

Density Experiments

1. Fill a large clear container with water. Set various objects on the table:
 - a. Large and heavy block of wood
 - b. Smaller lighter blocks of wood
 - c. Same sized objects of varying weights
 - d. Penny
 - e. Aluminum foil
 - f. Orange
 - g. Grapes
 - h. Sponge stone and regular stone of equivalent size

Ask children to guess what will float or sink and then try

Explain: Objects sink if they are denser than water and float if they are less dense than water.

What is Density? It is how much of a thing (Mass) occupies same space (Volume).
Density = Mass / Volume.

2. If you can put more Mass in the same Volume then the density increases.
Setup: scale; 3 jars of oil, water and corn syrup; extra oil, water, corn syrup; test tubes for each child; empty jar and stones; block of wood and metal of same size
 - a. Show 3 same sized jars filled with oil, water and corn syrup. Ask children if the space (Volume) of the liquids is the same.
 - b. Let children measure the relative weights of the 3 jars of liquids on the scale and sort by weight. Ask which liquid is denser or less dense than water. Will they float or sink or mix in water? Have each child pour the liquids gently in to the test tubes to find out.
 - c. Ask if empty jar will float or sink. Float jar. Have children increasingly add pebbles in to the jar and float it. Ask if the pebbles are increasing or decreasing the density of the jar.
 - d. Show the objects of same volume and ask children to sort them by density.
3. If you can decrease the Volume for the same Mass then also density increases
Setup: Equal sized Aluminum foils for each child. Mallets, board
 - a. Ask children to make balls of the foils and float.
 - b. Ask them to keep decreasing the volume until the ball sinks
4. Can we increase the density of water?
Setup: 2 beakers of water, salt, grape, food coloring, 3 large test tubes
 - a. Ask children to add salt to one of the beakers
 - b. Ask children to add one color to the plain water and another to the salt water

- c. Pour each in to 2 test tubes.
 - d. Ask children if the grape will float or sink in each test tube and have them try.
 - e. Pour salt water in to the last test tube. Very gently pour the plain water in to the test tube. Very gently place the grape in to the test tube.
5. Show Cartesian diver. Ask them to squeeze it, little one's can hug it. What happens and why?
6. Point children to the floating orange. Ask them to try the same with a peeled orange at home. Will it float or sink?