

DESIGN & TECHNOLOGY

Design & Technology

Y7 The 4 areas of **Design and technology** are Investigating, Designing and making, Analyse and evaluate, Demonstrate and apply knowledge

4. To help us remember key bits of information for investigating, designing, analyzing & evaluating we use **ACCESS FAME**:

Word What does it mean?

Aesthetics- what it looks like

Cost- cost to make or buy

Client Customer Consumer- who asks for it to be made, who buys it, who uses it?

Environment – where is it made, is it sustainable, is it recyclable?

Size – how big/small is it?

Safety – what potential hazards are there?

Function – what does it do?

Anthropometrics – what human dimensions are needed so it can be used by the majority of people?

Materials/Manufacture – what will it be made of? How will it be made?

Ergonomics – how will it fit the person using it to make it easy to use?

1. Health & Safety

A Hazard is – Something that can cause you or others harm

A Risk is – The likelihood or severity of the hazard occurring

A Control Measure is –

Something that is put in place to stop or reduce the risk of the hazard occurring.

2. Health and safety-- 5 things do you need to consider when in the work shop to keep you and others safe?

1. Wear goggles
2. Wear an apron
3. Tie long hair back when using equipment
4. Ensure only 1 person uses the machinery at a time
5. Clamp work down when drilling

5. Materials: Timber

A hardwood is from a broad-leaved deciduous tree which has a close grain due to its slow growth. The annual growth rings are close together.

E.g. **beech, oak (pictured), walnut, Sycamore, birch, mahogany and teak**



A soft wood comes from a coniferous tree that has needles instead of leaves. It does not shed these in winter. It grows fast and the annual growth rings are further apart.

E.g.: **cedar, larch, pine (pictured) and redwood**



Manufactured boards are industrial made from recycled or waste wood. They are available in large flat sheets and are can be a sustainable resource. They come in different sizes and thicknesses.

MDF: made from tiny fibers/sawdust that is mixed with a formaldehyde-based glue and compressed together. **The surface layer could be a hard wood to make it look better.** This does not have a grain.

Plywood: made from thin layers of wood that is arranged so that each layer is at 90° to each other making it stronger.

The surface layer could be a hard wood to make it look better.

Chipboard: made from small particles or wood that is recycled or waste wood mixed with a formaldehyde-based glue and compressed.



3. Tools and what they are used for?



Tenon saw for cutting straight lines in wood and plastic



Marking gauge for marking a line in wood parallel to the edge.



Bench hook for helping to hold wood when sawing.



Steel rule for measuring accurately



Sewing needle for tacking and hand sewing.









Dressmaking or fabric shears for cutting fabric

DESIGN & TECHNOLOGY

6. Metals There are two main types of metals, ferrous and non-ferrous. Put simply, **ferrous metals** contain **iron** and **non-ferrous metals** do not. **Non-ferrous metals** are rarer, more valuable and resistant to corrosion than ferrous metals. Ferrous and non-ferrous metals can both be recycled. Magnetising the iron in ferrous metals can separate ferrous and non-ferrous materials.

Alloys A metal alloy is a substance that combines more than one metal or mixes a metal with other non-metallic elements. For example, brass is an alloy of two metals: copper and zinc.

	Ferrous Metals	Non-Ferrous Metals
 Magnetic		
 Value		
 Resistance to Rust/Corrosion		
 Weight		
 Recyclable		

7. Plastics: Thermofoming plastics are recyclable and bendy. They don't resist heat, easily formed into different shapes. They are easy to recycle. (water bottles)
Thermosetting plastics are heat resistant, so they do not change when heat is applied. They are not recyclable.

8. Textiles construction
Temporary is by pinning and tacking two or more fabrics together.
Permanent is when they are machine stitched. This can be unpicked but this is time consuming.
Natural fibres are Plant – flax[linen], cotton [Straw and Bamboo] Animal – wool and silk

9. Properties of Fibres / appearance / good points / bad points

Cotton – absorbent, creases, washable, lightweight – chemical used to bleach it. Needs a lot of water to grow it which damages the environment.

Elastane/LYCRA - flexible and warm. Cannot be recycled.

Polyester: crease resistant, wind proof, can be waterproof, lightweight. Manmade fabric.

Wool: comes from sheep. It has to be shorn from a sheep, spun and then woven. It is an insulator and absorbent to sound and water. It may shrink when washed.

10. Types of glues are

1) PVA for wood

2) Epoxy Resin for all materials

3) Contact adhesive for textiles/carpets and fixing different types of materials together, such as plastic to wood.

4) Super glue for all materials

5) HOT glue gun for temporary fixing and modelling



11. Mono-printing is a single one-off print with ink onto a surface or fabric.
Screen printing is created when a stencil has been used to lock out certain areas within a design. It can be used a multiple of times in batch production processes.

12. A line bender is used to bend acrylic and high impact polystyrene to a specific angle using a bending jig

Fixing a design in fabric is when heat is applied to the surface either using an iron or a heat press.



13. What is a requirement or need when designing? This is a specification point which the designer must follow when designing a new product.

Write one requirement for a toy car made from mixed materials:

There must be no friction between the body of the car and any moving part as this would spoil any entertainment for the user.

14. The health and safety rules for textiles when using an iron/sewing machine/shears.
 1. Do not run around with sharp tools in your hand.
 2. Pass the shears holding the blade end.
 3. Remove all pins after tacking when you are about to machine sew.