The Miura Fold
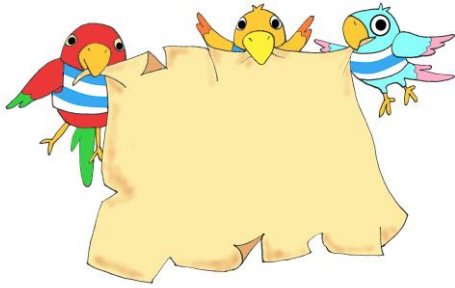
"This map will make our treasure hunt easy."
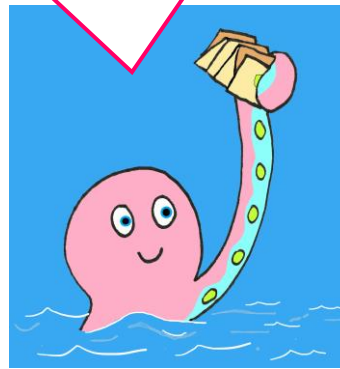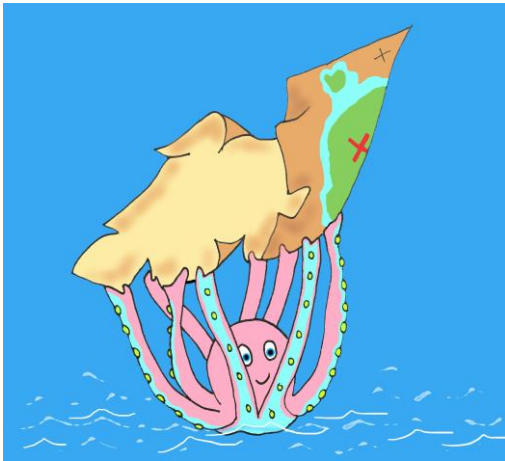
But on the deck it was rather breezy!

The map was big and hard to hold,

WHOOSH!

"What you need is a Miura Fold!"

What is a Miura Fold?

The Miura Fold is a way of folding paper (and other material) into a smaller area, keeping it flat. It's described as shape-memory origami because once unfolded it can easily be folded back to its compact shape. It was invented by a Japanese astrophysicist called Koryo Miura.

It's great for folding maps but can also be used for surgical equipment and folding furniture!

Why not impress your friends by creating your own Miura Fold!

Follow the instructions below or watch our video here:
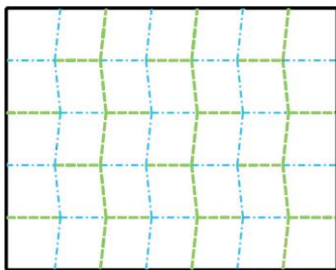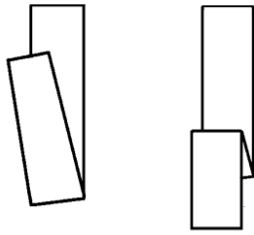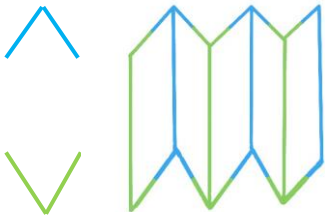https://youtu.be/ppr-yCxYlMY

What you will need:

A piece of A4 paper (Perhaps you could draw a map or secret picture to fold; you could even use the answer map from our treasure hunt activity.)
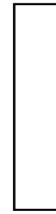
What to do:
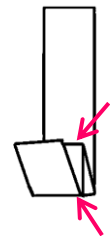
1. Fold your paper into 5 equal sections using a concertina fold (like a fan). The folds are called mountain and valley folds. Can you guess why?

2. Keep it folded to look like a long rectangle.

3. Now repeat step one to make seven more sections but fold at an angle.

4. Make sure the folds are parallel to each other.

5. Unfold your paper. Using the crease lines as guides, alternate between mountain and valley folds. You could draw coloured lines over the creases so you know which way to fold!

6. Push the folds together From left to right and then top to bottom. This might be a bit tricky the first time! Have another go!
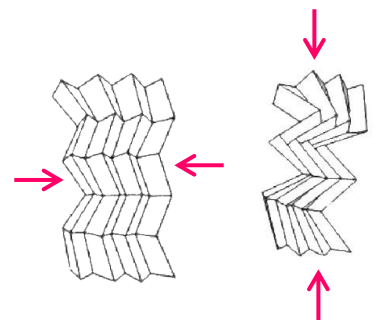
7. You have created a Miura Fold!

Why's this maths?

You are exploring shapes, lines and tessellations (repeating patterns with no gaps or overlaps). You are also working with angles and you may have spotted that there are no right angles in the Miura Fold tessellation. Miura proved that having no right angles reduces the stress on an object, meaning it can be used for longer!

maths on toast
the family maths charity