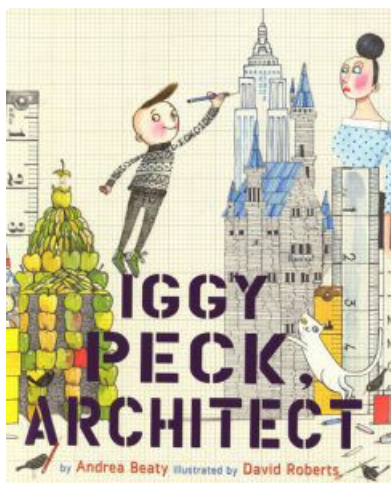


## BRIDGE BUILDING CHALLENGE

Watch a story about 'Iggy Peck, Architect' and then build and test your own bridge.

### Overview



Could you build a bridge strong enough for one of your cars or toys to cross?

Use materials from around your home or garden to build the strongest bridge possible.

 [Printable version](#)

This page will print, but looks a little funky. Click the button for a PDF version which looks a bit better.

[More STEM at Home](#)

### What you'll need

- A toy car or other toy to cross your bridge
- Materials to build your bridge:
  - building blocks or other construction toys you could use.
  - scrap paper, empty cardboard boxes, toilet or kitchen roll tubes or food containers.
- Clothes pegs, Sellotape or masking tape hold and stick things together.

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- Clothes pegs, Sellotape or masking tape hold and stick things together.
- Scissors (if using paper or cardboard)
- A gap to build your bridge across – between two chairs is a good place

### Suitable for:

Age 2-11

Age 3 up

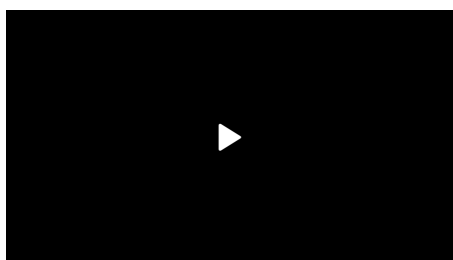
**Duration:**

About 30 minutes

**Safety notes**

You know your children better than anyone, and you should judge whether they're ready for this activity. You might want to think in particular about

- Always take care when using scissors.
- Bridges may fall down during testing.
- You might want to make sure everyone is out of the way when testing and the floor is protected.

**What to do****Step 1**

First watch this story about Iggy Peck, the architect. The story lasts about 9 minutes.

- What was the best thing Iggy Peck built? Why did you like this one?
- What did Iggy Peck create to save his teacher and the other children?
- What did Iggy Peck use to build this?

**Step 2**

Collect your building materials together.

Put two chairs back to back to create a gap of about 20 cm to build your bridge across. You don't have to measure the distance!

**Step 3**

Decide what you want your bridge to look like.

and stick things together.

- Scissors (if using paper or cardboard)
- A gap to build your bridge across – between two chairs is a good place

**Suitable for:**

Age 3 up

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**Careers link:**  
**Structural Engineer**

Structural engineers are interested in everything to do with buildings and built structures, such as houses, hospitals, office blocks. bridges.



- How will you make it long enough to cross the gap?
- Will it have sides to stop your car/toy from falling off?
- Will it have pillars or arches to hold it up?
- Will it be a suspension bridge like the one Iggy built?

You could draw a few ideas before you choose one and start to build.

oil rigs, ships and aircraft. They work to understand, predict and measure aspects such as the strength, stability and how rigid the structures are.

They are also responsible for choosing the right materials, such as concrete, steel, timber and masonry, to meet design specification of the structure.

**Attributes:** observant, committed, tenacious

## Step 4



Test your bridge.

Can you drive your car across it?

Can you balance your toy on it?

## Things to discuss

- Was your bridge strong enough to hold your car or toy?
- What do you think you could do to improve it?
- Which were the best materials for building your bridge?
- Why were they the best materials?
- Did your bridge bend in the middle like the one in the photograph? How could you stop this happening?

## How it works

When you placed the car on your bridge, the weight of the car might have caused your bridge to start to bend. If you put too many cars on, your bridge would collapse.

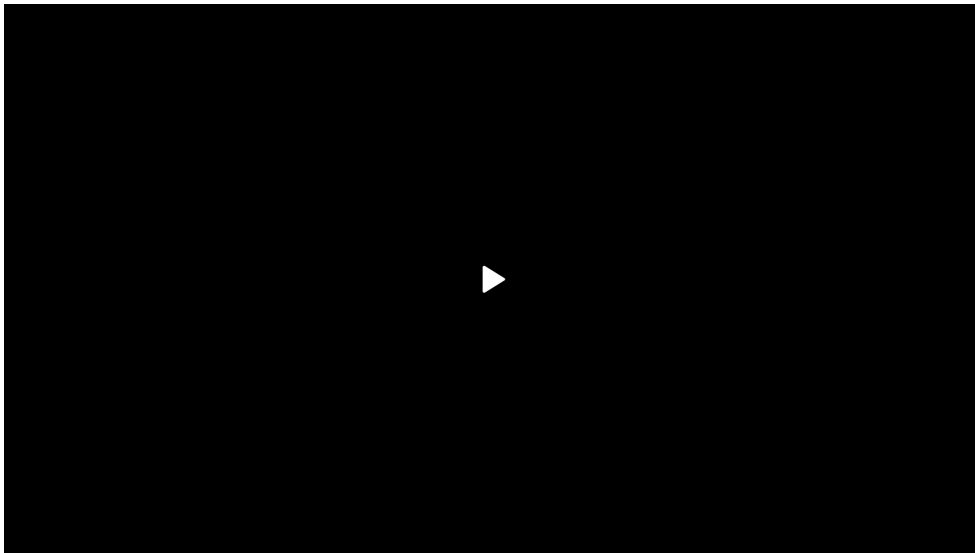
Real bridges are designed and built to hold the weight of the vehicles and people that use them. Bridges are built to last for many years and are designed to be safe and strong.

travel over them. Bridges spread the effect of the downward forces (weight) across the whole bridge, especially the bits that are on land. Some bridges do this by using arches, others use long chains or metal ropes to spread the weight out to the edges which are firmly secured on land.

You can [watch this video](#) to find out how suspension bridges work.

Have you ever wondered how a real suspension bridge is built?

Watch this video to find out how the Northern Spire Bridge in Sunderland was constructed.



## Other things to try

### Make a bridge using paper

You will need:

- a sheet of A4 paper
- a gap to build your bridge across (about 15 cm)
- about 10 coins (of the same coin)

### Step 1







Create your gap of about 15 cm to put your bridge across. You don't need to use a ruler, just make the gap wide enough so that your paper stays up when put across it.

Lay your paper across the gap.

## Step 2



Put your coins on the centre of the paper bridge, one at a time.

How many coins can the paper hold?

## Step 3





Fold the paper in half length ways.

Put it across the gap. Put your coins on the paper again, one at a time.

How many coins can the paper hold this time?

#### Step 4

Make a concertina. Fold about 2cm of the long edge over.



Fold the next 2cm over in the opposite direction.



Continue folding in this zig-zag pattern



Put the concertina across your gap. Put your coins on the paper again, one at a time.

How many coins can the paper hold this time?



## Things to discuss

Which paper bridge held the most coins?

Why do you think this bridge design was stronger?

## How it works

The concertina is made up of a series of triangles. Triangles are one of the best shapes for spreading out weight. They take force from a single point and spread it across a wide base. Bridges made of triangle sections are called truss bridges.