

Subject: DT
 Year group: 3
 Term: Autumn
 Unit name: Structures- shell structures

- National curriculum:**
- Design-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
 - Make- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
 - Evaluate- investigate and analyze a range of existing products
 - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

- Prior Knowledge –**
- 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

Spiritual Development

2PE 1:12 Therefore, I will always be ready to remind you of these things, even though you already know them, and have been established in the truth which is present with you.

Key vocabulary

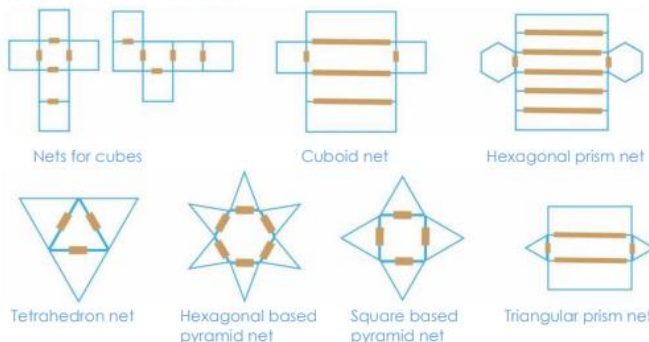
shell structure	ribbing	scoring
three-dimensional (3-D) shape	laminating	shaping
net	font	tabs
cube	lettering	adhesives
cuboid	text	joining
prism	graphics	assemble
vertex	decision	accuracy
edge	evaluating	material
face	design brief	stiff
length	design criteria	strong
width	innovative	reduce
breadth	prototype	reuse
corrugating	capacity	recycle
	marking out	

Design Process

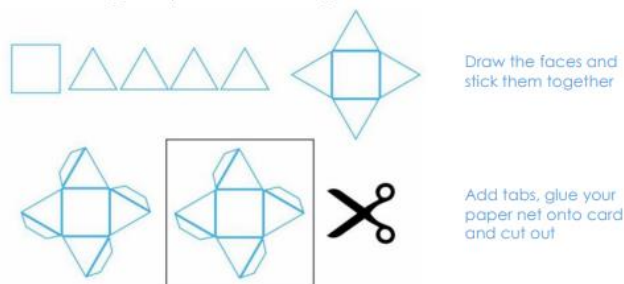
	Investigative and Evaluative Activities (IEAs)
	Focused Tasks (FTs)
	Design, Make and Evaluate Assignment (DMEA)

Teaching aids

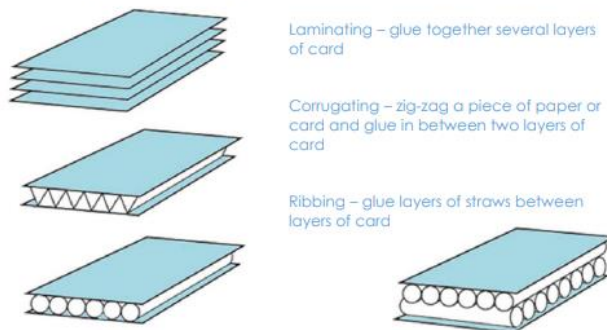
Assemble and evaluate 3-D shapes using standard sized card squares, rectangles, equilateral triangles, isosceles triangles and hexagons, joined with masking tape.



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



Stiffening and strengthening sheet materials:



Key Learning- what will the children know by the end of the unit?

- Explore and evaluate a collection of different shell structures including packaging to determine which designs are most effective and judge the suitability of the shell structures for their purpose and user.
- **To be able to take a small package apart identifying and discussing parts of a net including the tabs e.g.**
- To be able to use kit parts with flat faces to construct nets, using card and joining flat faces with masking tape to create 3-D shapes.
- **Experiment with assembling in nets in numerous ways.**
- **Children can demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets by constructing a simple box.**
- **To identify how there are different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating.**
- **Children have created a design brief with the children within a context which is authentic and meaningful.**
- **To be able to use annotated sketches and prototypes to develop, model and communicate their ideas for the product.**
- Consider how to explore the graphics techniques and media that could be used to achieve the desired appearance of their products.