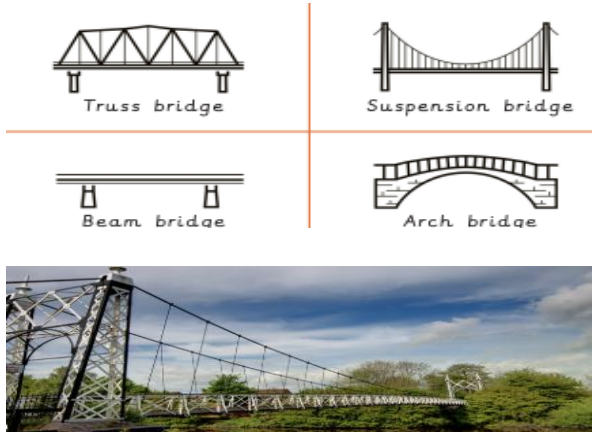


Autumn 2 Year 5 Design and Technology Knowledge Organiser

Structures: Bridges

Subject specific Vocabulary		Images/Diagrams/Maps	Important Knowledge
Accuracy	Making sure something is measured, marked, and made exactly right.		Triangles are strong shapes We can use triangles in a structure (like trusses) to make a bridge stronger and more stable.
Arch bridge	A type of bridge that has a curved shape underneath to help spread weight.		Reinforcement makes structures stronger Adding extra parts (like card corners or more layers) helps prevent bending or breaking.
Beam bridge	A simple bridge made from a straight, flat beam supported at each end.		Different materials have different properties We choose materials based on their strength, flexibility, and how they look or feel.
Evaluate	To think about what worked well and what could be improved in a design.		Wood has special properties Wood is strong, easy to shape, and comes in different types like softwood and hardwood. It can also look attractive when finished neatly.
Lamination	Sticking layers of material together to make it stronger.		We design and build bridges that can hold weight By measuring accurately, sawing safely, and using the right tools, we can build working frame and beam bridges.
Mark out	Drawing or measuring lines to show where to cut or join materials.		
Reinforce	To make something stronger by adding extra material or support.	Writing/Provision/Enrichment opportunities	
Rigidity	How strong and stiff something is—how well it holds its shape.	Evaluation of Finished Bridge Children evaluate their final bridge, explaining what worked well and what they would improve.	
Stability	How well something stays upright and balanced without falling over.	Warrington Bridge Study Walk Take children on a local walk to observe and sketch nearby bridges (e.g. Warrington Transporter Bridge, Victoria Park Footbridge, or Walton Lock).	
Truss bridge	A strong type of bridge made using triangles in its structure.		

Presentation	Assessment		
	To explore how to reinforce a beam (structure) to improve its strength.	Identifying stronger and weaker shapes and points where structures typically failed; recognising that supporting shapes can help increase the bridge's strength and allow it to hold more weight.	Recognising key factors that impact the bridge's strength, including factors that they have not yet explored (supports and materials); suggesting a variety of ways to reinforce structures at the points at which they failed and providing verbal thoughts and solutions.
	To build a spaghetti truss bridge.	Identifying beam, arch and truss bridges and describing their differences; using triangles to create a simple truss bridge that supports a load.	Making an accurate and well-constructed truss bridge; explaining where some bridges are stronger or weaker than others.
	To build a wooden truss bridge.	Cutting the required beams to the correct size, using the <i>Truss bridge cutting mat</i> as a visual reference; smoothing down the rough cut edges with sandpaper; following each stage of the truss bridge creation as instructed by the teacher.	Using a ruler and set square to plan and cut the required beams to the correct size after establishing the size using slide 11 of the <i>Presentation: Materials - Wood</i> or the <i>Resource: Truss bridge cutting mat</i> ; independently chunking each stage of the process (e.g. 'first I will...' and 'next I will, because...').
	To complete, reinforce and evaluate my truss bridge.	Completing a bridge with some support to a varying range of accuracy and finish; identifying some areas for improvement when evaluating the success of their bridge.	Completing a bridge independently with a higher quality of accuracy and finish; identifying all areas for improvement through evaluating the success of their bridge, and reinforcing as necessary.