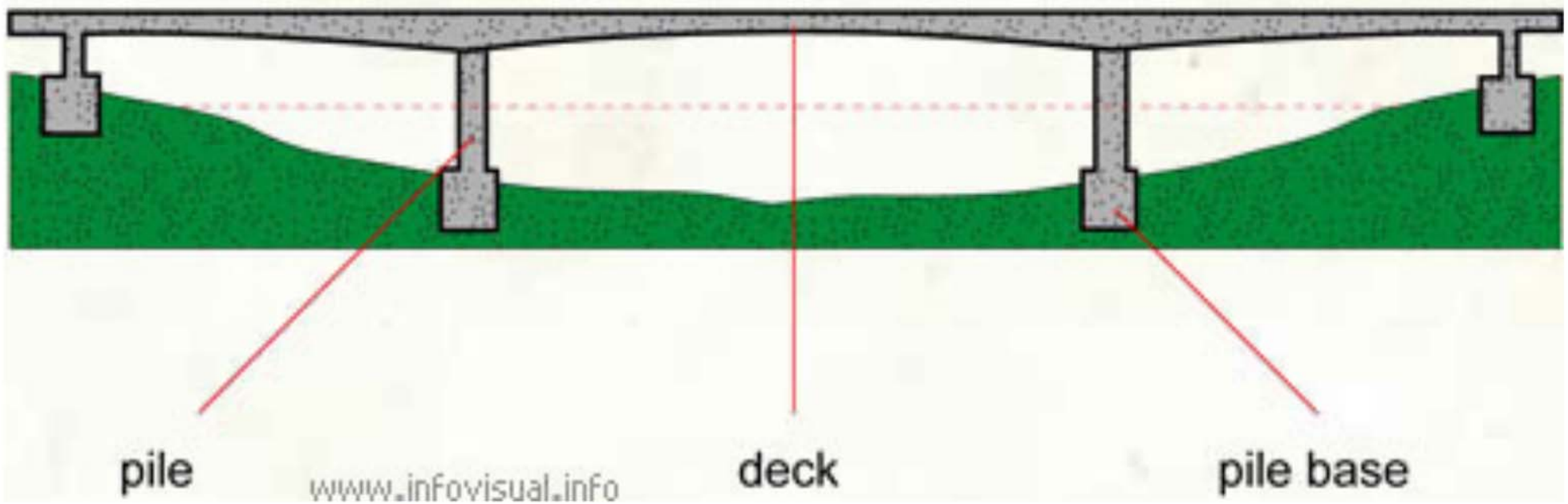


Bridges

1

Types of Bridges

BEAM BRIDGE



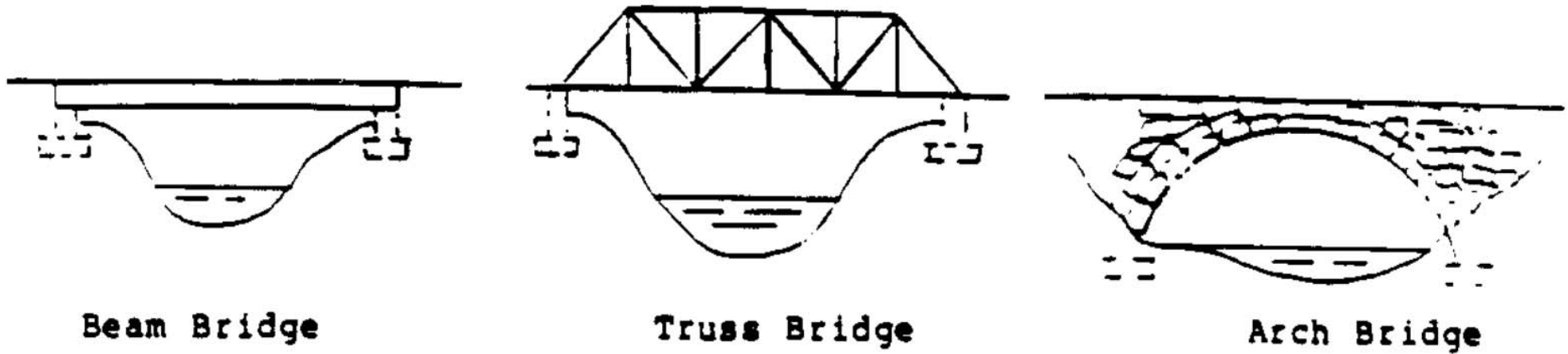
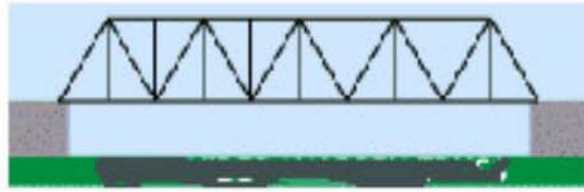


Figure 1: Three Types of Bridges: Beam, Truss, and Arch

Label the Bridges below, according to their type.



a)



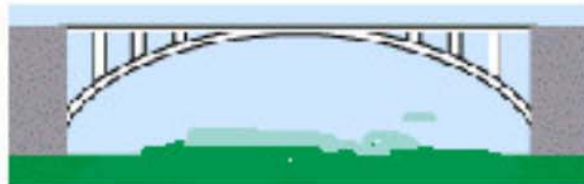
b)



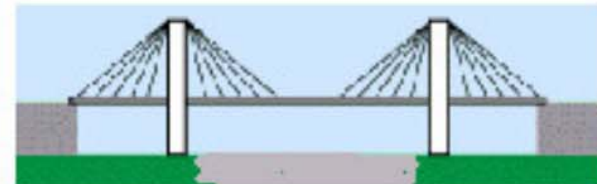
c)



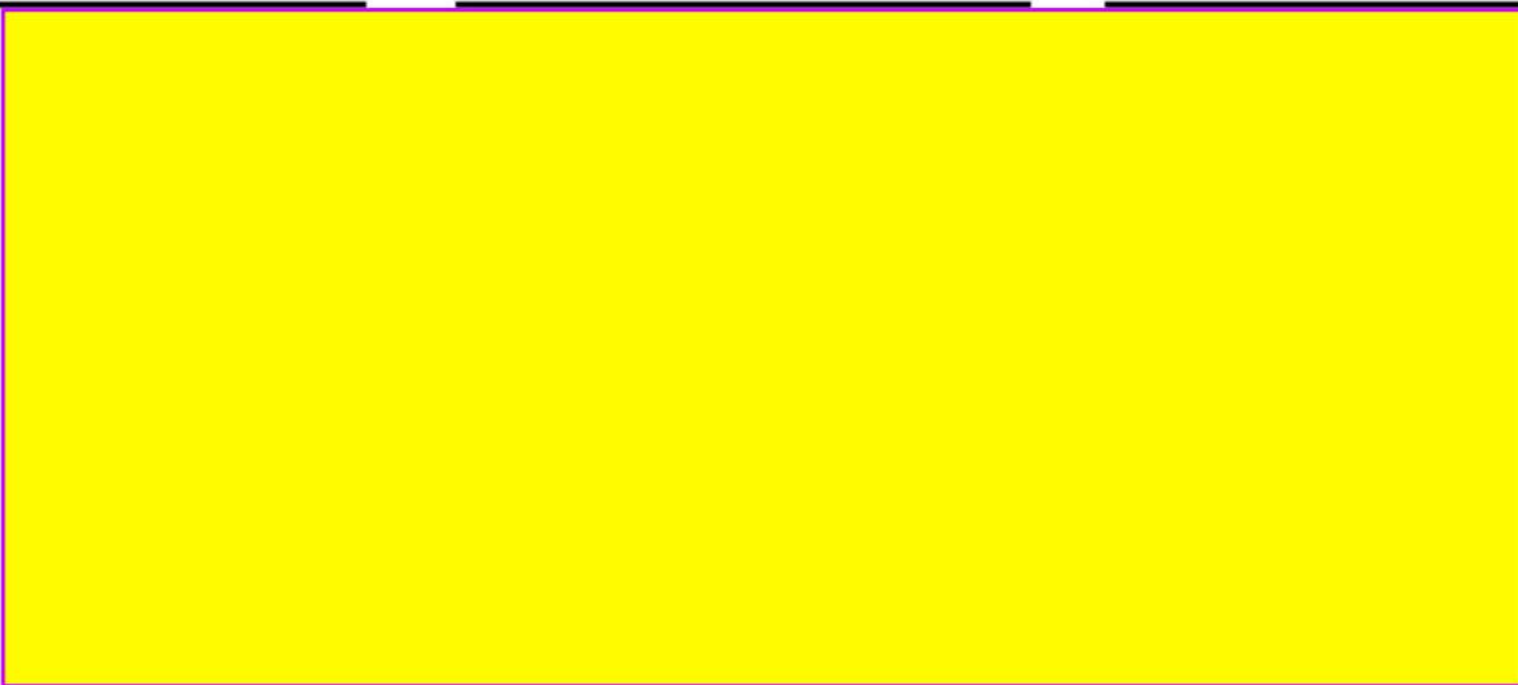
d)



e)



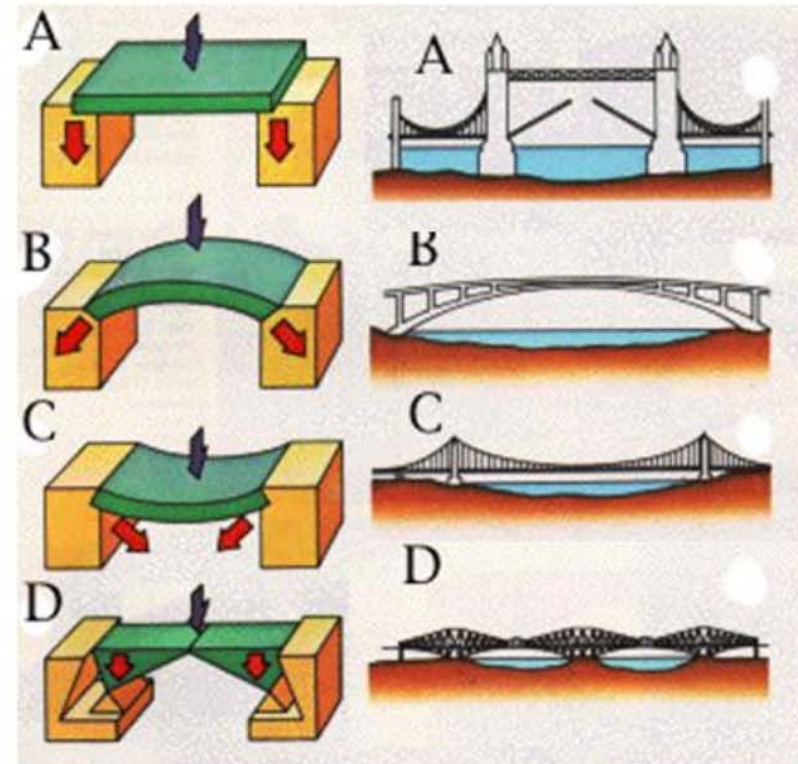
f)

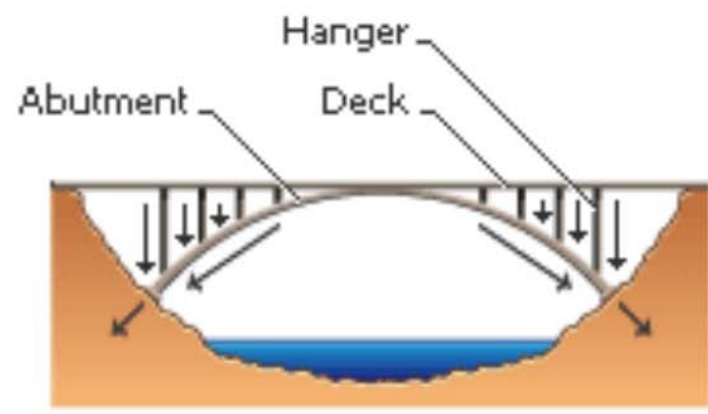


Forces in Bridges

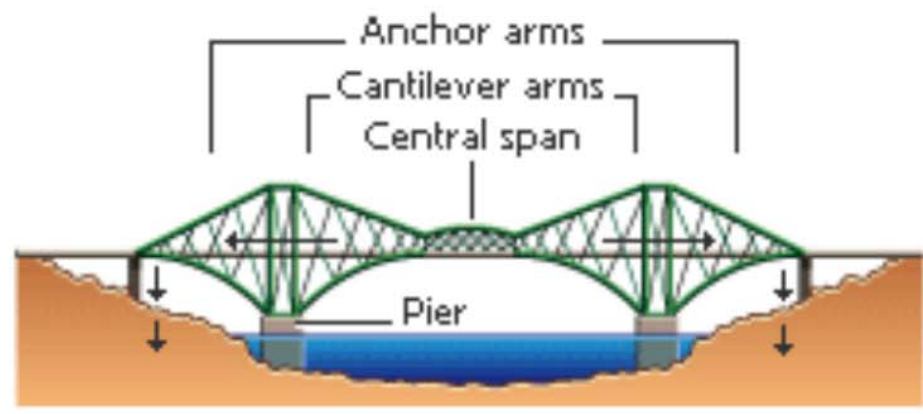
Basic Bridge Types

- Beam Type Bridges
- Arch Bridges
- Suspension Bridges
- Cantilever Bridges

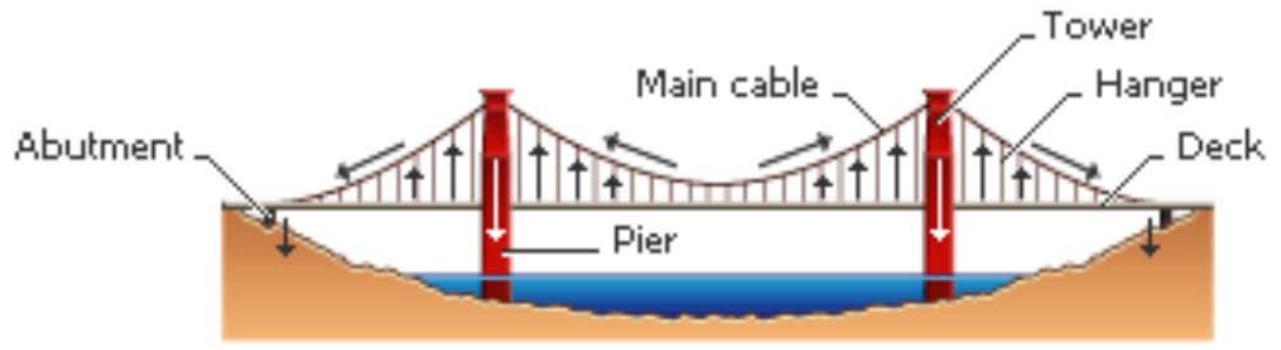




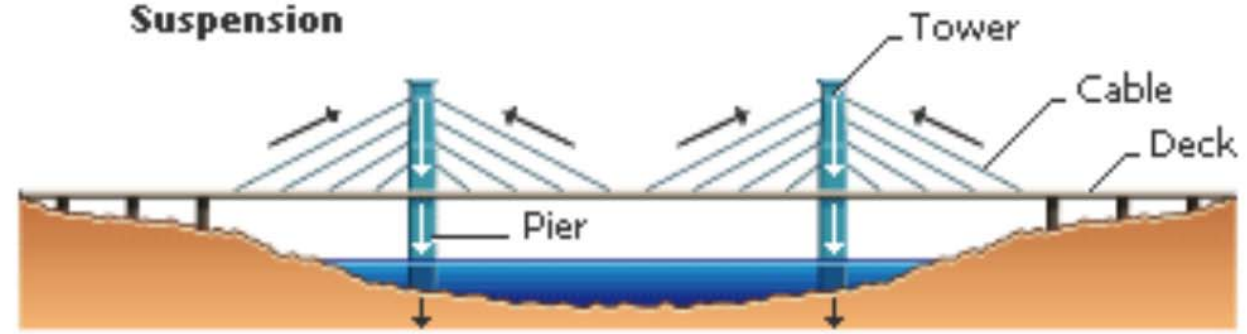
Concrete arch



Cantilever



Suspension



Cable-stayed

Unusual and Aesthetically Pleasing Bridges

















Famous Bridges



Golden Gate, San Francisco



Great Belt, Danemark





Chapel Bridge, Switzerland



Brooklyn Bridge, New York



Sydney Harbour Bridge



Rialto Bridge, Venice



Tower Bridge, London



Milau Bridge, France

Activity

Find out everything you can about the following bridge types and record it on the sugar paper:

Beam , truss, arch, suspension

Things to think about:

Structure

Famous Types

Science (Forces)

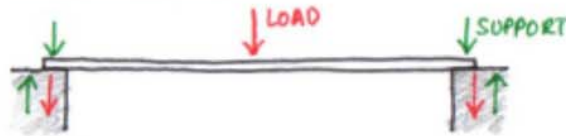
A sketch

Example on next page...



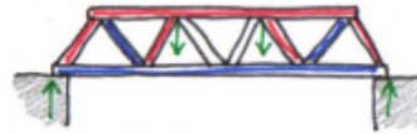
THE FOUR MAINTYPES OF BRIDGES:

1. BEAM BRIDGE



Weight is applied at either end to counteract the bending at the centre. The beam must be strong in both compression and tension to resist twisting & bending under load. (can only span 250ft max)

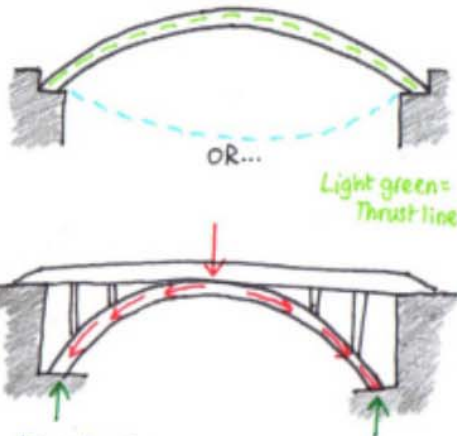
2. TRUSS BRIDGE



- Compression
- Tension
→ Forces

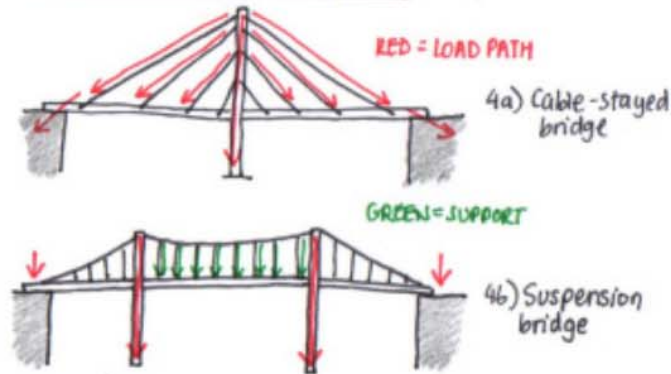
Truss bridges are kept strong by the stiffness of the structure. All the beams/members work together to spread out the load.

3. ARCH BRIDGE



In order for an arch bridge to work it needs to have firm foundations, to allow all the members to push back against each other. The arch needs to be within a thrust line to stay rigid + supportive. This can be found by hanging a chain off the gap + then mirroring it (light blue dotted line).

4. SUSPENSION BRIDGE



Suspension bridges allow for the longest spans. The bed of the bridge can be continuous, and is held up by cables stretched between piers. In the top bridge, these cables are rigid + directly connected to the bridge deck. In the bottom bridge, they hang vertically off another cable supported by the piers.