

Slide 1

Title: Leaf's 2021 Civil - Brandy, Anita, Ryder, Ethan

Image: A sketch of a bridge coming out of the clouds

Slide 2

Title: Forces 101

- A force is a push or pull on an object
- For bridges, the distribution of forces are the most important:
 - Brainstorm the forces that might be applied on a bridge (i.e. weight of the cars)

Image: Two people pushing on each other and being pushed back.

Slide 3

Title: Newton's Three Laws of Motion

Newton's 3 Laws of Motion

1st Law: Objects in motion stay in motion, and objects at rest stay at rest unless acted upon by an external force

2nd Law: Acceleration of an object depends on two things, force and mass. (Does a bridge accelerate?)

3rd: For every action, there is an equal and opposite reaction

Slide 4

Title: Shapes of Bridges

Factors that affect the shape of the bridge:

- Distance
- Terrain
- The object of transport (trains, cars, pedestrians, etc.)

Image: An infographic showing the six different types of bridges: truss bridge, arch bridge, beam bridge, tied arch bridge, suspension bridge, cantilever (truss) bridge, cable-stayed bridge.

Slide 5

Title: Beam Bridges

- Rigid horizontal structure
- Requires support (pillars) between distances
- Great for short distances

Image: A beam bridge stretching across a vast distance of water with multiples columns in the water.

Slide 6

Title: Arch Bridges

- Great for crossing distances where it is difficult to build midway supports
- The shape balances the weight of loads throughout the arch
- Has a finite span length

Image: An arch bridge crossing a river full of rocks.

Slide 7

Title: Truss Bridge

- A lightweight structure made up of triangles
- Very good at bearing loads
- Can cover long and short distances well

Image: A truss bridge spanning across a river.

Slide 8

Title: Truss Bridges Activities

Video of the activity.