Moor First School

Year 3 and 4
Summer block
Cycle B

Moor First Design and Technology
Knowledge Organiser
Topic Covered: Structures- Shell Structures

WEAVING CONCEPTS

Structures | Design Process | Design Inspiration | Practical Knowledge

What should I already know:

Year 3:

- I think of an idea and plan what to do next.
- I can choose tools and materials and explain why I have chosen them.
- I can join materials and components in different ways.
- I can measure materials to use in a model or a structure.

Year 4:

- I can prove that my design meets some set criteria.
- I can follow a step-by-step plan, choosing the right equipment and materials.
- I can design a product and make sure that it looks attractive.
- I can choose a material for both its suitability and appearance.
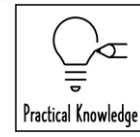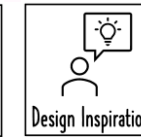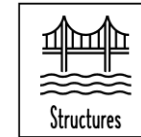- I can select the most appropriate tools and techniques for a given task.

Robert Gair was originally born in Edinburgh. He invented the cardboard box for packaging by accident when he was using a metal ruler to fold bags and accidentally cut the bag. He realised that he could create prefabricated boxes which were suitable for protecting and preserving products as well as making a surface for company logos to be displayed.
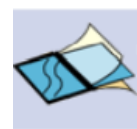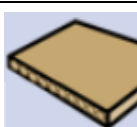
Key Vocabulary

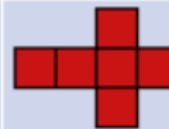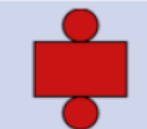|	
Net	A 2D pattern that can be folder and secured to make a 3D geometric shape.
Shell structure	A hollow structure with a thing outer covering.
Stiffen	To make the structure more rigid/difficult to bend.
Strengthen	To make something stronger and more able to withstand force.
Tab	The section of a net that is used to help secure edges together.
Prototype	The practice version of a product that you can make to evaluate and learn from.
Aesthetic	The look of something.
Packaging	Materials used to wrap or protect goods.
Logo	A symbol or other small design used by an organisation to identify its products or services.
Font	The style of lettering being used.

What will I learn?

- I will learn how to make a biscuit box using a shell structure.
- I will learn how to use Computer Aided Design (CAD) to explore, design and edit using Tinkercad.
- I will learn that there are four functions of packaging: protect; present; contain and preserve.
- I will learn how to strengthen my structure.

Strengthening Systems

Laminating		Sticking several pieces of card together.
Corrugating		Sandwich a folded piece of paper between two pieces of card.
Ribbing		Sandwich a layer of straws between two pieces of card.

Nets – the unfolded version of a 3D shape

cuboid	cylinder
triangular prism	square based pyramid