

Knowledge Organiser: Building Bridges

Years 3-4



Key Knowledge:

Beam bridges are the simplest structural forms for bridge spans supported by a pier at each end.

❑ A **truss bridge** is a bridge with its load-bearing structures composed of a series of wooden or metal triangles, known as trusses.

❑ A **cantilever bridge** is a bridge built using cantilevers, structures that project horizontally into space, supported on only one end.

❑ An **arch bridge** is a bridge shaped as a curved arch. ❑

A **suspension bridge** is a type of bridge in which the deck is hung below suspension cables on vertical suspenders.

❑ A **cable-stayed bridge** has one or more towers from which cables support the bridge deck.

Famous Engineers:

Isambard Kingdom Brunel 1806-1859



Thomas Telford 1757-1834



Key Skills:

How do I build a strong and stable structure?

Prior learning: Remember a wider base can help a strong structure to be more secure.

Key points: Consider the most appropriate materials and properties for your frame.

Evaluating: How well does your structure work?

How did you make your frame structure strong and rigid?

What materials did you use and why?

TYPES OF BRIDGES

arch bridge



tied arch bridge



cantilever bridge



truss bridge



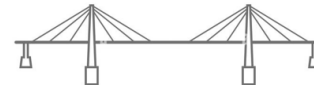
beam bridge



suspension bridge



cable-stayed bridge



Key Vocabulary:

Vocabulary	Definition
Frame	A rigid structure to support building or engineering work.
Keystone	A central stone at the summit of an arch, locking the whole thing together.
Triangulation	The triangular shape of bridges gives the bridge strength and distributes the weight of any vehicle or pedestrian crossing over it.
Mechanism	A system of parts working together in a machine.
Construction	To build or put together.
Engineer	A person who designs, builds or maintains engines.
Strengthen / reinforce	To make something stronger.

Time line of learning:

Research different bridges and structures

Design a bridge and the materials you will use.

Build your bridge using your materials

Test your bridge out. Can it hold an object?

Evaluate your bridge. Would you change your design?