



# Paper Structures

## Supplies:

- ✿ 30 Sheets of paper per team
- ✿ A roll of masking tape per team
- ✿ A book (to test the strength)
- ✿ Scissors
- ✿ Round toothpicks (Optional)

## Principle:

This activity tests creative skills as well as their ability to work in teams. The engineering and science principles behind this activity are:

1. To demonstrate that paper is a very strong or very weak material, depending on how it is used.
2. To show that material strengths vary by shape and configuration.
3. To show that even the flimsiest of items can be made stronger by folding, rolling or bending it into a different shape.
4. To demonstrate how fun it can be to construct items out of everyday things.

## Procedure:

Divide the girls up into groups of four or five. Give each team a stack of paper and a roll of masking tape. Explain that they can build a structure any way that they would like as long as the structure is at least one foot high, portable and can support a book.

Encourage them to use their imagination and feel free to help get a group going in the right direction.

## Suggestions:

1. Try folding columns (tubes) in different shapes – triangular, round, square, etc. Compare the strengths of different shapes.
2. Compare the strength of a tube when weight is applied longitudinally (vertically positioned tube) and transversely (horizontal tube).
3. Make really strong "dowels" for cross bracing, etc. by placing a round toothpick diagonally at one corner of a sheet of paper. Roll the paper tightly around the toothpick until you reach the opposite corner. Tape the corner in place and trim the floppy ends.