

Structures: Bridges



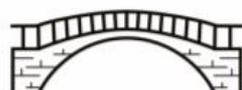
Truss bridge



Suspension bridge



Beam bridge



Arch bridge

Design Brief: To design and make a truss bridge.

Trusses are popular for bridge building because they use a relatively small amount of material for the amount of weight they can support. They commonly are used in covered bridges, railroad bridges, and military bridges.

The bridges are made of a series of triangles. As triangles cannot be distorted by stress, a truss gives a stable form capable of supporting large external loads over a large span.

Whilst there are some examples of these bridges in 14th Century their design was used a lot in the 19th Century with the advent of the Industrial Revolution.



Ikitsuki Bridge, Japan has the longest single truss span (400m) in the World.

Key words	Explanation
Equipment:	
Bench hook	A tool which hooks onto the edge of the workbench. You use it to hold wood still while sawing.
Compression	A force caused when parts of a structure are pushed together.
File	A tool used to smooth down rough edges on wood or metal.
Mark out	To measure and mark where a piece of material needs to be cut or shaped.
Reinforce	To make a structure or material stronger usually by adding another material or part to it.
Sand paper	Strong paper with sand on one side to smooth or polish woodwork.
Tenon saw	A saw with a flat blade used for cutting wood.
Types of bridges:	
Arch bridge	A bridge which has a curved arch.
Beam bridge	A bridge with horizontal beams and vertical pillars.
Suspension bridge	A bridge which is supported by vertical cables and suspended by cables which run between pillars that are connected to either end of the bridge.
Truss bridge	A bridge which is build from a series of triangular beams.

Key Questions

Tell someone how to use a saw safely.

What different shapes are effective for making a bridge?

Explain why truss bridges are a popular design.

By main span, where is the longest truss bridge in the World?



Be careful using saws. Fix the wood. Hold the saw with one hand. Place the other hand on the table away from the saw. Start by pulling the saw back before gently sawing. Try to keep the saw straight.