



Viscosity



Education
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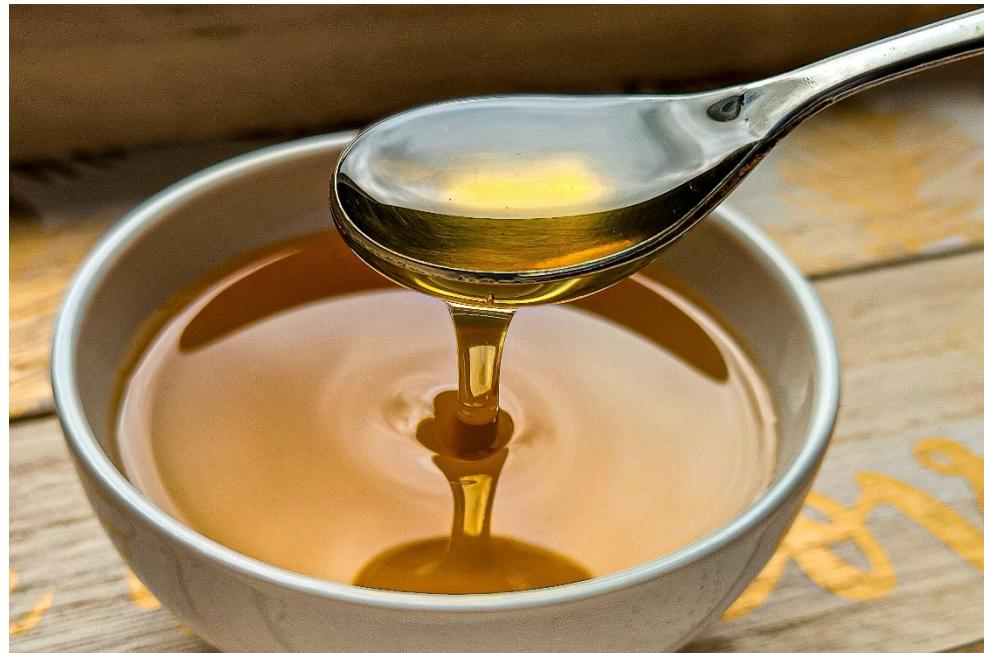
Learning objectives

During this lesson, you will:

- compare the viscosity of different liquids by making careful observations.
- apply your understanding of particles to explain your observations.
- design an experiment.



What words would you use to describe...?



Honey



Water



Defining viscosity

Viscosity is a measure of how difficult it is for a liquid to flow.



Honey has a higher viscosity than water because it is thicker or more gloopy than water.

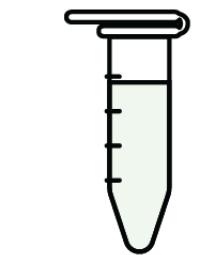


Water is less viscous than honey because the forces of attraction between the water particles are weaker than those between the honey particles.

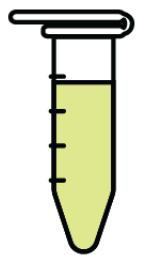
Method

Take one of the tubes provided.

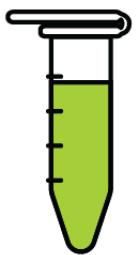
1. Make sure the bubble is at the top and the tube is held vertical.
2. Quickly invert the tube and measure the time it takes for the bubble to reach the top.
3. Repeat this measurement for all the samples.
4. Complete the table provided.



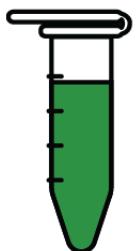
washing-up liquid



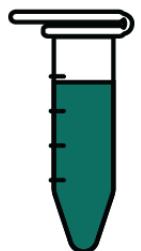
cooking oil



water



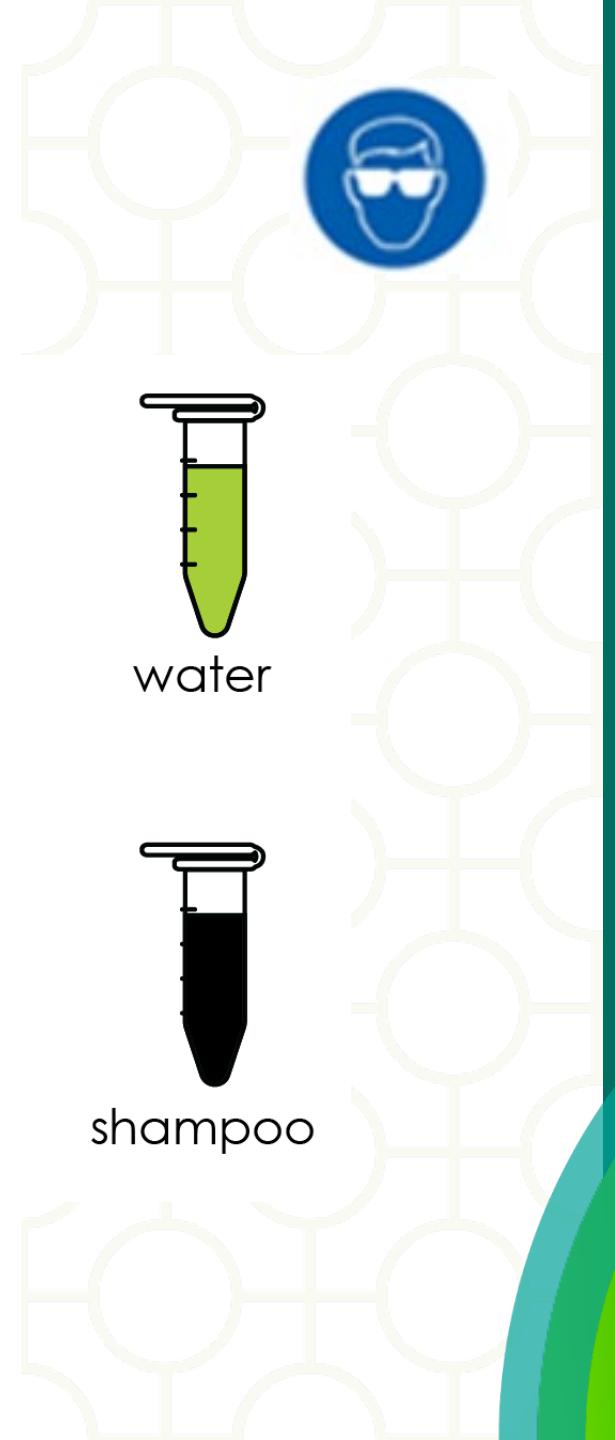
honey



ethanol



shampoo





2 Hold the tube vertically, making sure the bubble is at the top



1 Take a sealed sample tube

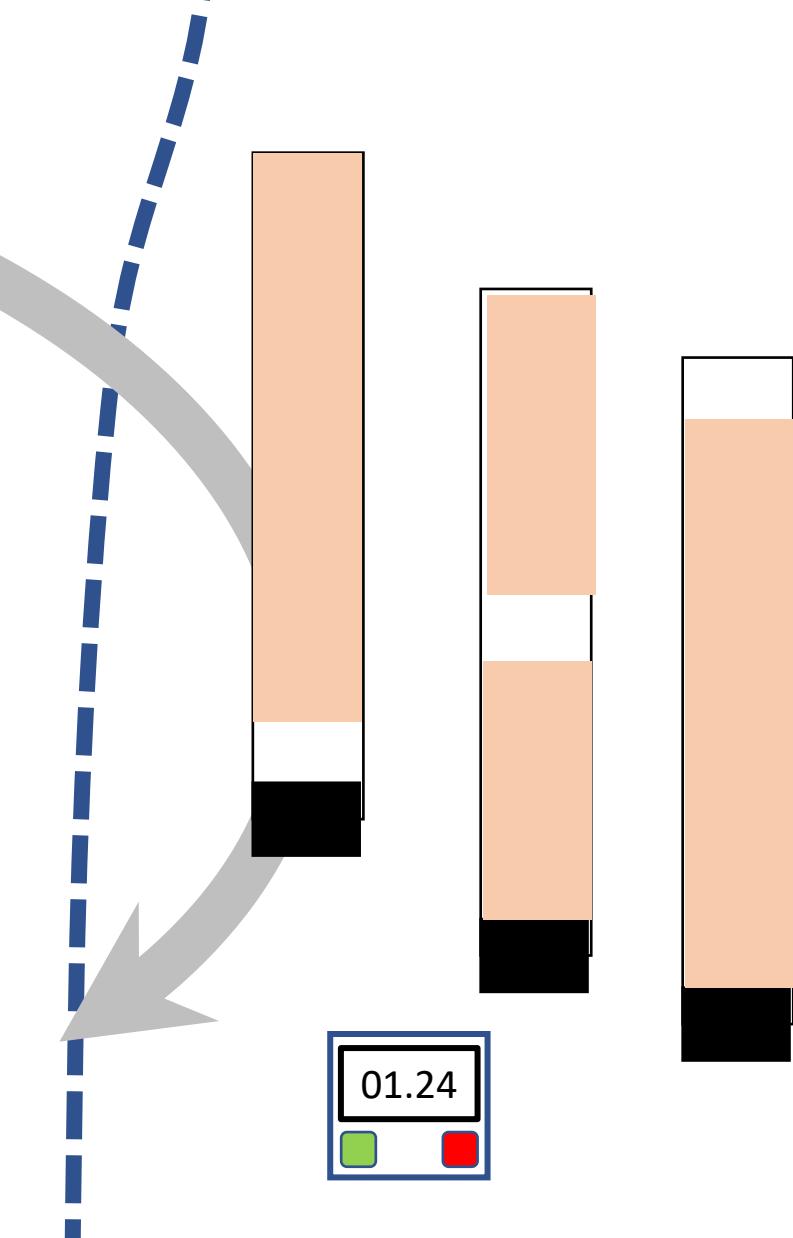
3 Quickly invert tube. Start the stop clock



4 Note the time taken for bubble to reach the top



5 Repeat steps 1 to 4 for all samples





Results table

Liquid	Time taken (s)			Average time (s)
	Test 1	Test 2	Test 3	
Water				
Cooking oil				
Washing up liquid				
Ethanol				
Shampoo or bubble bath				
Honey				

Results table

Questions

1. State the meaning of the word viscosity.
2. Use your results to identify the most viscous liquid. Why did you choose your answer?
3. Use your results to identify the least viscous liquid. Why did you choose your answer?
4. Draw a diagram to show how the particles are arranged in cooking oil.
5. Describe what happens to the particles when a sample of cooking oil is poured into a frying pan.
6. Explain why the viscosity of water is lower than the viscosity of bubble bath.
7. Predict how the viscosity of honey will change as the temperature of the honey is increased. Suggest a reason for your answer.
8. Design an experiment to investigate how the temperature effects the viscosity of a liquid.

Learning objectives

During this lesson, you will:

- compare the viscosity of different liquids by making careful observations.
- apply your understanding of particles to explain your observations.
- design an experiment.

Have you met all of the learning objectives?