



# HANDS-ON EXPERIMENTS

WAVES

While the ExpeditionSevern team are on the water, they will see some small waves even though they're not at sea. Anything that disturbs the water, like a paddle, will make waves.

Waves at sea are actually created by the wind blowing across the surface. There's friction between the wind and the water and this causes the top of the water to begin building up into the **peak** of a wave. As it moves, it leaves behind a low **trough**.

We can see this peak and trough structure of a wave by creating a model of the sea in a bottle. We'll need two substances that are different **densities** so we'll use water and oil.



## The Experiment

What you'll need: A large bottle, food colouring, cooking oil, water  
Optional: Glycerol, Baby oil, make-up remover

1

Half fill the bottle with water and add a few drops of food colouring.

2

Fill the rest of the bottle with oil, try and do it slowly. If the layers mix, you'll have to wait for them to separate.

3

Screw the lid on the bottle and then gently tip it back and forth on its side.

4

You should be able to get some waves to form. Can you identify the peaks and troughs? At the which end are waves higher?

## Further Investigation

- Create wave bottles using different pairs of liquids - do you see a difference in the waves formed?
- Design an experiment to compare the height of the waves to the difference in thickness (called 'viscosity') of the liquids - you'll need to have some way of estimating or measuring the viscosity.



# VIDEOS FOR THIS RESOURCE AT:

INTRODUCTION:



Clickable Link:  
<https://youtu.be/Sxv7rgjEi1c>

CONCLUSION:



Clickable Link:  
<https://youtu.be/mQS-nwPgFzg>

