



Year group: Year 4
Term: Autumn
Subject: Design Technology – Structures – Gift Box

Prior learning

EYFS

Experience of using construction kits to build walls, towers and frameworks. Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. Experience of different methods of joining card and paper

Year 2 Spring Term – free standing structures.

The children will be taught to select and use tools, skills and techniques using a variety of materials in order to make a free-standing structure such as playground equipment – climbing frame for example.

What comes next?

Year 5 Summer Term – Frame Structures

Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks to make a bird hide.

Notes and guidance

Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling in nets in numerous ways.

Demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets. Then allow children to practise by constructing a simple box. Show how a window could be cut out and acetate sheet added.

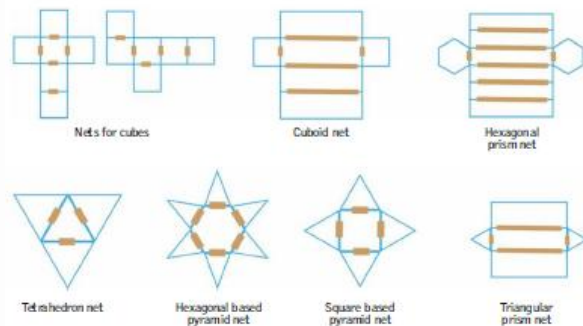
Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating. Provide opportunities for the children to practise these and to carry out tests to find out where their structures might need to be strengthened or stiffened.

Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products.

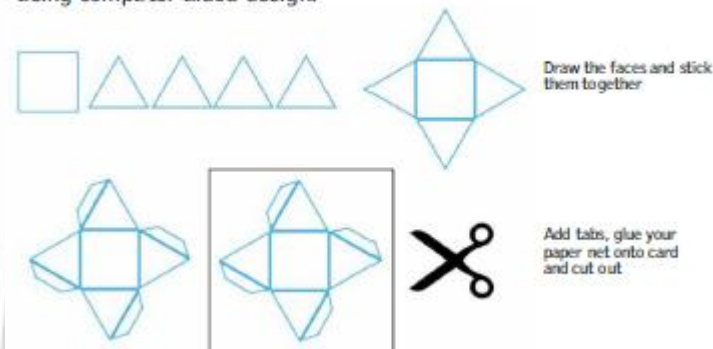
Key vocabulary

Shell Structures Three-dimensional Scoring Assemble

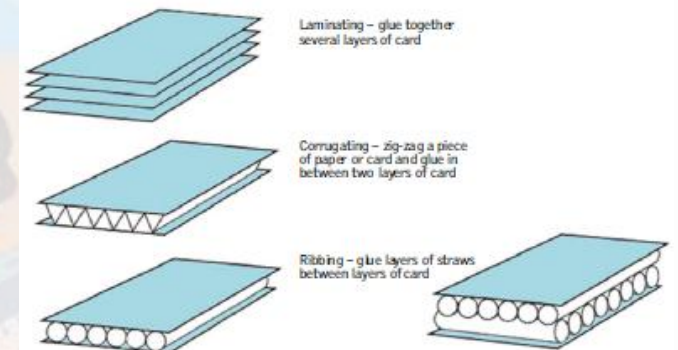
Assemble and evaluate 3-D shapes using standard sized card squares, rectangles, equilateral triangles, isosceles triangles and hexagons, joined with masking tape.



Creating the net for the product you are designing and making without using computer aided design:



Stiffening and strengthening sheet materials:



Substantive Knowledge

To know that 2D nets can be used to create 3D models.

To know the names of 3D shapes.

To know mathematical vocabulary of 3D shapes such as face, edge, vertices etc..

To know which nets will make which 3D shapes.

To know which structures make the most stability.

Disciplinary Knowledge

I know that designers consider the purpose of the product before selecting their design ideas.

Procedural Knowledge

I can select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.

I can explain my choice of materials according to functional properties and aesthetic qualities.

I can use finishing techniques suitable for the product I am creating.

Links to other curriculum areas

Maths – 2D nets 3D shapes

End Points

- To be able to use creativity and imagination to create high quality products.
- To master the use of a range of design technology tools and techniques.
- To be able to design, make and evaluate their products referring to whether it is fit for purpose and meets the design criteria.



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Key vocabulary definitions.

- **Shell Structures** — Hollow shapes that are strong because of the way their outside walls (the “shell”) hold them up, like an egg, a box or a dome.
- **Three-dimensional (3D)** — A shape that has length, width and height so you can see and touch all its sides (not flat).
- **Scoring** — Making a shallow line or mark on card, paper, or other material so it's easier to fold or bend neatly.
- **Assemble** — To put different parts together to make a finished product.

DESIGN