Bridges Design and Technology Knowledge Organiser

Project

To design, create and analyse a bridge to fulfil a purpose.

This half term you will learn:

- The names of different types of bridges.
- how to strengthen and join
- Understand the changes in technology that allowed longer bridges to be built.

Technical Knowledge

- Use knowledge to improve a made product by strengthening, stiffening or reinforcing To combine pattern, tone and shape.
- Demonstrate increased skill with a range of techniques and equipment, making informed choices based on the suitability and effectiveness of different processes.
- Test, evaluate and refine ideas and products against a specification.

Suspension and arch bridges

In the suspension type of bridge, the deck hangs from strong cables. The main cables hang between two or more towers. Smaller cables hang down from the curving main cables. The h[illegible] the cables under tension.

An arch bridge is a bridge with abutments at each end shaped as a curved arch. Arch bridges work by transferring the weig[illegible] its loads partially into [illegible] abutments at either sid[illegible] capstone or keystone..

Designer focus

Isambard Kingdom Brunel (1806-1859)

Isambard Kingdom Brunel was a Victorian engineer who was one of the main architects of Britain's industrial revolution. He was famous for his pioneering work on Britain's railways and ships. He built railways and designed bridges,

Royal Albert Bridge

The Royal Albert Bridge is a railway bridge which spans the River Tamar between Plymouth in Devon and Saltash in Cornwall. Its design is made of two 455-foot lenticular (the shape of a double convex lens) iron trusses (a framework, typically consisting of rafters, posts, and struts, supporting a roof, bridge, or other structure) 100 feet above the water. It's

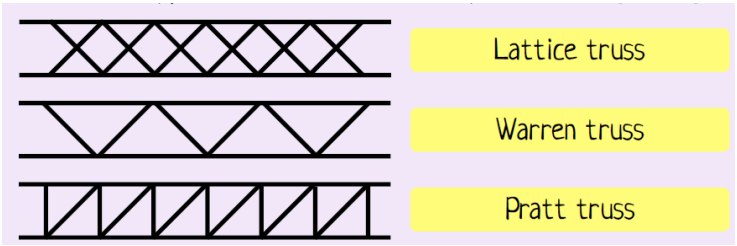
Clifton Suspension Bridge

One of Brunel's largest achievements was the Clifton Suspension Bridge. In 1830, he designed a 700 feet bridge to span across the Avon River. The bridge required two masonry towers that reached 245 feet above the river. The suspension bridge used cables under tension to support the roadway. This tension allowed the bridge to use less

Truss Bridges

Truss Bridge

A truss bridge is made up of several beams connected together in different



ways. There are three main types of truss bridge..

Key Vocabulary

abutment	The structure built to support the ends of a bridge
capstone	The centre stone in the arch of an arch bridge.
Compression force	Compression force (or compressive force) occurs when a physical force presses inward on an object, causing it to become compacted.
deck	The flat surface of a bridge.
Lenticular truss	Lenticular truss: uses a lens-shape truss which has an upper and lower curve and diagonal elements between them.
parapet	The side section of a bridge which makes it stronger.
pier	A man-made deep foundation for bridge pillars, found under water.
suspension	In suspension bridges, the roadway hangs from strong wires called cables. The main cables hang between two or more towers. Smaller cables hang down from the curving main cables. The smaller cables hold up the roadway. Suspension bridges can span longer distances than any other type of modern bridge.
Tension force	Tension is a reaction force applied by a stretched string, rope or similar object on the objects which stretch it.
truss	A bridge made up of several beams connected together in different ways