



HANDS-ON EXPERIMENTS

FLUID FLOW



Different liquids flow at different speeds. Think about water and chocolate sauce; even when we compare equal amounts, the water flows faster, and covers the surface more quickly. The same goes for different volcanic eruptions. The lava that flows from the volcano can be very runny or very thick. The thickness (or viscosity) and temperature of the lava released during an eruption both determine the shape of the volcano. In this activity we will investigate the thickness of different fluids and predict what shape volcano they would make.

Procedure

You will need a ramp (this can be a sheet of paper secured onto a book propped up on one end of another book), a stopwatch, a hot plate or Bunsen burner, some paper towels (to clear up the mess!) and a range of liquids, ranging from really thick to really runny, e.g. treacle, honey, ketchup, chocolate sauce, water

- Securely attach a piece of paper to a text book and rest one end on a pencil case to form a slope.
- Draw a start line across the paper 2 cm from the highest edge and label this with the liquids you will be testing evenly spaced out above the line.
- Draw a finish line across the paper 2 cm from the bottom edge.
- Drop 2 cm³ of each liquid on the top line by its name at the same time, and start the stopwatch.
- In the table below write the time that each liquid crosses the bottom line.

Name of fluid being tested	Time taken to cross finish line	Finishing place (1st, 2nd, etc)

- Now choose one slow moving liquid and heat it, then time how long it takes to cross the finish line.

Investigation

- Put the liquids in order from fastest to slowest. How does this relate to their thickness? Do you notice a pattern? What is the effect of heating?
- Imagine these liquids were lava from different kinds of volcanic eruption. Can we relate the thickness of lava to the shape of the volcano? THINK alone for 1 minute about what the results can tell us about the shape of volcanoes, then discuss in a PAIR whether you have come up with the same ideas or different ideas. Finally SHARE your thoughts with the class.
- How can we use this experiment to try and explain why Mount Etna is a tall triangle with a narrow base? What was the lava flow like here?

VIDEOS FOR THIS RESOURCE AT:

INTRODUCTION:



Clickable Link:

<https://youtu.be/Yq1RXJ2rRTI>

CONCLUSION:



Clickable Link:

<https://youtu.be/EXkUsHtmzBU>

