



Brief: Design and make a bridge

Key Vocabulary		Definition	Examples of Bridges
1	Foundation	Foundation is the lowest part of the building or the structure that is in direct contact with the soil which transfers loads from the structure to the soil safely	<p>Tower Bridge.</p>  <p>It was built between 1886-1894. The bridge crosses the River Thames. The bridge is 800 feet in length. It took thousands of stone and brick to build it.</p> <p>Sydney Harbour Bridge.</p>  <p>It measures 143 m (440) from top to water level. It is double hinged with reinforced concrete pylons.</p>
2	Bracing	Bracing is a construction method used to stabilize the building structure against lateral forces. It increases the capability of building structures to withstand lateral load due to wind and earthquakes.	
3	Triangulation	Triangulation in buildings is a structural technique that involves arranging materials into triangles to create strength and rigidity. Triangles are the strongest shape and help distribute weight evenly. Systems of triangulation have been used in construction for centuries.	
4	Beam	Beams are horizontal elements which carry loads mostly perpendicular to its axis to distribute them to its supports.	
5	Column	A column is a vertical structural element that is designed to carry loads from the upper parts of a structure and transfer them to the foundation or the ground. Columns are typically cylindrical in shape and are often made of materials such as concrete, steel, or wood.	

Frame Structures

Frame structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight. Frame structures give shape and are useful for support & weight bearing. Frame structures have joints which are formed according to the design requirements and materials being used. Some examples of man-made objects that use frame structures are houses, skyscrapers, bridges, scaffolding, tables and roller coasters.

The system of beams and columns in a frame structure can be further strengthened through the use of other features e.g. **Triangulation** will help to make your structure stronger. This is important when you are considering how to construct your bridge when creating stable joints.



HEALTH AND SAFETY

Remove any jewellery and tie back long hair

Wear an apron and roll up your sleeves

Walk safely and calmly around the classroom

Keep your work area and floor area clean

Follow the teacher's cutting instructions

If you need to move around with scissors, hold around the closed blade, face down.

Finally, report all spillages and clean up properly after yourself, leaving the classroom tidy.