How Strong is Paper?

1. If you take a piece of paper and wiggle it around it does not appear very strong, it may even tear.
2. If you roll a piece of paper up into a straw and try to tear it, that is more difficult.

• Take a piece of paper and balance it between 2 cans.
• Try to place a 3rd can on top of the paper and you will see it can not support a 3rd can. (Even using a second sheet it will not work).

We can change the shape of the paper to make it stronger.
• Fold the paper back and forward into 1.5cm pleats.
• Once the sheet is pleated place it between the 2 cans, like a bridge.
• You may place another sheet over the top before balancing a 3rd can and it works.
Build a Structure Challenge

You are challenged to build…

• A paper bridge, to support a number of cans
• A paper tower, self supporting & as tall as you can

You will need…

• Paper, try to use waste paper, recycling unwanted newspapers, magazines, catalogues or pre used A4.
• Wooden Spoon, or any other rod to roll the paper.
• Tape or Glue
• Hole Punch, use it upside down so that you know where you are punching.
• Something to attach the paper rolls, old freezer bag twists, tape or elastic bands.

Why not challenge a friend or sibling and make it a competition…
Making a Paper Rod

Use the wooden spoon to roll the paper into a rod. Use tape or glue (a glue stick is good) to stick the finishing edge.

Flatten the ends of the paper rod and using a holepunch make a hole at each end. If you turn the punch upside down it is easier to see where you are making the hole.

Make a selection of rods before you start building. You can always trim the length as you go along.
Building

Use the rods to start making your structure. Join the rods through the punched holes using the foil or freezer bag twists. Once joined the rods can be folded to form angles.

Remember triangles will make a structure stronger.

Over to you, it’s your challenge…
Here are a couple of examples of what we built and how many cans we were able to hold.

A Paper bridge to support cans.  
A self supporting paper tower.

We hope you enjoyed this challenge.