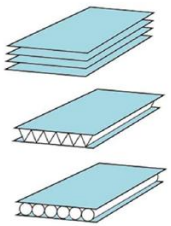
Design Technology Knowledge Organiser

Shell Structures

Year 3	Year 4	Year 5	Year 6
I CAN explore and describe how everyday packaging and containers are made. **I CAN** use simple drawings to show my ideas for a shell structure. **I CAN** choose and use tools safely to cut, fold, and join paper or card. **I CAN** test my model to see if it is strong and make changes to improve it.	**I CAN** Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. **I CAN** Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy **I CAN** Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have be en used. **I CAN** Develop and use knowledge of how to construct strong, stiff shell structures	**I CAN** research and analyse existing shell structures to inspire my own designs. **I CAN** produce detailed annotated sketches, diagrams, and prototypes to show how my structure will be made and reinforced. **I CAN** use tools and equipment accurately and safely to measure, mark out, cut, and assemble precise shell structures. **I CAN** test and refine my product to ensure it meets my design criteria for strength, stability, and appearance.	**I CAN** use research and analysis to develop a detailed design specification for a strong and functional shell structure. **I CAN** plan and produce high-quality shell structures using accurate measuring, marking, and construction techniques. **I CAN** apply advanced techniques to strengthen, stiffen, and reinforce my product. **I CAN** evaluate my structure against my design specification and explain how it could be improved further.

Skills and techniques

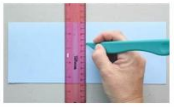
Stiffening and strengthening sheet materials:



Laminating – glue together several layers of card

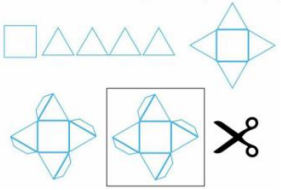
Corrugating – zig-zag a piece of paper or card and glue in between two layers of card

Ribbing – glue layers of straws between layers of card



Scoring – press a line into your paper to make it easier to fold accurately

Create the net for the product you are designing:



Draw the faces and stick them together

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