Enriching lives every day; enabling our school community to learn, achieve and flourish through living 'life in all its fullness'

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

Key vocabulary

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

Design Process

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

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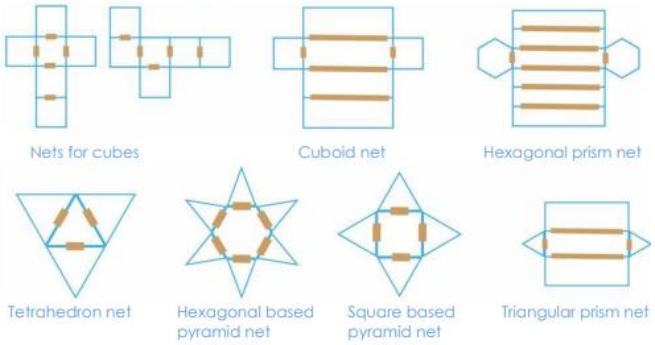
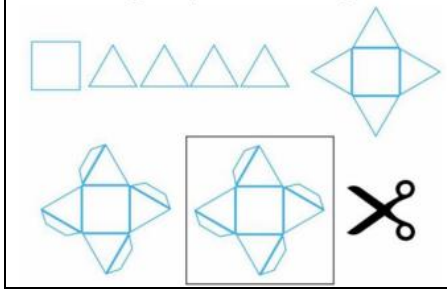
Teaching aids

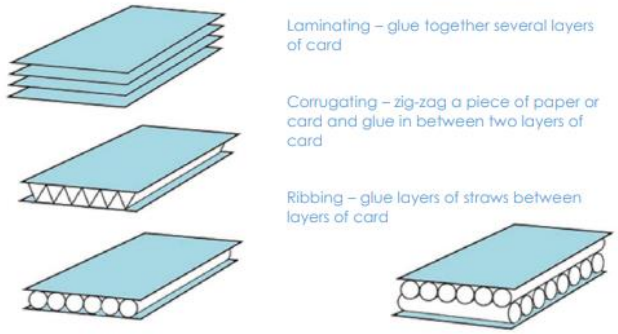
Assemble and evaluate 3-D shapes using standard sized card squares, rectangles, equilateral triangles, isosceles triangles and hexagons, joined with masking tape.



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.