Building bridges

Key Question/What will I learn by the end?

Research different bridges and their structures and designs.
Design a bridge, and select the materials
Construct bridge
Test bridge
Evaluate

Key links

The Millennium Footbridge in London

Isambard Kingdom Brunel

Prior vocabulary

Horizontal
Diagonal
Vertical
Bridge
Structures
Frame
Structures
Rigid
Beam
Column
Joints

Sticky learning

New Knowledge

- *Know which materials will be appropriate for which functions and uses and which are not*
- *Know the environmental factors involved in use of different materials*
- *Know how to make a structure stronger using a base, reinforcement, bracing, girders, struts, rafters, cross bracing and cantilevers*
- *Know how to make an increase range of mechanisms including sliders, levers, linkages, springs, discs, hinges, axels, pneumatics, hydraulics, gears, cams, pulleys, and winders.*

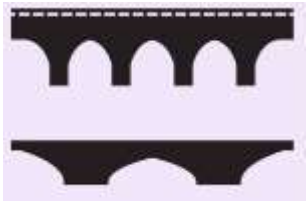
New Skills

- *Balance functionality and aesthetics in their design – and explain their choices*
- *Share and discuss ideas with others, creating group plans and allocating tasks where appropriate*
- *Record a step by step plan for making*
- *Produce lists for the tools, equipment and materials they will be using*
- *Choose materials to use based on suitability of their properties and aesthetic qualities*
- *Represent ideas in diagrams, annotated sketches and computer-based programmes (where appropriate)*

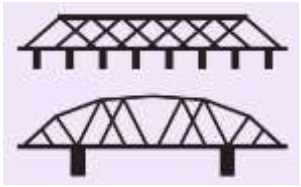
New Vocabulary

Lab
Foundations
Triangulation
Bracing
Functionality
Aesthetics
Hydraulic
Cam, gear, pulley
Plan view,
cross section,
exploded diagram

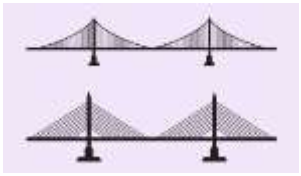
Visual representations



Arch Bridge

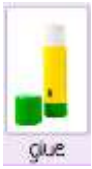


Truss Bridge



Suspension Bridge

Materials/tools



Safety

- Be cautious with scissors and always watch carefully when you are cutting. Put scissors away after you have finished using them.

- When making holes in materials, a pointed pencil can be used. Always use blue tack or similar underneath the card that the hole is being made in.