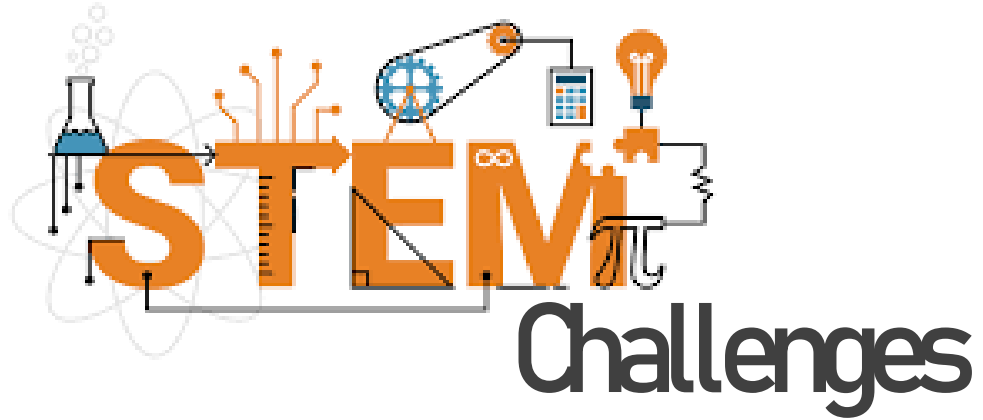


THE JCB ACADEMY



What's it like at the JCB Academy?

<https://jcb-academy.com/>



STEM Challenge

Design an earthquake proof building



The Challenge

You are going to learn a bit about earthquakes and how engineers have designed buildings to allow them to stay standing when an earthquake happens.

You will have to design a building and, if you have the resources at home, you can have a go at making then testing one.

Objective

To learn how different shapes are used in the design of a building. To design, make and test an earthquake proof

STEM Challenge

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Before you start:

Watch this video to learn (or recap) about how earthquakes happen:

https://youtu.be/AArne-wh_Uc

Now watch this short video and get some ideas of how engineers design buildings in places that experience big earthquakes.

<https://youtu.be/ojhJD7NoTzA>



What Causes Earthquakes?



Geography | KS1 | KS2 | Earthquakes | BBC Teach

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Study the buildings below.

How might their shape and structure help them in an earthquake?



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So what ideas do you have about what makes a building earthquake proof?

Either write down your ideas or talk about them with someone.

Now let's see what are the important features:

- Deep foundations or a wide base to add stability to the building.
- X-shape supports to prevent the building from twisting and to make it stronger.
- Emergency shut off switches for gas and electricity to prevent fires.
- Thin walls with steel bars help to reduce the movement of the building.
- Shock absorbers in the base can absorb the shock waves produced by the earthquake.
- Shutters on windows to stop any glass falling.

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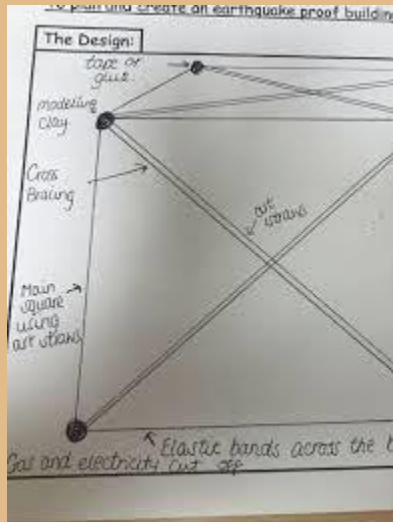
Design a earthquake proof building

You could either design a building on paper or build your design using materials you have at home

Draw your building

What you will need –

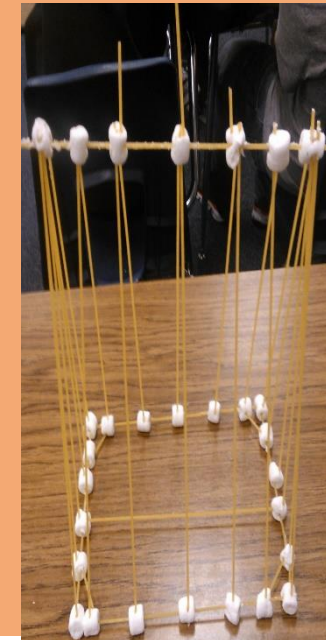
- Paper
- Pencil



Build your building

Use material you can find around your home, for example;

- Straws
- Dried spaghetti
- Lego
- Lolly sticks
- Card
- Tape
- Blu tack



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If you've made your building why not test it?

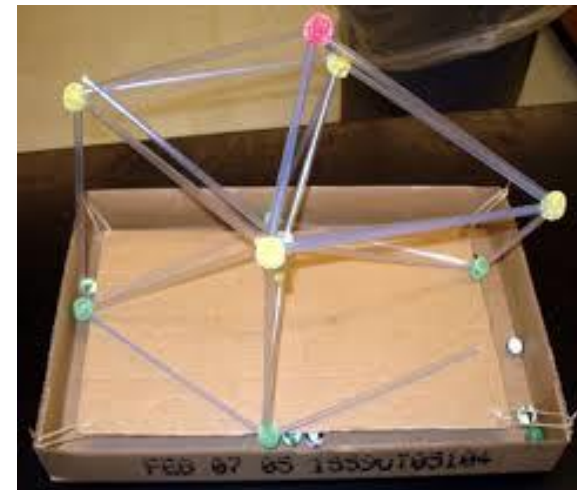
Your building needs to be able to stay standing for at least 30 seconds.

You could ask an adult to help you make a dish of jelly to test your building on?



OR

You could place your model on a tray and gently shake it?



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Time to evaluate

Engineers always evaluate a process when they have completed it. It helps them to improve their processes next time. Here are some things to think about -

Did you enjoy making it?
Why?

What went Well?
How could you improve?

If you wanted to extend your building how would you do it?

Is it sturdy enough?
How could you increase the strength?

Is your structure creative?

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What's next?

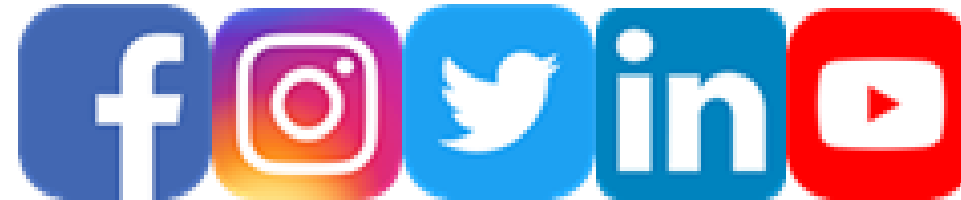
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