

Bomere and the XI Towns Federation Knowledge Organiser—DT

Topic: Structures

Class/Year Groups: Y3/4

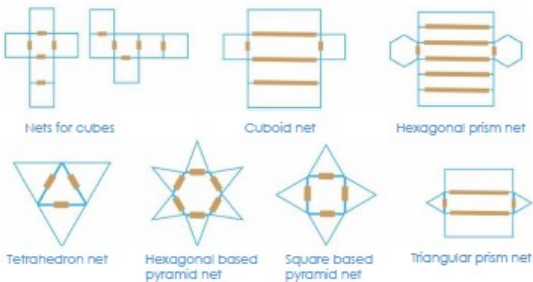
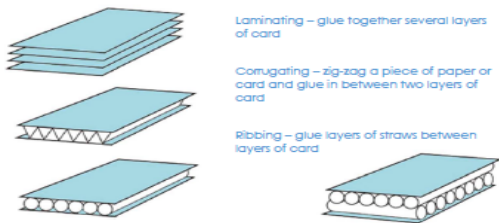
Term: Summer 2024

What you already know?

Experience of using different joining, cutting and finishing techniques with paper and card.

A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Stiffening and strengthening sheet materials:



What you will learn:

Designing • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.

Making • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating.

Evaluating • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose.

Technical knowledge and understanding • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project.

Vocabulary

shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity

marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating

font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Glossary

- **Cuboid** – a solid body with rectangular sides.
- **Edge** – where two surfaces meet at an angle.
- **Face** – a surface of a geometric shape.
- **Font** – a printer's term meaning the style of lettering being used.
- **Net** – the flat or opened-out shape of an object such as a box.
- **Prism** – a solid geometric shape with ends that are similar, equal and parallel.
- **Scoring** – cutting a line or mark into sheet material to make it easier to fold.
- **Shell structure** – a hollow structure with a thin outer covering.
- **Vertex** – used to refer to the corners of a solid geometric shape, where edges meet.



National Curriculum Objectives:

use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups

investigate and analyse a range of existing products, evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

apply their understanding of how to strengthen, stiffen and reinforce more complex

structures

select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

