



That Sinking Feeling

Check out the videos of this activity on the [Detective Science, Latest Updates](#) page

Find What You Need..

- Honey
- Water
- Cooking oil
- A narrow drinking glass or jar (a test tube or graduated cylinder is best, if you have one)
- At least 3 different kinds of objects to test for their density; suggestions - a button, a dime, a bead, a bean, a kernel of popcorn, a piece of crayon, a piece of a plastic toy

Please find
a grownup to supervise
this activity.



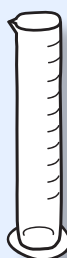
Honey



Water



Cooking oil



Graduated cylinder



3 objects to test for their density

Why would detectives care whether a material floats or sinks in water?

Forensic detectives often have to figure out what happened using tiny clues. For example, a sliver of glass found on a street may give clues about a traffic accident. Scientists would need to test the glass to see if it came from a windshield of a certain car. How do they test glass and other materials? They study properties such as color, mass, and *density*.

Scientists use "density" to describe how much mass an object packs into a certain volume. Objects with high density have lots of material packed into a small space. Density determines something's ability to float or sink. If an object has greater density than the liquid it is in, it will sink. If its density is lower than the liquid, it should float

on or near the surface of the liquid. If the density is the same as the liquid, it will float in the middle of a liquid layer.

Can you predict which materials are denser than others? Try this activity and find out!

Fact:

Most materials are denser as solids than as liquids. But ice is less dense than water. That's why ice cubes float.

Activity Instructions

1. Pour water into your glass or test tube until you have at least one inch of water. The glass should not be more than $\frac{1}{3}$ full.
2. Tilt the glass and gently pour a little oil down the side. Straighten the glass when you have at least an inch of oil.
3. Tilt the glass again and pour honey down the side, until you have about one inch of honey.
6. Gently drop your samples, one by one, into your glass and observe where each object comes to rest.
7. **A fun challenge:** Based on your observations of your three samples, predict where other, untested materials might come to rest. Then test your predictions by dropping new samples into your glass.



Conclusions

4. Collect three or more samples to test from the materials suggested in "Find What You Need" above, or choose your own samples. Try to find things that are all roughly the same size. Some of your pieces – like the bean, may float because they have air in them. By trying more samples you'll get an overall idea of which are the densest objects.
5. Make a prediction: Which sample has the highest density? Which has the lowest?

Which object had the lowest density? The highest? Which liquids were they most similar to in density? What's denser – a bowling ball or the same size ball of cotton candy?

Brain Squeezer:

If an object changes shape,
does it change density? A chunk of
metal sinks into water.
But a huge ship made of metal can float.
Why?



Kids' Science Challenge
Science Projects
are presented by
the award-winning
radio series,
Pulse of the Planet



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