

Engineering with Legos : Sturdy Structures & Tall Towers

Name: _____



BRIDGES

There are many different bridges, but here are a few types. Try building some of these bridges and see which ones are the sturdiest! You can also combine different designs to make the bridge even sturdier.

REVIEW:

- What is Bracing?
- What is a cantilever?
- What is a strong shape?

LESSON: Bridges

Q: What is the purpose of a bridge?

A: Usually to connect to land masses which are separated by a river, body of water, or a big ditch.

Q: What does a bridge do?

A: It helps support weight so you can get from one side to another.

Who has ever seen a bridge?

Has anyone gone to the Golden Gate Bridge in San Francisco?

WORKSHEET: Pass out worksheet and go over bridges.

Bridges that work well are always symmetrical and do a good job at distributing weight down to the ground through their columns.



BEAM BRIDGE: Consist of a strong beam. These bridges are usually shorter in length and are the simplest bridge to build.



TRUSS BRIDGE: These bridges are more complex to build. But when built properly, they are very strong. They consist of multiple triangles which help distribute weight and make it very sturdy.



ARCH BRIDGE : This design uses arches to help distribute the force to the sides of the bridge. These can be complex. You can also try using a beam to triangulate the bridge instead of the arches.



SIMPLE CANTILEVER BRIDGE : This bridge has beams that are supported by another beam or a tower that goes straight to the ground. This helps distribute weight in important areas.

Challenge 1 - Individual or Team Build

- Build a free standing bridge at least 10" long. (a little shorter than the length of a piece of paper). Must be off the ground.

Challenge 2 - Individual or Team build

- Build a bridge at least 12" that can support weight at different locations.

Challenge 3 - Individual or Team build

- Build a bridge that has arches or triangles to support it.

Challenge 4 Ultimate- Individual or Team build

- Build a bridge that can support the instructors foot!