

Earthquakes and jelly: an architecture experiment

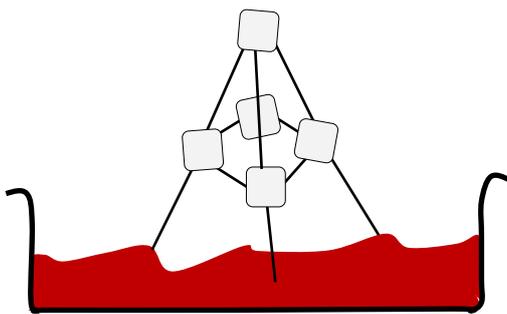
Be an architect and build mini-marshmallow structures in a bed of jelly. Wobble the jelly to simulate an earthquake and see which buildings are strongest!

You will need:

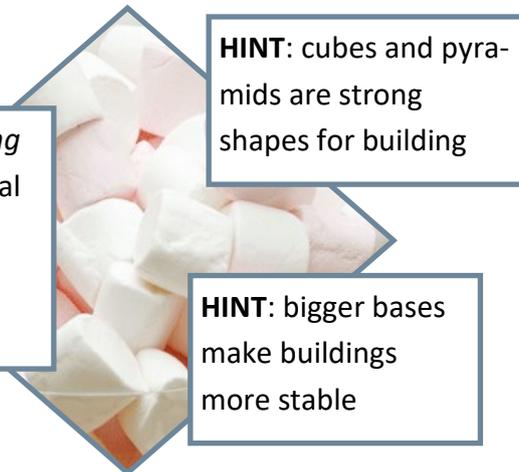
- ⇒ **some jelly**
- ⇒ **a shallow container**
- ⇒ **mini marshmallows**
- ⇒ **cocktail sticks**

What to do:

1. With an adult, make some jelly in a shallow container. Make sure to let it cool and set fully.
2. create houses and other structures out of the mini marshmallows and cocktail sticks.
3. shake the jelly to make an earthquake and watch to see if your structures stay standing or fall down.
4. Redesign and rebuild if they fall over! How can you make your buildings stronger? How? See the hints!



HINT: *cross-bracing* (by adding diagonal cocktail sticks) makes structures stronger



HINT: cubes and pyramids are strong shapes for building

HINT: bigger bases make buildings more stable

What is an earthquake?

Earthquakes are usually caused when rock underground suddenly breaks along a fault. This sudden release of energy causes waves that make the ground shake. Like volcanoes, they happen most often where two tectonic plates of the Earth meet [see map].

Do they happen in Britain?

We sometimes get small earthquakes in the UK. Find the most up-to-date real earthquake data in Britain here:

www.earthquakes.bgs.ac.uk/earthquakes/recent_uk_events.html

Where can I see them?

See some real earthquakes and their effects on YouTube here:

<https://youtu.be/ZMXuFm1opJM>

<https://youtu.be/iGtRko8y4Fo>

Where are they happening now?

A real time worldwide earthquake map can be found here:

<https://seismo.berkeley.edu/seismo.real.time.map.html>

If you enjoyed this activity, you might be interested in the following careers:

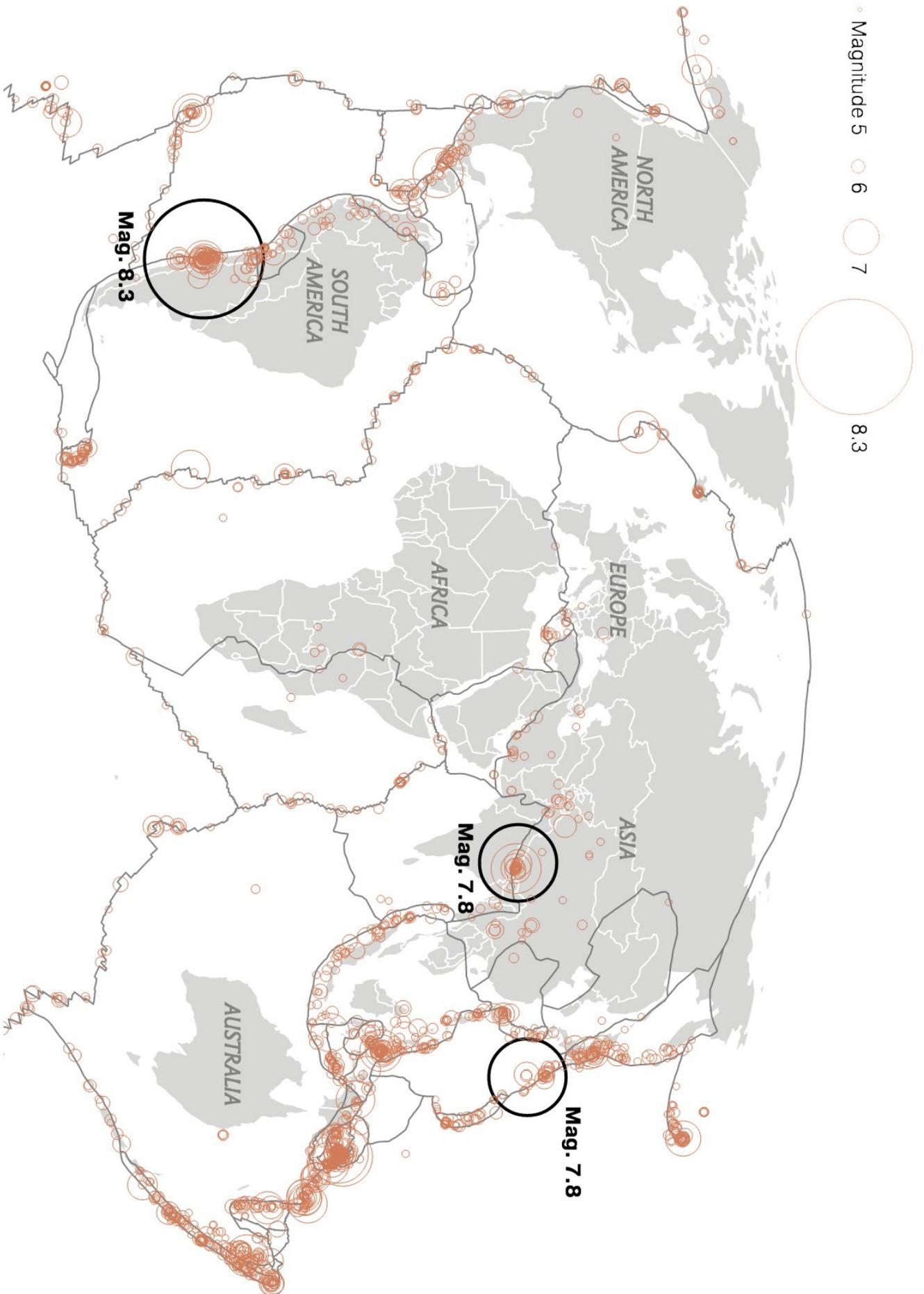
Architect

Structural Engineer

Geologist

For more info, you can go to: www.nustem.uk/primarycareers

Earthquakes and jelly: an earthquake map



Tectonic plates data made available under the [ODC Attribution License](#)
Produced by: National Geographic; Source: US Geological Survey

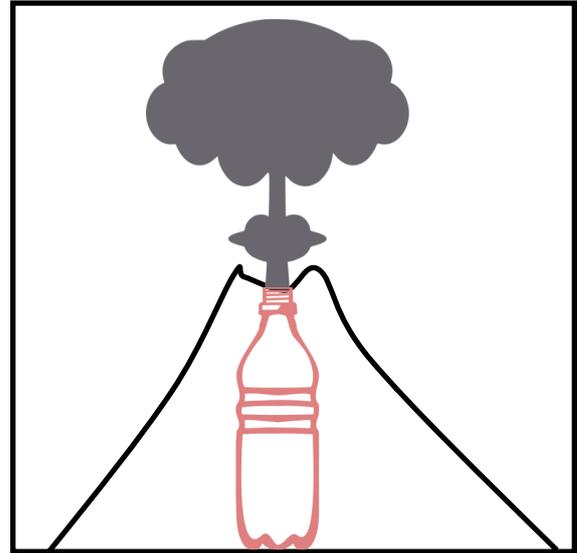
Make a volcano eruption: an experiment

Make your own volcano eruption outside with diet coke and mentos.

! Warning: this is a **messy**, outdoor activity

You will need:

- ⇒ An outside area with no roof and some space to make a mess
- ⇒ A 2-litre bottle of diet coke
- ⇒ A packet of mentos sweets
- ⇒ Some coloured card
- ⇒ A sheet of A4 paper
- ⇒ Coloured pens, pencils or paints (optional)
- ⇒ Any other craft items to hand (optional)

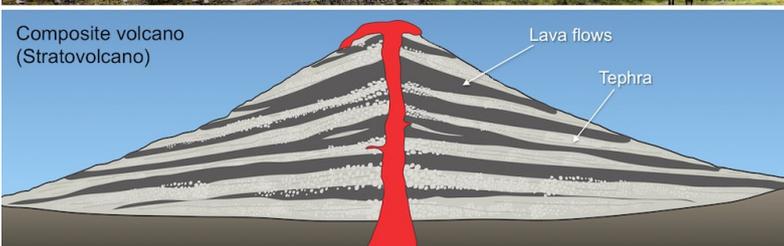


What to do:

1. Clear an area outside to set off your volcano. It will make a mess, so make plenty of space.
2. Decorate the 2-litre bottle of diet coke with some card to mimic a volcano. You can paint on some different volcanic layers or decorate it with other craft items, if you wish.
3. Ask an adult to roll the sheet of A4 paper into a funnel and place three mentos inside.
4. Ask an adult to take the top off the diet coke bottle and **quickly** add the mentos via the funnel.
5. Everyone: stand back and watch the volcano erupt!

Why does this happen?

The explosion happens because of the carbon dioxide gas dissolved in the diet coke. When some mentos are added, the mints quickly force the carbon dioxide from being dissolved in the solution into being a gas. All these gas bubbles expand and push the diet coke out of the bottle.



Did you know...

People who study volcanoes are called **volcanologists**.

They take photographs of eruptions, record vibrations in the ground, and collect samples of lava or falling ash.

For more ideas on future careers, you can go to: www.nustem.uk/primarycareers.

Sing a volcano song: Popocatepetl = Pop-a-cat-a-pet-al



Listen to the Popocatepetl song here:

<http://bit.ly/Popocatapetl>

Popocatepetl Lyrics

Popocatepetl is a big volcano
Far away in Mexico
Popocatepetl oh, Mexico,
Popocatepetl oh,
Popocatepetl goes bang,
Sizzle, sizzle, bang,
So you wont forget that!

Did you know...

Hawaii has *many* volcanoes. In fact, there is so much lava on Hawaii that certain types of lava use Hawaiian words. Pāhoehoe for example, is formed when the top of the lava cools quicker than the runny lava underneath.



1. learn how to say the name of the volcano! Split it up: Pop-a-cat-a-pet-al. Try it slowly first then gradually speed up.
2. Learn the rhythm of the words by listening to the song and watching where the words come. Use the version marked '*slow*' (popocatapetl slow solo).
3. Try singing along to the slow version. Be warned, you need to breathe properly to sing this song! Start a very slow breath in as soon as you hear the piano begin. You can take mini top-up breaths after "Mexico" and you might need to snatch a very quick one after "volcano".
4. When you think you've got it, try singing along to the version marked '*faster*' (popocatapetl faster solo) Good luck! If you feel **really brave** try the version marked '*fast*' (popocatapetl fastest solo)!
5. Now let's go back to the slow version, and listen to it as a round. (popocatapetl slow duet example). Now you see all the other parts to the music too. Can you hear that a second voice comes in with the tune when you get up to the word "far"? It sings exactly the same thing but starts a bit later: this is called a **round**.
6. Now try coming in with your part as normal, but keep going with your part when the second voice comes in. It might feel a bit scary as we've taken out the supporting line: you have to carry that on your own! (popocatapetl slow perform) .
7. If you have a musical instrument at home, have a go at playing along! You only need 2 notes. We've put ukulele chords (F and C) on the score, as well as a easy recorder line (A = 2 fingers and thumb and G = 2 fingers and thumb) and a violin part for open strings A and E. If you play another instrument that can play these notes, it will still work.

N.B. If you play trumpet, saxophone or clarinet, you may need a different set of notes. Ask an adult to email us at ucb@museumsnorthumberland.org.uk telling us what instrument you play and what notes you already know and we'll write you a part specially.