



Can be done inside



Can be done individually

32. SHAPE STRENGTH

What shape should we make a column so it will hold the most weight?



You will need

- A4 paper
- Sticky tape
- A pile of books

How to do it

1. Begin by folding A4 paper into three columns with different shaped bases: square, triangular and circular. Use sticky tape to hold each column together.
2. Which column do you think will hold the greatest weight? Why?
3. Test one of the columns by slowly stacking books on top of it. Count how many books it can hold before it collapses.
4. Repeat with the second and then third column.
5. Which shape held more books? Why do you think this was?

Investigate

How important is the size of the circle? Investigate whether changing the size of the column affects its capacity to hold more or less weight.



What are we learning?

The triangle and square designs shift the weight of the books to the corners of the column. This creates a point of high pressure which is too much for the paper. Engineers refer to this as buckling. Meanwhile, in the circle-based column, the weight is evenly distributed across the shape. This means more weight can be added before buckling. Circle-based columns are commonly used by engineers to support the weight of buildings.

