

FESTIVE FOLD AND CUT TEACHER NOTES

These notes outline one way the Festive Fold and Cut resources could be used in the classroom.

1) Investigate: cutting out the 'Christmas Present'

Students should cut the 'Festive Fold and Cut' sheet into quarters along the dashed scissor lines.

Ask the students '**what is the least number of straight cuts you can make to cut the 'Christmas present' (the rectangle) from the page?**' They should use their scissors and Christmas present shape to investigate.

You could give students the hint that it can be done in **fewer than four straight cuts**.

Some students will realise they can fold the paper first, with some students folding it such that the rectangle can be cut out in just one straight cut.

Stop the class and show them how it can be done in **just one straight cut**.

Zoe shows how this can be done, in the video here:

https://youtu.be/QttlOVfVw_E

2) Discuss: the Fold and Cut Theorem

You could ask the students '**Do you think any other shapes can be cut out with just one cut?**'

More specifically you could ask '**What properties do you think a shape needs to have for it to be possible to cut it out with just one straight cut?**'

This is an opportunity to talk about shape properties. Often students suggest shapes need to be regular or have reflective symmetry.

But, in fact, amazingly, all the shape needs to have is straight sides; The Fold and Cut Theorem tells us that **any straight sided shape can be cut out with just one straight cut, provided the paper is folded correctly first**.

Mathematician Katie Steckles introduces us to the Fold and Cut Theorem in her excellent video on the Numberphile YouTube Channel, here: <https://youtu.be/ZREp1mAPKTM>

The video is definitely worth a watch to find out more.

Katie shows how every letter of the alphabet can be cut out with just one cut!

3) **Challenge: the 'Elf Hat' and 'Gingerbread House'**

Challenge students to cut out the other festive shapes (the gingerbread house and elf hat) with just one cut.

Zoe shows how these can be done, in the videos below.

Elf Hat solution: <https://youtu.be/831ifSbTxll>

Gingerbread House solution: <https://youtu.be/-VfCnEzXohM>

Students could use the blank quarter to draw and cut out their own festive shape.

4) **Make and Decorate: Christmas tree**

This is a more fiddly task, but the fold pattern (instructions for how to fold) has been given.

Print the 'Fold and Cut Tree' template on to light card, A4 size.

The video here shows how to fold by following the fold pattern lines on the template: <https://youtu.be/YT-xO15pVng>

Once students have cut out the tree they could decorate it. They could even punch a small hole at the top so it can be hung from a real tree with ribbon.