



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 are made stronger, stiffer and more stable.

Skills I will develop:

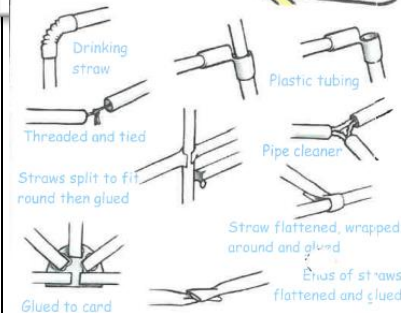
- Select appropriate tools and techniques
- Measure and mark out accurately
- Use tools and equipment safely e.g., junior hacksaws, glass paper,
- Cut and join accurately to ensure a good quality finish to the product
- Use research to develop a design specification for a functional product. Take account of constraints including time, resources, and cost
- Generate and develop innovative ideas and share and clarify these through discussion
- Communicate ideas through annotated sketches, pictorial representations, or circuit diagrams.
- Evaluate against the original design specification
- Evaluate the product personally and seek evaluation from others.

Techniques for building frame structures

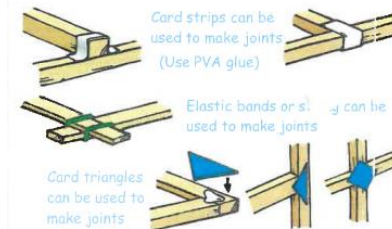
Roll paper to make tubes for construction



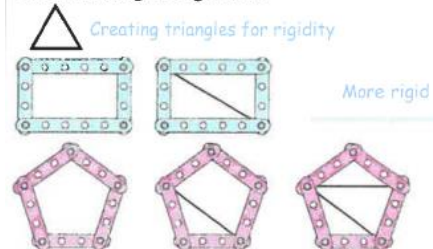
Joining straws



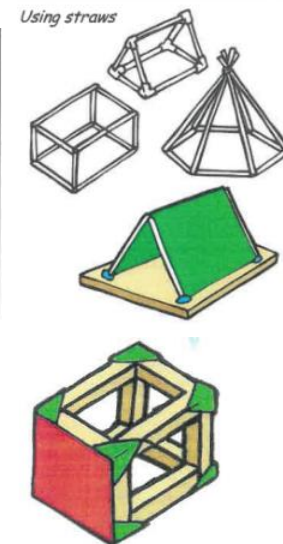
Joining thin sectioned pieces of wood



Understanding triangulation



Using straws



Key Vocabulary (including definition)

- **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.