

Inquiry Question: What are shell structures?

Key Vocabulary

Design	Make	Evaluate
Shell Structures	Purpose	Forces
Style	Durable	Net (2D/3D)
Tab	Layering	Folding

Key Learning

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

Design

Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.

Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Use annotated sketches and appropriate information and communication technology, to develop and communicate ideas.

Make

Order the main stages of making.

Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products.

Explain their choice of materials according to functional properties and aesthetic qualities.

Select from and use materials and components, including construction components according to their function and properties.

Evaluate

Investigate and evaluate a range of products including the materials, components and techniques that are used.

Test and evaluate their own products against design criteria and the intended user and purpose.

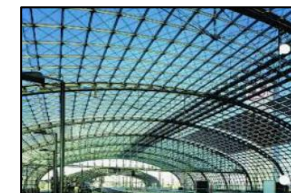
Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

In Year 3, you learnt;

- How to build structures with increasing independence.
- To begin to demonstrate a growing understanding of how to strengthen frames using diagonal struts and how to reinforce a finished product.
- How to use technical language

Overview – Shell Structures

You should already know that structures are things that are built for a purpose, for example to support something or hold something.



Shell Structures are structures with a solid outer surface (which may be curved or flat) and a hollow inner area.

Shell structures can serve many different purposes. Often, they are used to protecting, containing and/or presenting (e.g. packaging).

Some examples of shell structures are food packaging, tunnels, helmets, drinks cans, and boats.

A rounded outer surface is particularly strong, because it spreads forces throughout the whole structure, which means every part of the structure supports only a small part of the load.

A shell structure is... A shell structure is made strong/ still by...

A net is.. A net is used for....

My structure works well because...

My product would be better if...

