

Year 1

Design Brief:

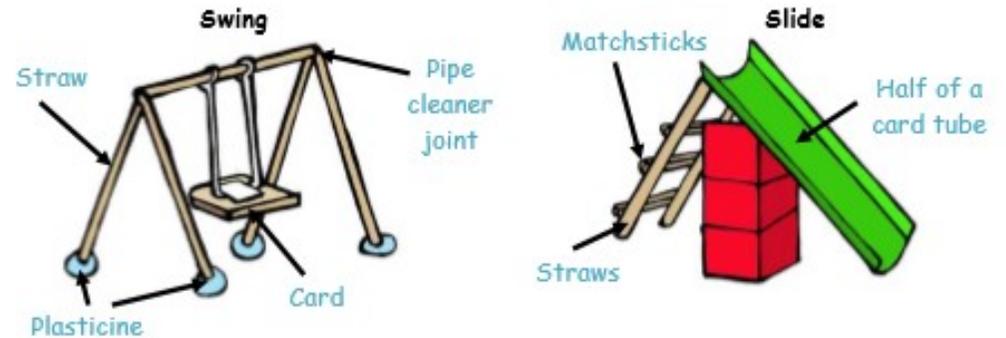
What should I already know?

- Experience of using construction kits to build walls, towers and frameworks.
- Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.

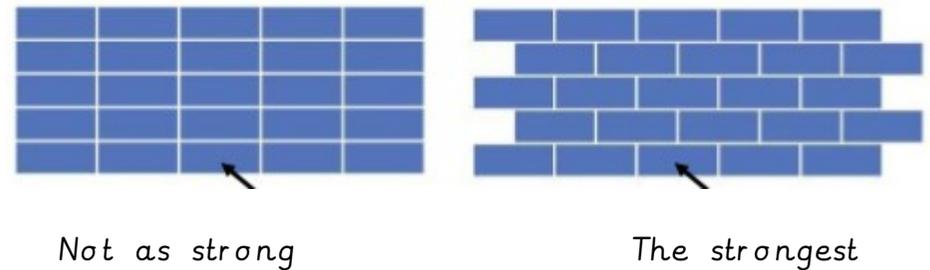
Vocabulary

Freestanding structure	A structure that stands on its own foundation or base without attachment to anything else.
Frame structure	A structure made from thin components e.g. tent frame. □
Shell structure	A hollow structure with a thin outer covering.
Stability	In relation to a freestanding structure, the extent to which it is likely to fall over if a force is applied.
Buttress	A structure added to a wall, tower or framework to make it more stable and/or reinforce it. □
Mock-up	3-D representation of a product.
Brick bonding	Arranging bricks in a wall to improve the performance of the structure or improve its appearance.

Freestanding Structures:

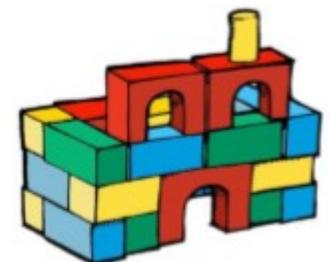


Which wall do you think is the strongest and why?



As a freestanding structure becomes taller its centre of gravity rises. Stability in a structure can generally be increased by making the base wider, making the base heavier or adding buttresses.

Ask the children to build and explore a variety of freestanding structures through focused tasks. Use a range of construction kits.



Year 4

Design Brief:

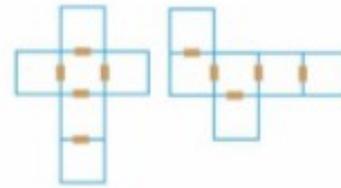
What should I already know?

- Experience of using different joining, cutting and finishing techniques with paper and card.
- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

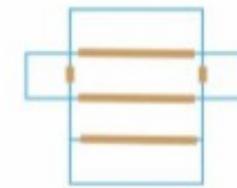
Vocabulary

Cuboid	A solid body with rectangular sides.
Edge	Where two surfaces meet at an angle.
Face	A surface of a geometric shape.
Font	A printer's term meaning the style of lettering being used.
Net	The flat or opened-out shape of an object such as a box.
Shell structure	A hollow structure with a thin outer covering.
Prism	A solid geometric shape with ends that are similar, equal and parallel.
Vertex	used to refer to the corners of a solid geometric shape, where edges meet.

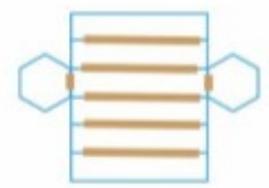
Range of different nets:



Nets for cubes



Cuboid net



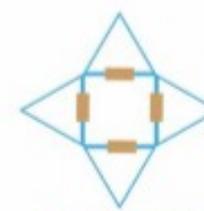
Hexagonal prism net



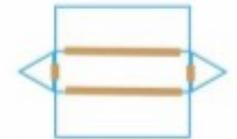
Tetrahedron net



Hexagonal based pyramid net

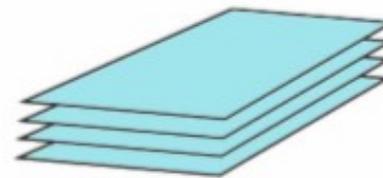


Square based pyramid net

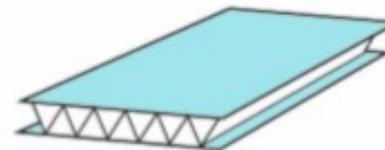


Triangular prism net

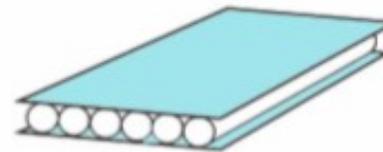
Strengthening Sheets:



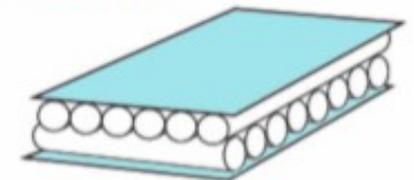
Laminating - glue together several layers of card



Corrugating - zig-zag a piece of paper or card and glue in between two layers of card



Ribbing - glue layers of straws between layers of card



Design Brief:

What should I already know?

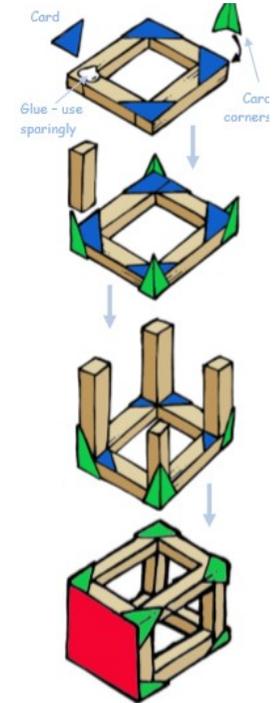
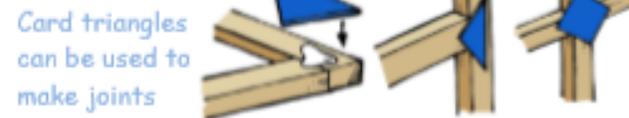
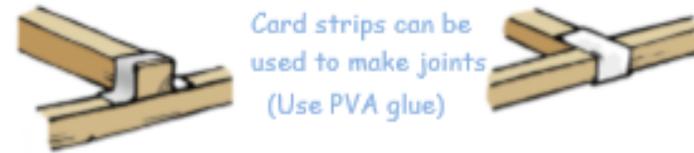
- Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.
- Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.

Vocabulary

Modelling	The process of making a 3-D representation of a structure or product.
Compression	The application of pressure to squeeze an object.
Strut	A part of a structure under compression.
Tension	A force pulling on a material or structure.
Tie	A part of a structure under tension.
Diagonal	A straight line that goes from one corner to another inside a shape. □
Horizontal	A line that is parallel to the ground.
Vertical	A line that is at right angles to the ground.
Triangulation	The use of triangular shapes to strengthen a structure.
Frame structure	A structure made from thin components e.g. tent frame.

Joining Wood:

Joining thin sectioned pieces of wood



Blue = card

Use glue sparingly

Card corners

Building frames and joining straws:

One straw creased and inserted

Flattened and glued

Pipe cleaner

Sleeve glued around joint

Sticky tape

