

Structure is Key

Task One: Weight Support

You will need:

Paper (One A4 sheet divided into eighths)
Masking Tape
Scissors
Ruler

Time: 20 minutes total

Team

Your team will include 2-3 members of your class.

Objective

Build a stable platform that can withstand 1kg of weight with the given materials.



Instructions

Once your design is complete, bring the platform to the instructor for testing. If an attempt fails, you may attempt it again with a new set of paper after any other group has finished testing. DO NOT reuse any paper from the previous attempt. Once the structure succeeds, you will be allowed to move on to the second task.

Specifications

The platform should be:

- At least 8cm tall
- Stable and free standing, you should not have to hold it up!
- Able to support 1kg

Task Two: Paper Bridge

You will need:

Paper (One A4 sheet)

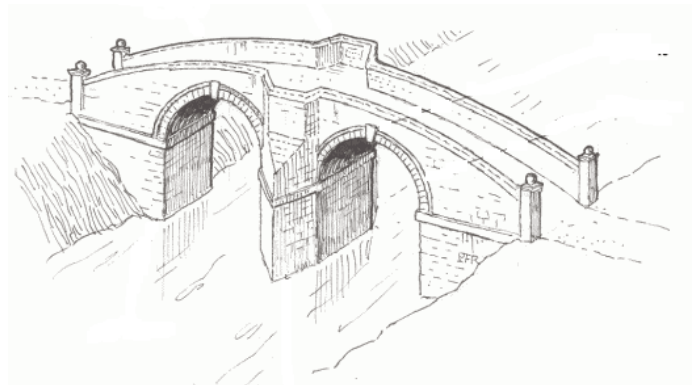
Scissors

Ruler

Time: 20 minutes total

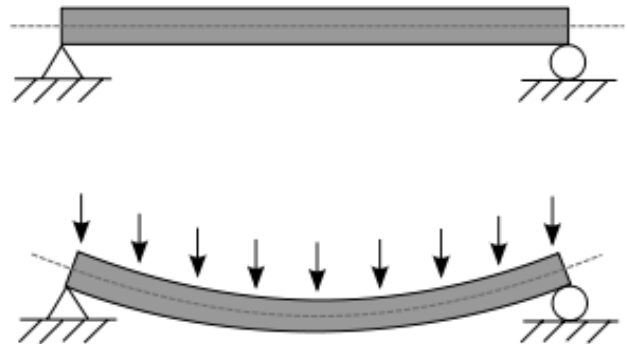
Team

Your team will include 2-3 members of your class.



Objective

Build a paper bridge between two platforms that supports as much weight as possible.



Instructions

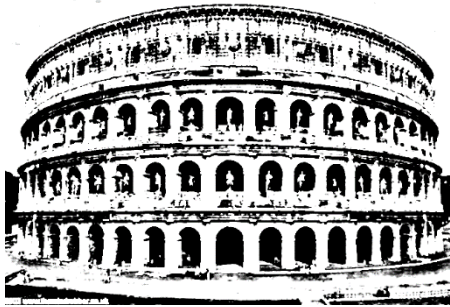
- Once you think that your group is ready to test your bridge, ask the instructor for weights.
- Keep on trying different forms and designs. Consider the examples of structural design covered in class.

Specifications

- The bridge must span a 15cm gap without attaching it to platforms.
- You will be able to place weights on the bridge in any way you wish as long as they are placed between the platforms and above gap.

The primary task of **Architects** and **Civil Engineers** is designing and overseeing construction of structures. They are responsible for making these buildings safe and functional. Whether it is a home, Canary Wharf skyscraper, or tube station, buildings are designed to support much more than its own weight.

Have you ever wondered how the large structures like skyscrapers or long bridges support themselves? How do old structures that are hundreds to thousands of years old manage to still stand?



Imagine you are the ground floor of a building. You are literally keeping the entire building from coming down. A typical building has to be able to support thousands of tons of its own weight as well as the weight of everything inside it.

This is made possible through **Structural Design**. Structures are arrangements of materials designed for stability. They come in various shapes and sizes depending on their application and make better bridges and buildings. Therefore structural design is crucial in creating the smallest houses to the tallest skyscrapers.



What kind of shapes exist in bridges and buildings?

With the right structure, you could build the sturdiest of buildings with even the weakest materials like paper!

What dangers threaten the stability of a building or bridge? Are these dangers all physical?