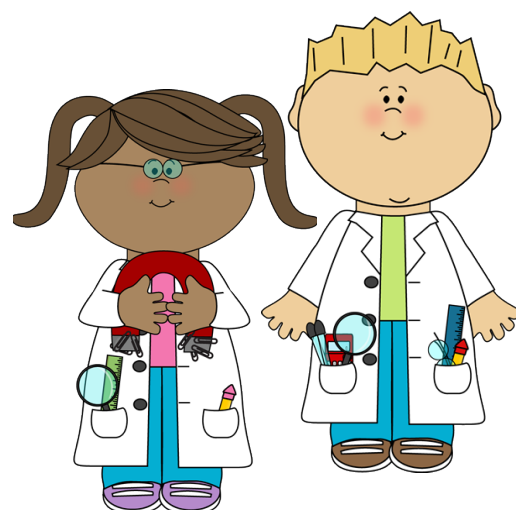


BREAK A BEAM

Video to support this activity: https://youtu.be/3i_pakLUFv0

Materials Scientists make new and exciting materials, and learn how to use existing ones in different ways to solve problems. How can we build on Mars or how can we help to keep people healthy? Materials might provide the answer.

One of the ways that scientists test materials is to break them. In this experiment you will make a beam of material out of anything you can find around the house (spaghetti or breadsticks are good or you could make a beam out of Lego). Now try to break it to see how strong it is.



You can repeat the steps in this worksheet by changing the material to find out which material is the strongest (meaning which holds more weight before breaking).

YOU WILL NEED:

- Kitchen Scales
- A plastic cup or container
- Weights to add into the cup (such as coins or pebbles)
- Two supports of the same height (food cans work well)
- Something to make the beam out of (Spaghetti, Lego bricks)
- An adult helper

1

Design a beam

Design a beam to make a bridge between two supports, it must be more than 15 cm long. Think about what materials you will make it out of, the number of layers of material and both the width and thickness of the beam. Then make the beam.

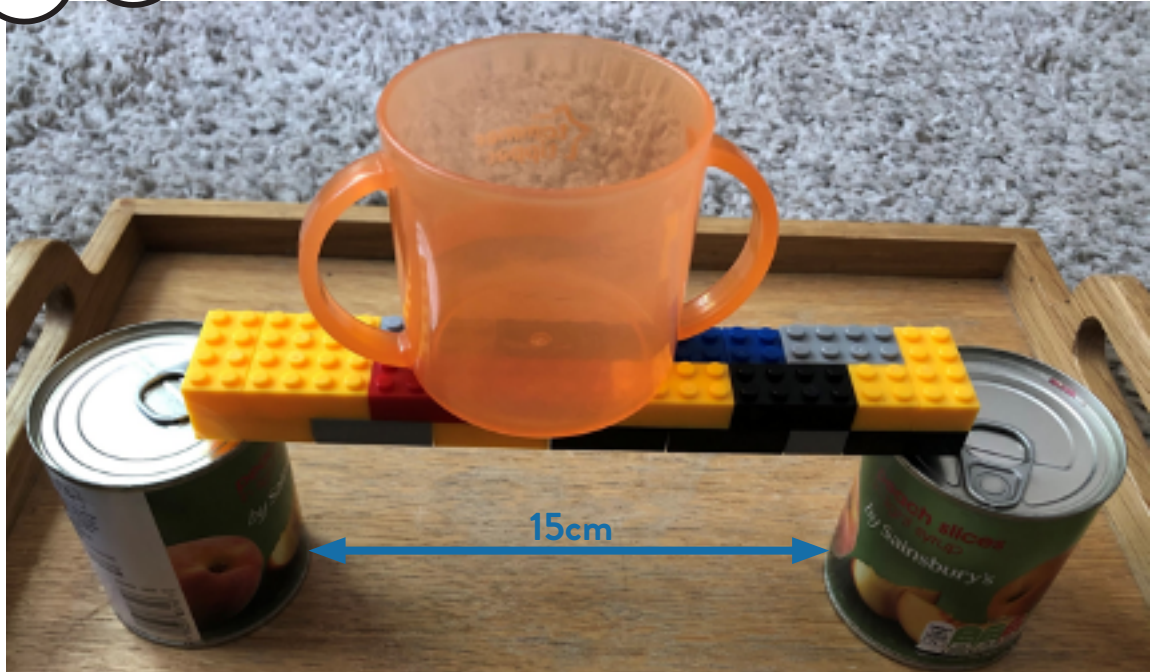
Material used (e.g. spaghetti)	
Number of layers	
Width of beam (cm)	
Thickness of beam (cm)	

2

Now place two objects of the same height (food cans are great) 15 cm apart and place your beam on both supports to make a bridge.

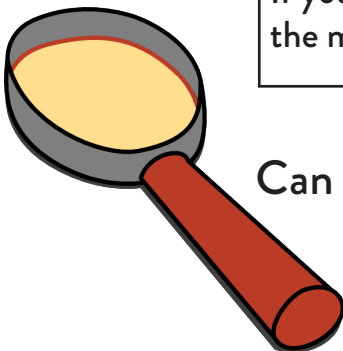


It could look something like this



Place a container in the middle of the beam and gradually place more and more things into it (coins and small pebbles work well) until the beam breaks. Weigh your container and everything that was in it to find the weight required to break your beam.

Weight that broke the beam	----- g
If your beam did not break what was the most weight you put on it?	----- g



Can you design a new beam that can hold more weight?

Share your findings

It would be great if you could share photos / videos of your beams and how much weight they could hold by the following ways:

Twitter: @DiscovMaterials #DiscoMaterBeam

Please post your results on Padlet where see what other people have done:

<https://padlet.com/DiscoverMaterials/nsszy5ckgv6h57sg>

