Are you ready to become a MATHSTRONAUT?
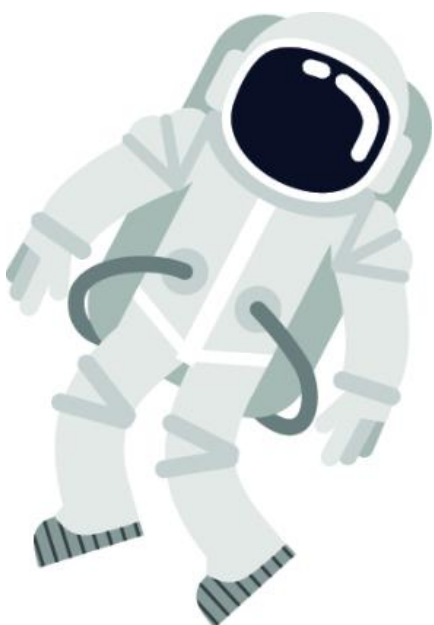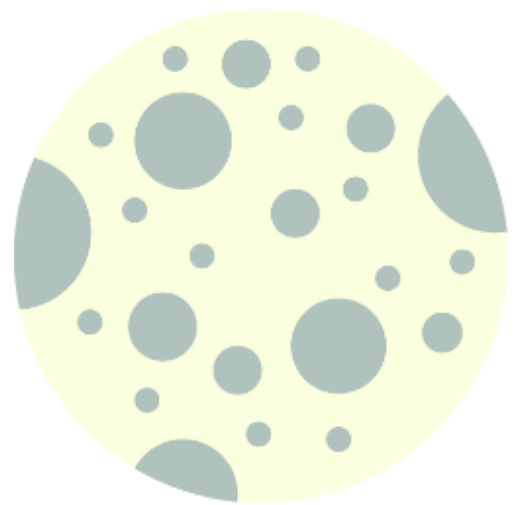
Answer the challenges as you head around the Dynamic Earth Experience.

Will you be able to complete them all and become an official MATHSTRONAUT?
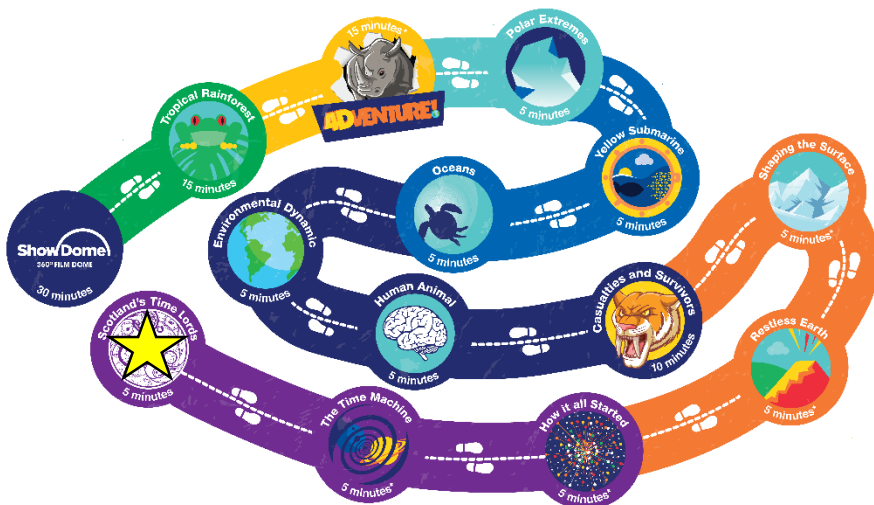
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Scotland's Time Lords

Geiger counters are useful tools for scientists like Arthur Holmes to work out how old rocks are. The more radioactive the rock then the younger it is.

Challenge

Pick a rock in the Geiger counter and work out how many radioactive particles are given off in 1 minute.

Casualties and Survivors

Each pillar in this gallery represents a mass extinction event – a time in our Earth's history when a large number of species died out in a short space of time.

On each pillar you can find out what *percentage* of species died out during each mass extinction.

Challenge
Put the mass extinctions in order of how catastrophic they were, from least to most species dying out

Least catastrophic → **Most catastrophic**
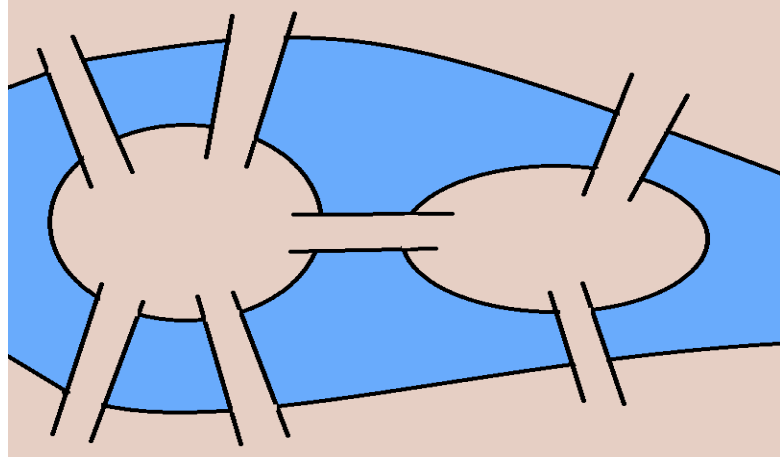
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The Human Animal

It is our ability and creative thinking which allows humans to explore the world in a mathematical way.

There was once a challenge in the town of Königsberg where you had to walk around the whole town only crossing each bridge once.
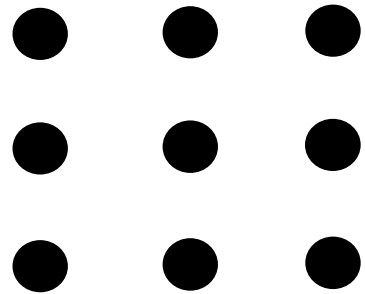
Challenge
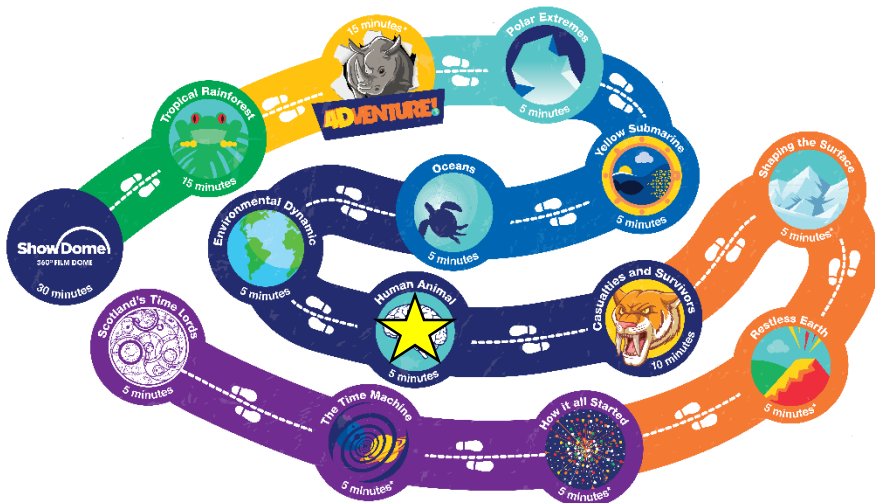Can you draw one continuous line that only goes over each bridge once?

Don't worry if you can't manage! In 1736 the mathematician Leonard Euler visited the town and proved that it is impossible. This kind of maths is called topology.

Challenge
Can you solve this topology puzzle by connecting all 9 dots using only 4 straight lines
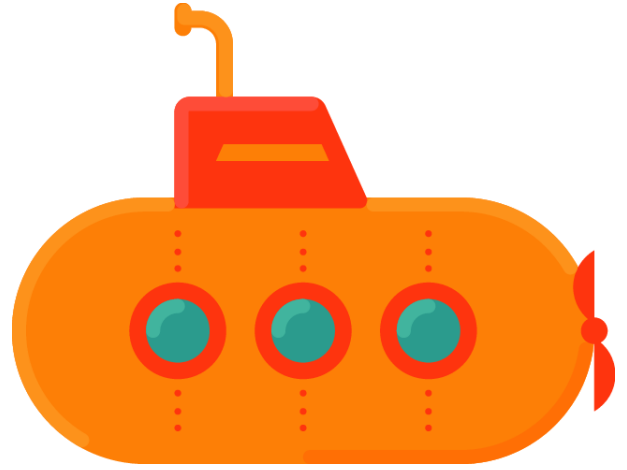
Top Tip!
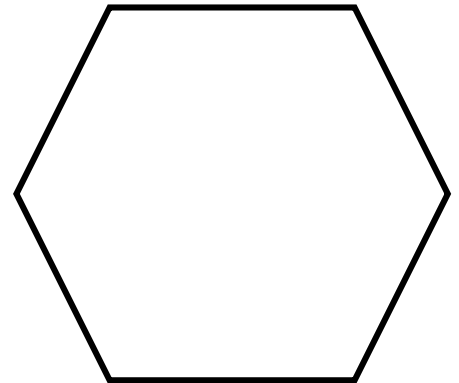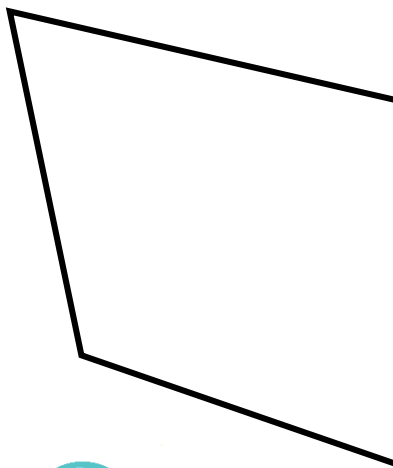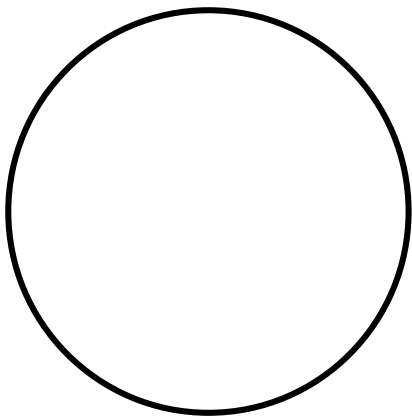Think outside the box!

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Yellow Submarine

When a submarine is under the sea, water is pushing on it from all directions. This is called water pressure. To ensure the pressure is the same from all directions, the submarine will have curved walls and be symmetrical.

Challenge

Look at the three shapes of submarine below and draw on the lines of symmetry. Which would be the best shape for a submarine?
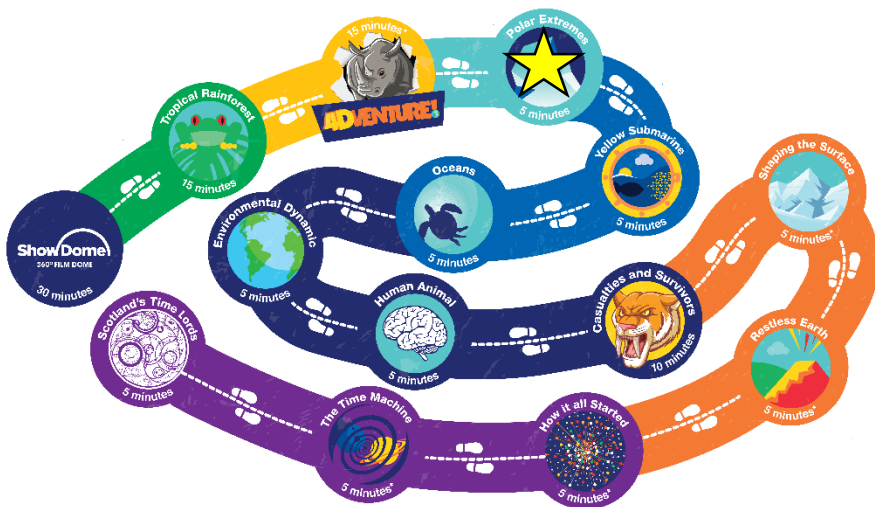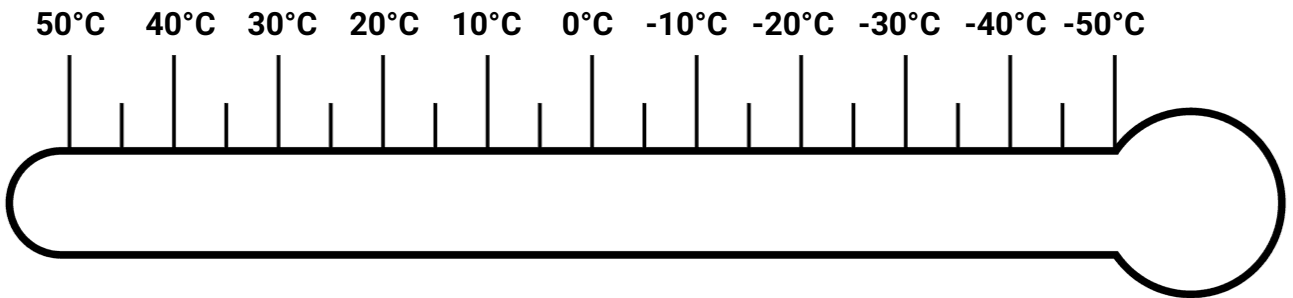
Top Tip!
There might be none!

Polar Extremes

You are currently in one of the coldest places on Earth – the Arctic, where it is often as cold as −40 °C.

The hottest place on Earth is Death Valley in California, USA, where the average summer temperature is 50 °C.

Challenge

Work out the difference in temperature between the hottest and coldest places on Earth.

50°C 40°C 30°C 20°C 10°C 0°C -10°C -20°C -30°C -40°C -50°C

Top Tip!
Use the thermometer to help

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Tropical Rainforest

Tropical rainforests are home to lots of amazing animals including apes, snakes and frogs.

Challenge

Scan the QR code below to find video instructions of how to make an origami frog. You can cut off this sheet and use this paper.

Origami and paper folding is a great way to explore the maths of many different shapes.

Top Tip!
Most phones can scan QR codes with the camera app

Congratulations for completing the MATHSTRONAUT Challenge!

There are lots more Maths Week 2019 events happening all over Scotland.
To find out more, visit:
www.mathsweek.scot

Thank you for visiting Dynamic Earth. We hope to see you again in the future.

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Maths Week
Scotland

30 September –
6 October 2019