

BRIDGES (Part of 'Superstructures')

Moby can't understand why we need bridges when he can just use his super jet-boots to get where he wants! Tim explains that people need to get across rivers or busy roads and we haven't invented jet-boots on our planet yet!

Tim explains that if they want to build a bridge they need to make a model and test it first. They also need to think about:

- What the bridge is to be used for
- How to make it strong so it won't collapse
- How to make it look attractive so it isn't an 'eyesore'



THE MISSION (if you choose to accept it!)



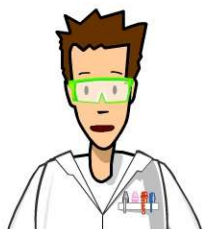
Moby has decided to build a bridge that will go over a river. It will be a **'post and beam'** bridge. He is going to test it first to make sure it is strong enough so gravity won't pull it down or things on it won't make it collapse.

Can you help Moby test bridges?



THE EXPERIMENT

Tim says that to do the experiment you need to work in a small group. You need to use your **imagination** but think like a **scientist**. This means:



- Think of a few **different ways** of building your test bridge before you decide on one
- When testing your bridge **don't change more than one thing at a time**
- Record what happened (the results) in a **table**
- **Ask** other groups what they found out

What we will test

Moby is keen to find out how wide a river his bridge can cross before it collapses. So he is going to make three beams in the same way. The only thing he is going to **change** is the **length** of the beams. He is then going to test them, one at a time, by putting small weights on top of them to see when they collapse.



Decide whether you want to help Moby or use your **imagination** and try something different. You could find out:

- Which **beam** is the strongest? (Change the way you make your beam, or the materials you use, but don't forget to **keep the length the same**)
- Do some **posts** make better supports? (Change the type of support, but keep the beam the same)



Whatever you want to do make sure you talk to your teacher about how to do it **safely!**

Write what you are going to do here:

What materials we need

Think about what you could use for the **beam** of the bridge, use your **imagination**.



Cardboard? Straws? Plastic? Lollipop sticks? Mixture of materials?

Think about what you could use for the **posts**.



Small boxes, cotton reels, 3D wooden shapes, books?

Write what materials you need here:

Beam:	Posts:

The test

Moby has drawn out his results table

Your table:

Length of beam (centimetres)	Mass which collapsed the bridge (grams)
20 cm	
30 cm	
40 cm	

Think about what you are testing and draw your own results table in the space above. Now do your experiment and fill out the results table.

What you found out

Look at your results table and discuss with the others in your group what you found out. Write about it here:

Find out if any other groups agree with what you found out. If not, why not?