

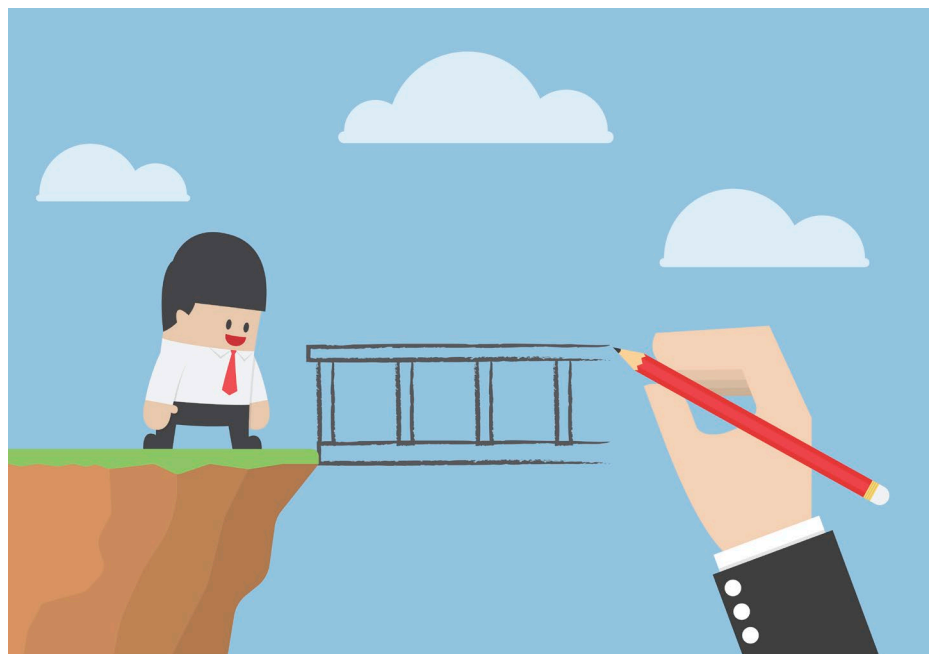
**1st & 2nd Class
Science**



Bridges

Today we are going to be engineers! An engineer is a person who designs machines, buildings or structures.

Anything that is built must first be engineered, or planned out. You can use your imagination to build whatever you like but it is important to plan it out to see if it will actually work!





Bridge Quiz

There are many different types of bridges, here are some examples.



A Truss Bridge is made of a series of wooden or metal triangles, known as trusses. The triangle shape gives them strength.

An Arch Bridge is a very old bridge design and has been used for thousands of years. The bridge is shaped as a curved arch.

Beam Bridge is the oldest, simplest, and most common type of bridge. A simple plank that crosses a stream is the most basic beam bridge. Supports, called piers, hold up the bridge between the two ends.

Suspension Bridges can span longer distances than any other bridges. The bridge hangs from strong wires called cables. These cables hang between towers.

Cable-stayed Bridge also uses cables but the cables run between the towers and the roadway in straight, diagonal lines. They also only need one tower.

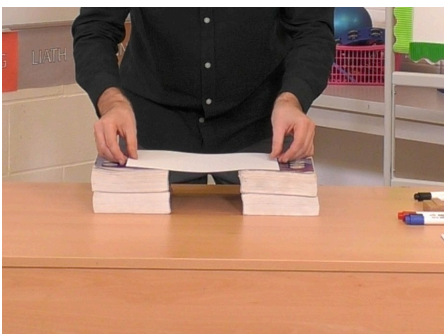


Design + Build a Bridge

Bridges are very important structures, especially in Ireland. As we have lots of rivers, we need a safe way to cross the water. Bridges need to be able to carry heavy weights such as trucks so they have to be strong with lots of support.

What you will need: Blocks or books, paper, and some weights to test your bridge. Toy cars, action figures and coins will work as weights.

01 We are going to build a very simple bridge by using laying a page across the books. But look what happens when you place a weight on it. It collapses straight away!





Design + Build a Bridge

02 Back to the drawing board! By adding an extra page and folding it on both sides, it gives our bridge extra strength and can now hold the weight! Add more weight to your bridge until it collapses and make a note of the weight!



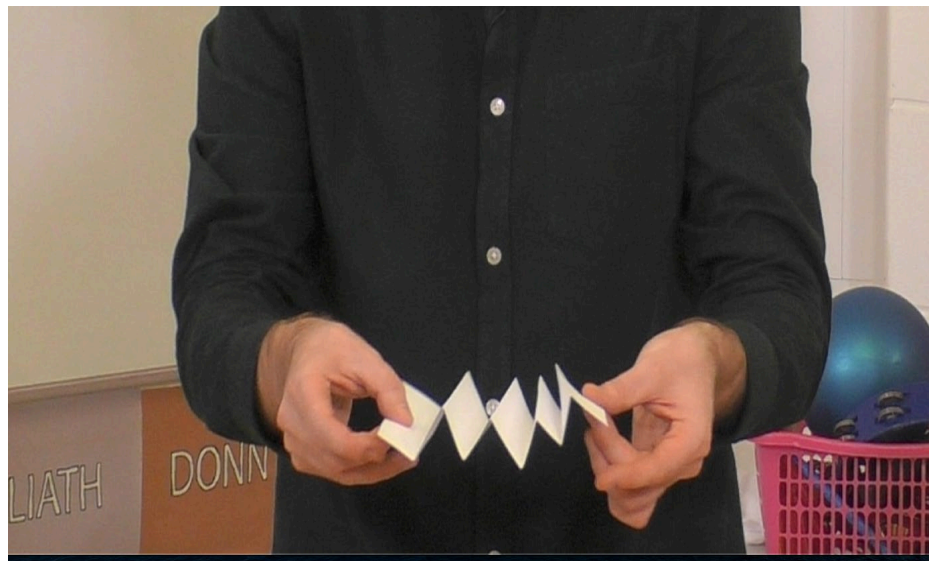
03 Try different bridge types. Arch bridges are very popular in Ireland but are they stronger than our first bridge? Copy the design below and find out. Try folding the page below so it looks like /\\\\\\\\ The triangle shape gives it strength!



Design + Build a Bridge

Place the folded paper across the books, like below, so that the ridges point to the other side.

Now add a page on top. Remember last time we tried just one page and it collapse? Look what happens now!



Make a note of how much weight it can hold. Which is best? Try making your own bridge design, using different techniques and see which is the strongest! This is what engineers do! They learn what works best and adapt their ideas!





Bridge Quiz

Can you name each type of bridge using the list above? Answers at bottom of page.

1. _____



2. _____





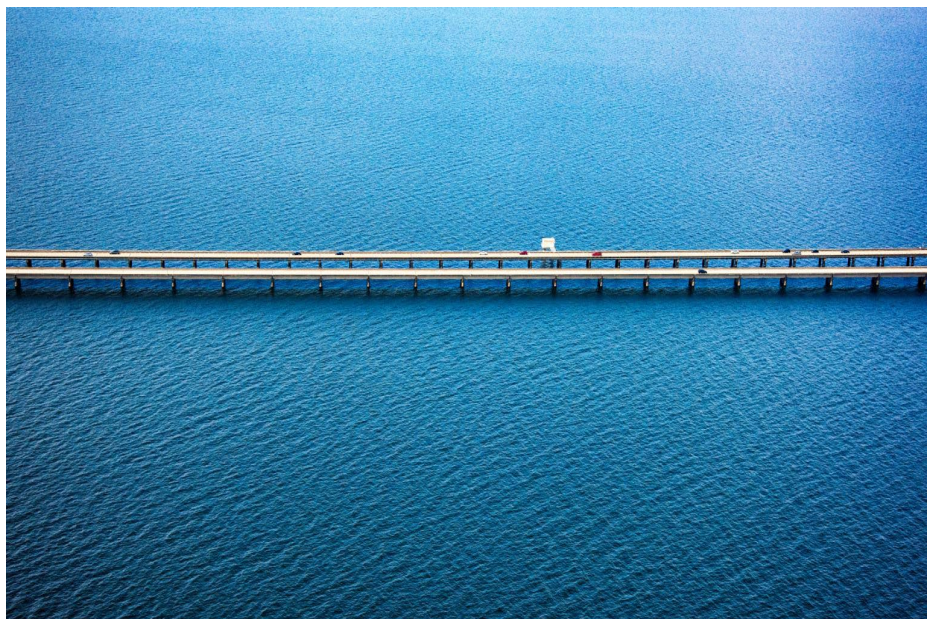
Bridge Quiz

Can you name each type of bridge using the list above? Answers at bottom of page.

3. _____



4. _____





Bridge Quiz

Can you name each type of bridge using the list above? Answers at bottom of page.

5. _____



Answers: Bridge Quiz Q1:Suspension Bridge.
The Golden Gate Bridge is perhaps the best-known suspension bridge in the world. Q2:Truss
Bridge Q3:Arch Bridge Q4:Beam Bridge Q5
Cable-stay bridge. The Samuel Beckett Bridge in Dublin
is a magnificent example. It can twist around to let boats
through!