

Floating Fluids

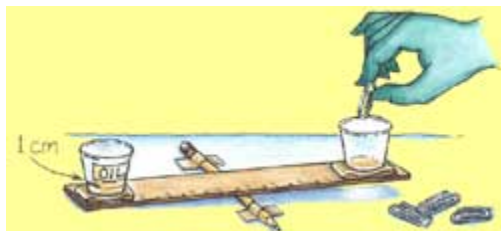
Everyone has seen solid objects float or sink in water. But have you ever seen other liquids float or sink in water? Try this activity and let's see what we can find out!

Materials:

- Vegetable oil
- Water
- Corn syrup (Karo)
- 4 small cups
- Paper clips
- Metric ruler
- Masking tape
- Pencil
- Teaspoon

Procedures:

1. Use your masking tape and pen to label one cup oil, one cup water, and one cup corn syrup. Also, make a mark on each cup at 1 centimeter from the bottom of the cup. Tape the pencil down as shown.
2. Roll two small pieces of tape so that the sticky side is out. Stick each piece of tape to the opposite end of the ruler. Place the ruler on the pencil so the ruler is as balanced as possible. Look at the number on the ruler that is directly over the center of the pencil. Write this number down as your balance point.
3. Slowly and carefully pour vegetable oil into its labeled cup until it reaches the 1 centimeter mark. Place the oil cup on one piece of tape and the empty unlabeled cup on the other. Be sure the ruler is still on the balance point.



4. Add paper clips, one at a time to the empty cup. Count the paper clips until the weight of the paper clips causes the oil cup to lift from the table. Write down the number of paper clips in the chart.
5. How many paper clips did the vegetable oil weigh? _____
6. Repeat these steps to see how many paper clips the water and the corn syrup each weigh.
7. How many paper clips did the water weigh? _____
8. How many paper clips did the corn syrup weigh? _____
9. Place one drop of food coloring into the water and stir to mix. In a narrow clear plastic container, slowly pour the heaviest liquid in first, then the next heaviest, and then the lightest. What did you observe?



Think about this ...

Since you weighed the same amount of each liquid, you can compare their densities. Which liquid was the most dense, the least dense, and in between? If wax is more dense than oil and less dense than water, what would happen if you placed a piece of wax, such as a piece of birthday candle, in your liquids? Try it and see!

Where's the Chemistry?

Density works for liquids in the same way it works for solids. A cubic centimeter of water weighs 1 gram. Since a cubic centimeter of vegetable oil weighs less than 1 gram, oil will float on water. Corn syrup is more dense than water so 1 cubic centimeter of corn syrup weighs more than 1 gram. Therefore, corn syrup sinks in water.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

