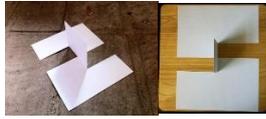




HOOK THEM IN...

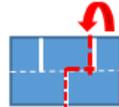
Present the students with something that makes them wonder such as this simple puzzle:



Cut a single piece of paper and arrange it as shown. Challenge students to recreate it for themselves without tape or glue, without touching the original.



Make 3 cuts into the centre of the piece of paper as shown



Flip the entire right hand section over, through 180°



Stand up the middle section.

Use images or video clips that amaze or surprise them.

(Please view all clips and images before screening to ensure that the content is appropriate for your students)

Japanese Pop-up Cards

These three Japanese greeting cards date from the 1980s, and they are all the work of Masahiro Chatani. He was a Professor at the Tokyo Institute of Technology, and he is considered to be one of the founders if not the founder of a technique called Origamic Architecture.

<https://www.youtube.com/watch?v=1Vbxk5rNUV4>

Hexaflexagons-Vi Hart

<https://www.youtube.com/watch?v=VIVlegSt81k>

Paper Art

100 extraordinary images

<http://www.webdesignerdepot.com/2009/05/100-extraordinary-examples-of-paper-art/>

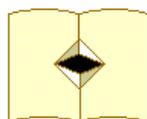
10 Things you can do with a piece of paper

<https://www.youtube.com/watch?v=8UAH4BY4XDo>



ENGAGE THEM...

Set up two popup cards that you have made and ask students to replicate them without instructions.

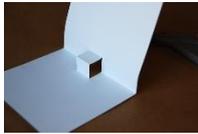


MOUTH CARD

Instructions for Mouth Card can be found at the link:

<http://www.enchantedlearning.com/crafts/Mouthcard.shtml>

BUILDING



Simple instructions at <http://tinkerlab.com/simple-diy-pop-up-cards-for-creative-kids/>

Ask students to modify these simple techniques.

- How might you make the beak pointier? ...add teeth?
- How might you make the building taller (x2,x3,etc.)? ...wider? ...make a winners' podium(same ratio as used at the Olympics)?

Remind students to record their thinking and reasoning.



CHALLENGE THEM ...

Research different techniques in Popup cards and design a card of their own.



RESOURCES

In ***Be a Paper Engineer***, students design make and evaluate 3-dimensional paper products including gift boxes and pop-up greetings cards. They explore 3-dimensional shape-and-space, making generalisations using words and algebra.

The materials comprise a teacher's guide, a student booklet and a set of photocopy masters.

Unless stated otherwise, these materials are Copyright © Shell Centre for Mathematical Education (see the materials for full details). You may download these materials for personal use and freely reproduce them for *non-commercial* purposes including teaching, research and staff development within your institution. For other uses, please contact Shell Centre Publications for licensing information.

<http://www.mathshell.com/materials.php?series=numeracy&item=paperengineer>

Nrich Website: Short activities

Making Maths: Walking through a playing card. <http://nrich.maths.org/5385>

Making 60: <http://nrich.maths.org/6355>

Napkin <http://nrich.maths.org/700>

Folding , Cutting Punching <http://nrich.maths.org/1798>

Making Maths: Equilateral Triangle Folding <http://nrich.maths.org/5372>

Bryony's Triangle <http://nrich.maths.org/7392>

DAN MEYER

How many sheets on a toilet roll? <http://www.101qs.com/1527-toilet-paper-roll>