

DESIGN & TECHNOLOGY · Y1-Y6

Structures

Knowledge Organiser — KS1 to KS2 D&T

Key vocabulary

1

Structure

Anything that holds together and stands up — buildings, bridges, towers, even trees.

2

Strong

Able to support weight without breaking.

3

Stable

Doesn't easily fall over.

4

Stiff

Doesn't bend or fold under pressure.

5

Frame

The skeleton of a structure — bones that hold everything else.

6

Foundation

The strong base that keeps a structure standing on the ground.

7

Tension

A pulling force — like a stretched rubber band.

8

Compression

A pushing or squashing force — like the weight of a building on its base.



9

Truss

Triangular framework — very strong because triangles don't deform.

10

Reinforcement

Extra material added to make something stronger.

What makes a structure strong?

Three rules to remember

- TRIANGLES are stronger than squares. A triangle can't change shape; a square can squash into a parallelogram.
- WIDE BASE = MORE STABLE. A short, wide structure is harder to push over than a tall, narrow one.
- MATERIAL CHOICE matters. A paper bridge bends; a wooden bridge holds.
- Tubes are stronger than flat sheets — that's why bones are tubular.
- Layered or folded materials can be much stronger than single sheets.

Types of structures

Different jobs need different structures

- TOWERS — tall, narrow. Need wide bases or anchored ground (Eiffel Tower, lighthouses).
- BRIDGES — span gaps. Types: beam, arch, truss, suspension.
- BUILDINGS — combine walls, frames, roofs. Floors transfer weight to walls.
- DOMES & ARCHES — spread weight outward (Pantheon, St Paul's Cathedral).
- FRAMES — like the metal skeleton of a skyscraper.
- SHELLS — strong shape with thin walls (eggshells, seashells, helmets).

Joining materials

How to put things together



- GLUE: PVA for paper/wood, hot glue for stronger joins (with adult).
- STICKY TAPE: temporary, not very strong.
- MASKING TAPE: can be painted over, easy to remove.
- STAPLES: quick joins for paper or thin card.
- SPLIT PINS: allow movement at a join (great for moving figures).
- PAPER FASTENERS: like split pins.
- STITCHING: for fabric joins (running stitch, back stitch).
- NUTS & BOLTS / SCREWS: strongest, can be undone.
- Choose the join based on: strength needed, materials, whether it must move.

ing for stability

How to stop your structure falli

- WIDE base wherever possible.
- LOW centre of gravity — keep heavy things at the bottom.
- TRIANGULATE — add triangular braces to corners.
- ANCHOR to the ground if you can (foundations, glue, weights).
- TEST the structure with a small load before adding more.
- INSPECT for weak points before declaring it 'finished'.
- Real engineers use computer models to test buildings before they're built.

