straw again and pull it out.

**Explain:** The force of gravity will cause the denser liquid to the bottom layer.

- If the second liquid mixes with the first, empty the straw into the waste jar and start over with a different liquid. If the second liquid remains on the bottom, go to step 6.
- Continue until all three liquids in the straw remain in different layers.

## Summary:

**Density** is a measure of the amount of matter or mass ( $m$ ) contained in a given volume ( $V$ ).

$$D = \frac{m}{V}$$

- Which of the three liquids is the most dense?
- Which is least dense?
- How do you know?

**Explain:** The denser the material, the more it is affected by gravity. The liquids have different densities, making it possible to “stack” them in order in the straw from greatest (on the bottom) to least dense (the top liquid).



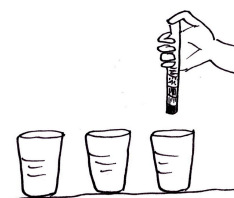
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## Leading questions:

- What do you think causes something to sink or float?
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## What to do:

1. Dip the tip of a straw into one of the three colored liquids and allow a small amount of the liquid to enter the straw.
2. Tightly hold your finger over the top of the straw.
3. Lower the tip of the straw into the second liquid.
4. Lift your finger to allow the second liquid into the straw. Cover the tip of the straw again and pull it out.
  - What do you see? Do the liquids mix or stay in separate layers?
5. If the second liquid mixes with the first, empty the straw into the waste jar and start over beginning with the second liquid. If the second liquid remains on the bottom, go to step 6.
6. Continue until all three liquids in the straw remain in different layers.



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**Density** is a measure of the amount of matter or mass (m) contained in a given volume (V).

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