

AT HOME!

PROJECT NO.11

The Impossible Hole

As family days out are put on hold, we've been thinking how we can make your family days in as much fun as possible.

Eureka! is the UK's only hands-on museum just for children aged 0-11. Full of exhibits to explore, helpful staff to engage with, activities to do and buttons to press. Based in West Yorkshire, we have brought smiles to the faces of over 8 million visitors since 1992. As families can't come to us, we are keen to bring a sample of the Eureka! experience to you.

Our expert staff have come up with a series of experiments that can be done at home, all designed to inspire children to get hands-on, have fun, and learn about themselves and the world around them.

Get experimenting and send us or share your pictures and videos using #EurekaAtHome and we'll share on our social media feeds too.

WE'RE ALL IN THIS TOGETHER!



THE IMPOSSIBLE HOLE

Do you think you can cut a hole from an ordinary size piece of paper – and walk through it?

Sounds impossible, right? Well... let's try to make the impossible hole, and show you how you can walk through a hole in a piece of paper!

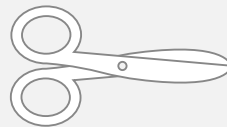
YOU WILL NEED:

- A4 piece of paper or card
- A ruler and a pencil
- Scissors



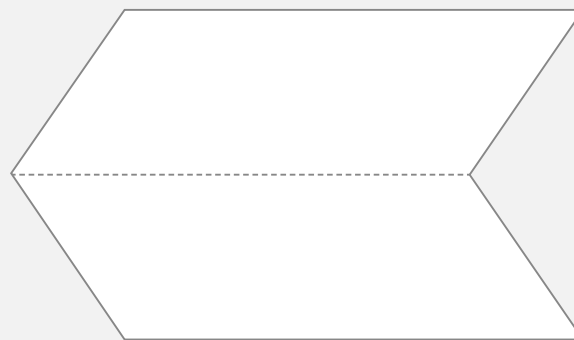
Top Tip:

It's very important to draw and cut along the lines accurately. You may need to get an adult to help with the cutting.



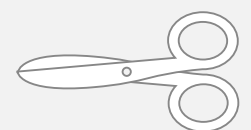
STEP 1:

Fold your piece of paper in half lengthways



STEP 2:

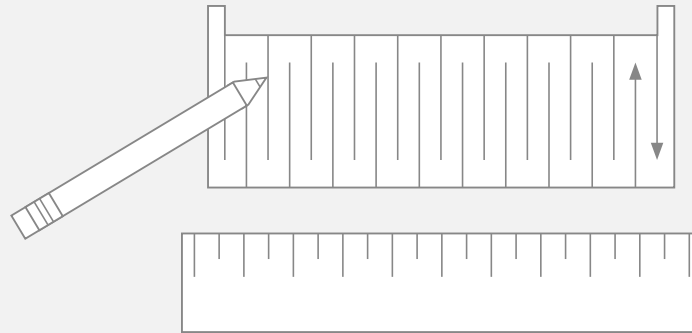
On the folded edge cut out a narrow letter-box strip. See shaded area in the diagram



THE IMPOSSIBLE HOLE

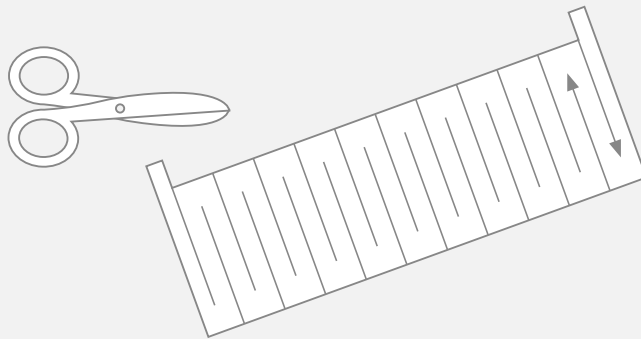
STEP 3:

Now draw on your cutting lines. These should alternate between starting from the top and the bottom edge, and should finish 2 cm from the other edge of paper



STEP 4:

Carefully cut along the lines



STEP 5:

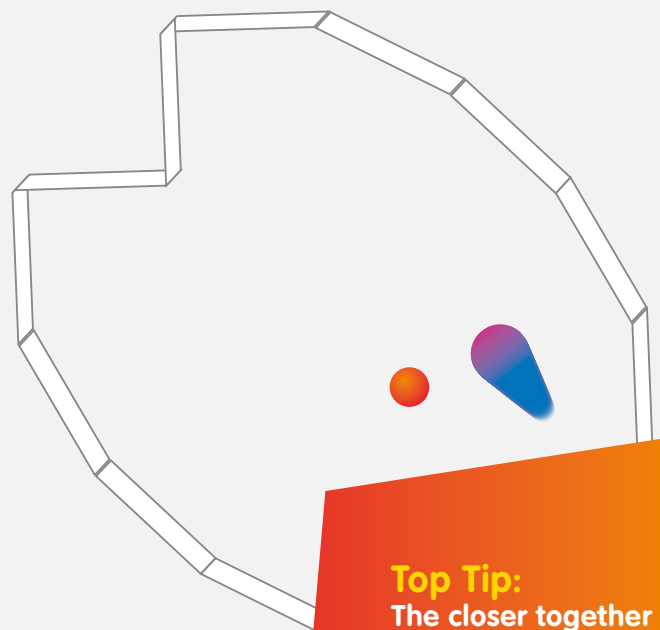
Once all your cuts are made, carefully unfold your paper, and see whether you have created an enormous hole! Is it big enough to walk through?

What it shows?

This demonstration helps to show the difference between area and perimeter. The area of the paper stays the same but the clever cutting changes the perimeter by a huge amount.

Here's another paper-related challenge: Can you fold a piece of paper (of any size) in half, more than 8 times? If you can, show us how and share it with us at #EurekaAtHome. There's lots more fun puzzles with paper on these links too...

<https://www.whatdowedoallday.com/impossible-paper-puzzle/>
<https://www.youtube.com/watch?v=MZxtgUoGzMQ>



Top Tip:

The closer together the cuts are the bigger you can make the perimeter, but it won't be as strong so will break more easily