

Forces can change the **shape** of objects, they can also make objects begin to move, speed up or slow down.

push

pull



Pulls and pushes are both forces.



Truss bridge



Suspension bridge



Beam bridge



Arch bridge

Gravity is a force which pulls everything towards the centre of the Earth. The weight of something is the force that the Earth's gravity is having on it.



What I already know

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities .
- investigate and analyse a range of existing products.
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work and motors].

What I will know:

- I will understand different types of bridges for example beam and arch bridges.
- I will be able to create a range of beam and arch bridge designs.
- I will be able to identify stronger and weaker structures and find ways to reinforce a structure.
- I will be able to use triangles to create truss bridges and test them and understand how triangles can reinforce bridges.
- I will be able to measure and mark out accurately on wood.
- I will be able to select appropriate tools and equipment for particular tasks following health and safety rules.
- I will be able to explain why these materials are an important part of the design process.
- I will be able to make a truss bridge and identify its points of weakness, reinforcing them as necessary.
- I will be able to evaluate my truss bridge against a specification.

Vocabulary

Arch bridge—A bridge which is built with a curved arch.

Beam bridge—A bridge which is built with horizontal beams and vertical pillars.

Bench hook—A tool which hooks onto the edge of the workbench. It is used to hold woodwork still when sawing.

Compression 0 A squashing force caused when parts of a structure are pushed together.

Coping saw—A saw with a narrow D shaped metal blade, used for cutting curves in wood.

File—A tool used to smooth down rough edges on wood or metal materials.

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 especially by adding another material or element to it.

Sand paper—Strong paper with sand on one side to smooth or polish woodwork.

Setsquare or try square—A right angle triangular plate, wood or metal tool used for drawing lines at degrees.

Suspension bridge—A bridge which is supported by vertical cables and suspended by cables which run between pillars

Tenon saw—A saw with a flat blade for cutting wood in straight lines or angles.

Truss Bridge—A bridge which is built from a series of triangular beams.

Tension - A bridge which is built from a series of triangular beams.