Student activity sheet
Activity 7.3

Name: _____

Comparing the density of different liquids

How do the densities of vegetable oil, water, and corn syrup help them to form layers in a cup?

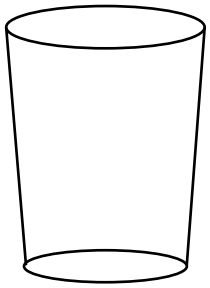
1. In the following procedure you will pour vegetable oil, water, and corn syrup in any order into a cup. Decide with your group which order you will pour the liquids and indicate which you will pour in first, second, and third.

First _____

Second _____

Third _____

Procedure



1. Slowly and carefully pour about about half of the water, corn syrup, and vegetable oil (in the order you chose) into one empty clear plastic cup.

2. Record your observations by drawing in and labeling the cup.

3. Keep your cup of layered liquids. You will need it again at the very end of this activity.

2. Think of the liquids as sinking and floating in water.

   - Which liquid seems to be floating on the water? _____
   - Which liquid seems to be sinking in the water?_____

3. When you think of the liquids as floating or sinking on water, you can make a guess about the density of each liquid compared to the density of water.

   - Which liquid is less dense than water?_____
   - Which liquid is more dense than water?_____

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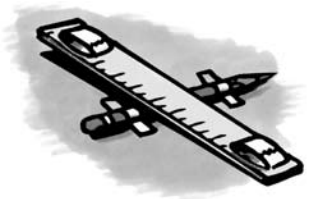
Comparing the density of different liquids (*continued*)

Procedure

1. Use a permanent marker to label 3 small cups **vegetable oil**, **corn syrup**, and **water**. Use your ruler to measure 1 cm up from the bottom of the cup and make a line with the marker.



2. Tape the pencil down as shown. Roll 2 small pieces of tape so that the sticky side is out. Stick each piece of tape to the opposite ends of the ruler.

3. Place the empty vegetable oil cup on one piece of tape and the empty unlabeled cup on the other. Be sure that the edge of the cup comes right to the end of the ruler. Lay the ruler on the pencil so that it is as balanced as possible. (Don't worry if you can't make it balance exactly.) Use a pencil or permanent marker to mark the spot on the ruler directly above the center of the pencil. This is the *balance point*.

4. Remove the vegetable oil cup and very carefully add vegetable oil until the oil reaches the mark on the cup. Replace the cup on the ruler. Be sure the edge of the cup is at the end of the ruler and that the marked balance point is directly over the pencil.

5. Add paperclips, one at a time, to the empty cup on the other end. Count the paperclips until the weight of the paperclips causes the oil cup to just lift from the table. Record this number in the chart below.

6. Repeat Steps 4 and 5 for water and corn syrup.

Liquid	Weight in paperclips
Vegetable oil	
Water	
Corn syrup	

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Name: _____

Comparing the density of different liquids (*continued*)

4. What did you do in the experiment to make sure that you compared *equal volumes* of water, vegetable oil, and corn syrup?

_____

_____

_____

5. Since you used equal volumes of water, vegetable oil, and corn syrup, you can compare the weight of each to find out about the density of each liquid. Use your data from this experiment to list the liquids in order from the *least dense* to the *most dense*.

_____

_____

_____

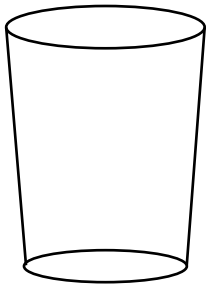
6. How does the density of each liquid explain the layering of each liquid in the cup?

_____

_____

_____

Place a crayon piece, paperclip, piece of pasta, and piece of popsicle stick into your cup of layered liquids.



7. Draw and label the liquids and objects in the cup.

8. Use what you know about density to explain why the objects are positioned where they are.

_____

_____

_____

_____

_____

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