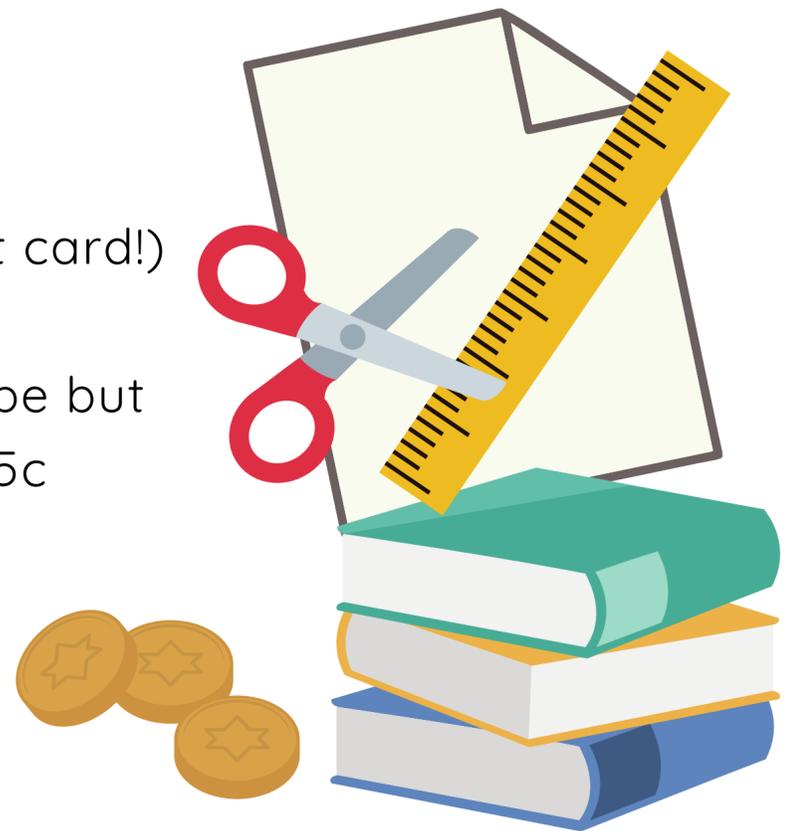


Build a Bridge

Can you build a bridge that holds the weight of a number of coins using just 1 sheet of paper?

Materials

- 1 Sheet of A4 printer or construction paper (not card!)
- Books
- Coins (these can be of any denomination or type but best to stick to the one kind if possible—e.g. all 5c coins or all 20c coins).
- Ruler
- Scissors



Rules

- The bridge must support its own weight (the dead load) as well as the weight of anything placed on it, like the coins (the live load).
- Your paper bridge must span 20 centimetres (about 8 in.). The sides of your bridge will rest on two books and cannot be taped or attached to the books or the table.
- You can cut or fold the paper any way you wish but cannot use more than 1 sheet of paper or any sticky tape, blue-tack, glue or other adhesives.

Make a Prediction

- Describe how you think the bridge should be constructed in order to support its dead load plus the live load of the pennies.

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Try it out

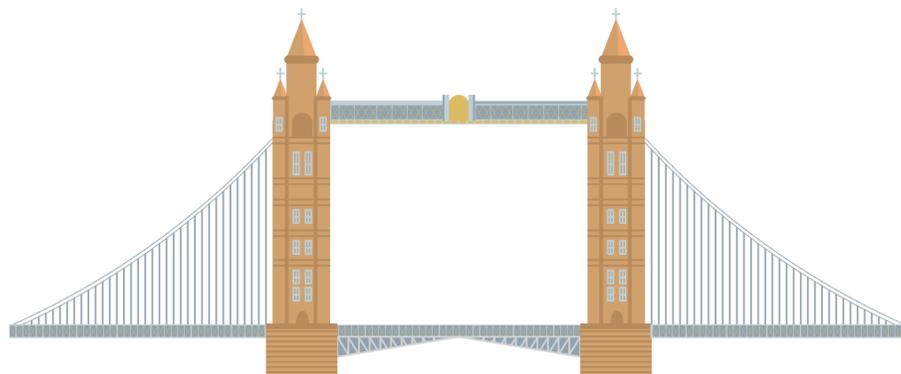
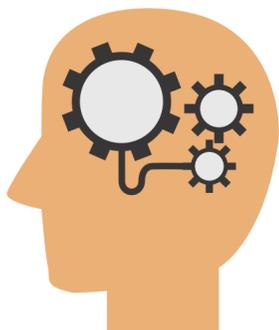
- Think about possible ideas before you start building. What can you do to the paper to make it stronger? When you have decided on a design, construct your bridge.
- Place the bridge across two supports that are 20 cm apart.
- To test your bridge, load it with pennies one at a time, until it collapses. Record how many pennies your bridge supported.

Explain it

- Describe how well your bridge supported its dead load and the live load you placed on it. Was the bridge as strong as you thought it would be? Where did it fail?

Build on it

- Redesign your bridge and test it again, using a new sheet of paper. How does your second attempt compare? How can engineers test their plans for building a full-size bridge?
- Is there a difference in the load your bridge can hold if you put the load in the centre of the bridge compared to spreading it out along the bridge? Make a prediction and test it.



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