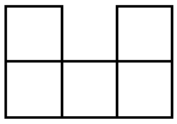
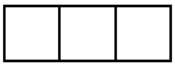
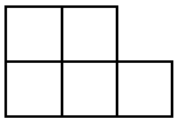
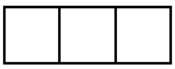
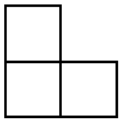
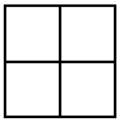
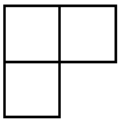
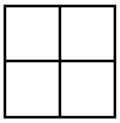
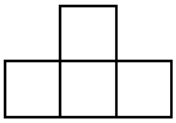
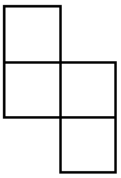
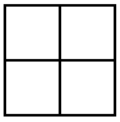
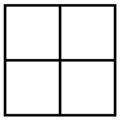
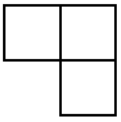
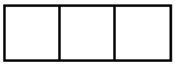
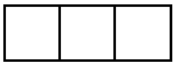
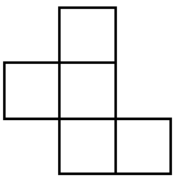
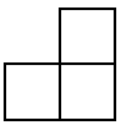
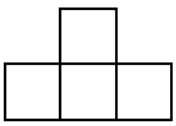
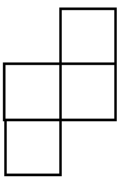
Building bridges

For each structure:

1) Make it out of multilink cubes
2) Draw an isometric drawing of it (3D drawing)

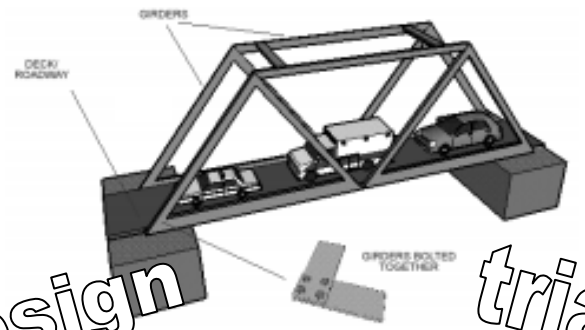
	front view	*left side view*	*plan view*
1			
2			
3			
4			
5			
6			
7			

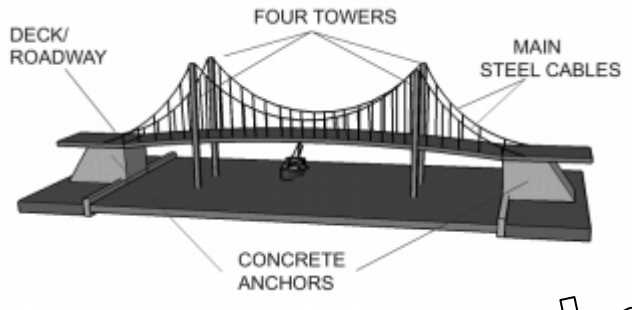
Isometric paper

triangles

Building bridges

nuts





design triangle bolts

Box girder bridges

These are usually manufactured from prefabricated steel girders.

The steel girders of a bridge are fixed together normally with large _____ and _____.

Each side of the bridge is composed of three _____. Each _____ is made up of three steel girders bolted together.

This is called _____and produces a structure of great strength.

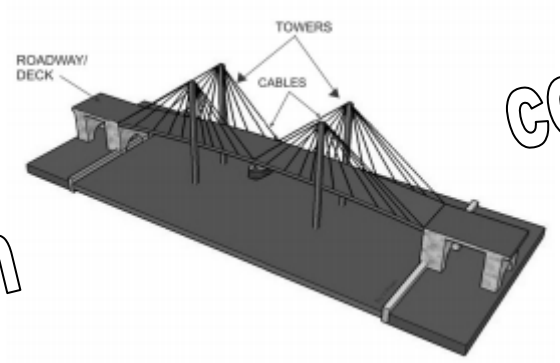
Suspension bridges

A suspension bridge is composed of a roadway suspended by steel cables.

The four towers hold up the steel cables which in turn hold up the _____. The steel cables are held in position by enormous concrete anchor blocks.

The anchor blocks must be heavy enough to hold up the number of vehicles that are expected to be on the roadway at any one time.

aided



computer

triangulation

roadway

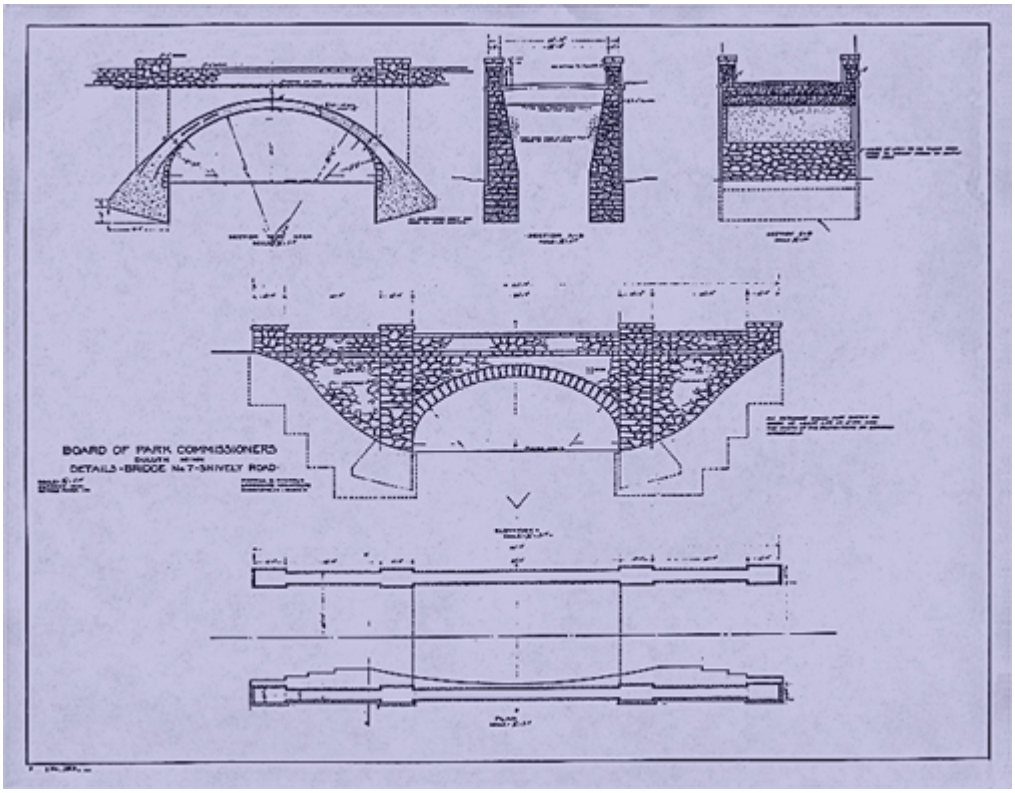
Cable stay bridges

These are modern bridges designed using _____ _____ _____ (CAD). Unlike suspension bridges, cable stay bridges do not need anchor blocks. The cables are fixed to either side of each _____ - this means that the weight of each side of the bridge counter balances the opposite side.

The absence of anchor blocks substantially reduces the amount of materials needed and the cost of building the bridge.

tower

Building bridges - the challenge



Blue print of a bridge design by an architect

You are going to design a bridge that supports a weight between two desks 25 cm apart.

Your bridge will be made out of paper.

You will not be allowed to stick the ends of your bridge to the desks.

Before you make your bridge you will need to create a design in your groups.

Your design should include:

1) A **plan view**
2) A **front elevation**
3) A **side elevation**

You will have heard these referred to as **orthographic projections** in your D&T lessons.

You will need to include dimensions/measurements on your designs. These should be given in both centimetres and millimetres.

Each piece of A4 paper you use will cost you £0.01. Your bridge should be built as cheaply as possible. Your teacher will be in charge of the paper and will record how much you use. You should keep a record of the cost yourself.

You will present your design to the class before the designs are tested.