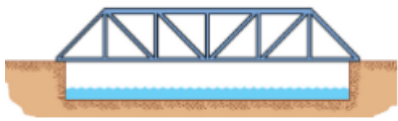
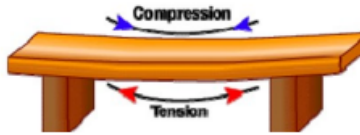


Types of Bridges:

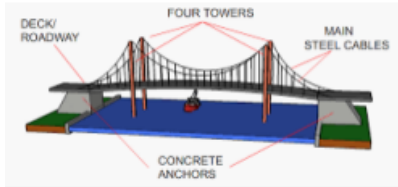
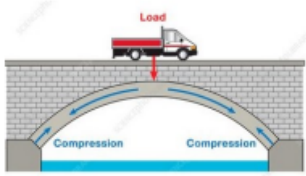
**There are 4 main types of bridge construction:**

**Beam bridge** – The force of compression manifests itself on the top side of the beam bridge's deck (or roadway). This causes the upper portion of the deck to shorten. The result of the compression on the upper portion of the deck causes tension in the lower portion of the deck. This tension causes the lower portion of the beam to lengthen.



**Cantilever/Truss bridge** - a bridge built using cantilevers, structures that project horizontally into space, supported on only one end. For small footbridges, the cantilevers may be simple beams; however, large cantilever bridges designed to handle road or rail traffic use trusses built from structural steel, or box girders built from prestressed concrete.

**Arch bridge** - a curved design, which does not push load forces straight down, but instead they are conveyed along the curve of the arch to the supports on each end. These supports (called abutments) carry the load of entire bridge and are responsible for holding the arch in the precise position unmoving position. Conveying of forces across the arch is done via central keystone on the top of the arch.



**Hanging/Suspension bridge** - suspend the roadway by cables, ropes or chains from two tall towers. These towers support the majority of the weight as compression pushes down on the suspension bridge's deck and then travels up the cables, ropes or chains to transfer compression to the towers. The towers then dissipate the compression directly into the earth.



**Vocab:**

Bridge: A structure across river, road or other obstacle.

Beam Bridge: A horizontal structure that is resting on two piers, one at each end.

Truss Bridge: An assembly of beams or other elements that creates a rigid structure

Suspension Bridge: A bridge that has its roadway suspended from two or more cables and is anchored at the ends.

Arch Bridge: A semi-circular structure with abutments on each end.

Abutments: Supports that carry the load of the bridge.

Span: The distance between two bridge supports.

Framework: An essential supporting structure of an object.

Support: The thing that bears the weight of something or keeps it upright.

Tension: A state of being stretched tight.

Structure: A building/object constructed from several parts.

Mentionable Bridges and People:

**Golden Gate Bridge** (San Francisco, USA) Joseph Strauss et all – Suspension Bridge

**Millennium Bridge** (London, UK) Norman Foster- Suspension Bridge

**Forth Bridge** (Scotland, UK) John Fowler and Benjamin Baker- Truss Bridge

**Ponte Vecchio** (Florence, Italy) Taddeo Gaddi- Arch Bridge

**Donghai Bridge** (Shanghai, China) – Beam Bridge

Key Skills and Knowledge:

- Wider bases can help structures to be more secure.
- All things are designs with specific purpose and audience.
- Appropriate materials need to be used.
- Sometimes additional supports are needed to make structures more secure.
- Bridges can collapse if not strong enough.
- Designs and prototypes need to be evaluated and adapted based on need