



Structures	KS1- How freestanding structures can be made stronger, stiffer and more stable Model city/village	LKS2- How to make strong, stiff shell structures Mini Habitat Biome	UKS2- How to reinforce and strengthen a frame structure Brilliant Bridges
Substantive Knowledge	<ul style="list-style-type: none"> - Structures are things that are built for a purpose - They can be large like buildings and bridges or small like chairs and tables - They need to support their weight or the weight of things using them - They need to be strong, rigid and stable - Stability in a structure can be improved by making the base wider - A buttress adds width to based making it more stable - As a free-standing structure becomes taller, it becomes less stable - Structures can be made stronger and more rigid by making sure that parts and materials are properly joined - A joint is where parts of a structure are connected together 	<ul style="list-style-type: none"> - Shell structures are structures with a solid outer surface and a hollow inner area - Shell structures are used to protect, contain and present something - Food packaging, tunnels, helmets and boats are all examples of shell structures - Shell structures need to be appealing to the users - Shell structures can be strengthened through laminating, corrugating and ribbing 	<ul style="list-style-type: none"> - Frame Structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight - Beam - Column - Slabs - The system of beams and columns can be further strengthened through foundations and bracing - Triangulation can be used to add strength to a structure
Technical Knowledge	<ul style="list-style-type: none"> - Joins can be made stronger by using masking tape and glue - Folding materials can make them stronger or stiffer - When cutting, the index and middle fingers of the cutting hand are still. The thumb is used to open and close the scissors. The assistant hand is used to hold the material - thumb on top and fingers underneath - Measuring to the nearest cm - Marking measures 	<ul style="list-style-type: none"> - Scoring is the process of scribing, or even partly cutting through, the material along the line to be bent or folded - Laminating is gluing together several layers of card - Corrugating is when you zig-zag a piece of paper or card and glue in between two layers of card - Ribbing is gluing layers of straws between layers of card 	<ul style="list-style-type: none"> - Joints for straws can be made through; being flattened, wrapped around and glued - Joints for thin pieces of wood can be made through; card strips, card triangles and elastic bands - Junior hacksaws are used to cut soft materials like wood - A bench hook is used to hold a workpiece in place while crosscutting with a hand saw - When two pieces of wood come together at 90 degrees they are said to be square
Vocabulary to be taught explicitly	Strong Rigid Stable Weak Buttress Index & middle fingers Three-dimensional Tabs Slot Fold Free-standing Stiff	Shall structures Cube Cuboid Cylinder Base Curve Adhesive Assemble Laminating Corrugating Ribbing Durable Solid Hollow	Beams Foundations Bracing Triangulation Crosscutting Handsaw Scoring Columns Hacksaw