

# Year 4 - DT Knowledge Organiser

## What I remember from Year 3...

- Scissors can be used to score materials, so that they can be folded more easily.
- Cardboard is a stronger material than paper.

## Key Knowledge...

A shell-structure has a solid outer layer, which can be flat or curved, and **hollow** inside.



The O2, London

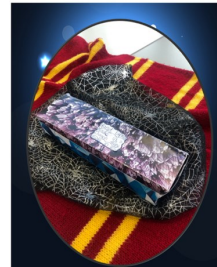
The Shard, London



Shell structures can be used to make buildings and packaging. Some are more effective than others.

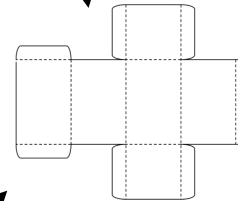


## Design...

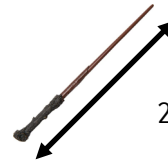


appealing box to protect wand

net shape



20 cm wand



## Key Skills...

Experiment with **de-constructing** different net shell-structures.

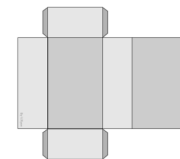
Step 1 - Taking apart.



Step 2 - Turning inside out.



Step 3 - Exploring net shapes.

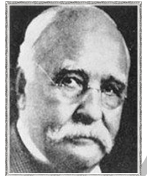


## Construction Magic Wand Box



## Robert Gair

Robert invented the folding carton in 1890. He was a printer and a paper bag maker in the 1870s. He invented the paperboard folding carton by accident - a metal ruler used to crease bags shifted position and cut the bag.



## Key Vocabulary...

**De-constructing** - To break something down or take something apart.

**Net shapes** - The flat or opened out shape that is folded or joined to make an object like a box.

**CAD** - Computer Aided Design. A way to digitally create 2D drawings and 3D models.

**Joining flap** - A tab used to join two faces of a net shape.

**Hollow** - Having a hole or empty space inside.

**Three Dimensional (3D)** - Shapes with 3 dimensions such as width, height and depth.

## Key Knowledge...

There are different ways to strengthen sheet materials.



Ribbing - gluing layers of straws between layers of card.



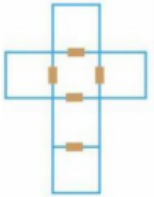
Corrugating - zig-zagging a piece of paper or card and glue in between two layers of card.



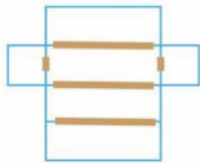
Laminating - gluing together several layers of card.

Construct different net shell-structures using pre-prepared shapes.

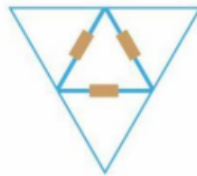
cube net



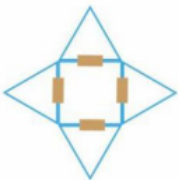
cuboid net



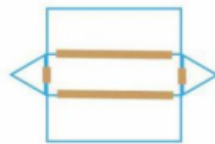
tetrahedron net



square based pyramid net



triangular prism net



## Key Skills...



Use 'Sketchup' (CAD) to show what your design will look like in 3D.



Use a Craft Knife to score your joining flaps. This will make them easier to fold.

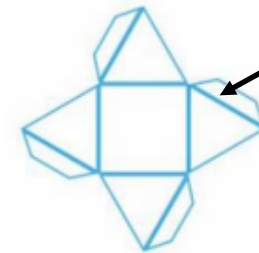
## Health and Safety...

When you use a craft knife...

- Always use with an adult.
- A cutting mat and a metal safety ruler must be used to protect your fingers.
- Keep your fingers behind the knife and always score away from your hand that is holding the safety ruler.



Draw accurate joining flaps so that they can't be seen on your finished box.



joining flap

## Evaluating...

- Does your box work?
- Does your box look appealing?
- Is your wand well protected?
- Is there anything you could improve next time?

