



Design Technology

Structures

Shell Structures

Y3

In this unit, we will design, make and evaluate packaging to hold a small chocolate gift for a relative. We will investigate and evaluate boxes for different purposes and users, engage in focused practical tasks using Polydron kits to construct nets and 3D shapes which will inform our designing and making. We will test and evaluate our boxes, identifying strengths and areas for improvement. We will also research inspiring individuals

Structures Knowledge:

I will:

- 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

Skills

I will be able to:

Design:

- 3.1 Record ideas by drawing using annotated sketches.
- 3.3 Use prototypes to develop and share ideas.
- 3.5 Order the main stages of making.

Make:

- 3.7 Explain my choice of materials according to functional properties and aesthetic qualities.
- 3.8 Select and use appropriate tools to measure, mark, cut and assemble with some accuracy.
- 3.9 Use a range of finishing techniques with some accuracy

Evaluate:

- 3.12 Research key individuals in D&T
- 3.14 Discuss how well the finished product meets the design criteria
- 3.15 Identify the strengths and areas for development in my work.

Vocabulary

Technical vocabulary

Shell structure, 3-D shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity,

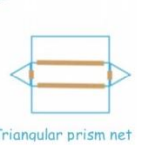
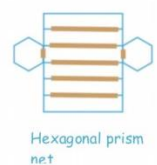
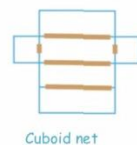
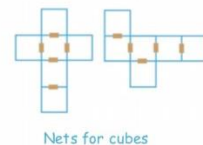
Process vocabulary

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.

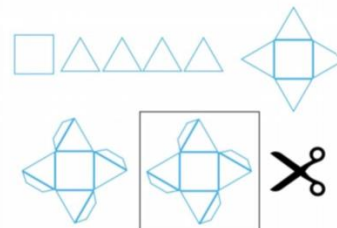
Names of tools, equipment and materials used

Techniques:

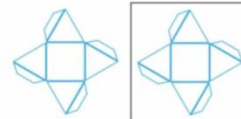
Assemble and evaluate 3-D shapes using standard sized card squares, rectangles, equilateral triangles, isosceles triangles and hexagons, joined with masking tape.



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

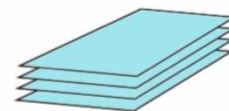


Draw the faces and stick them together

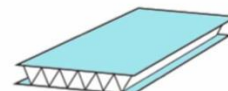


Add tabs, glue your paper net onto card and cut out

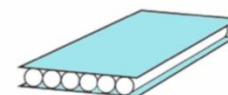
Stiffening and strengthening sheet materials:



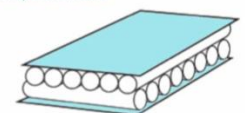
Laminating - glue together several layers of card



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



Ribbing - glue layers of straws between layers of card



Inspiring Individuals



Nicholas
Grimshaw



Richard
Buckminster
Fuller



Paula Scher