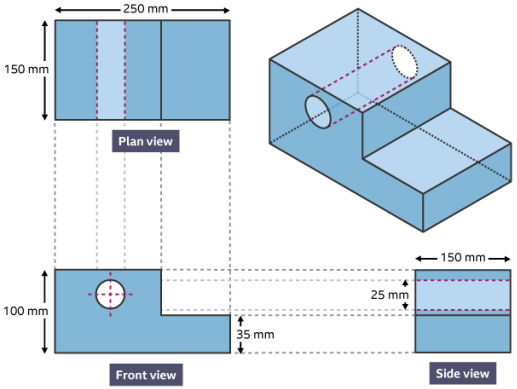
Knowledge Organiser: Year 9 Timbers

Orthographic projections are **working drawings** in either a first or third angle projection and show each side of a design without **perspective** ie a 2D drawing of a 3D object. They show an object from every angle and aid manufacture.



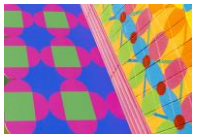
Different lines types of line represent different things on the drawings, as seen in the table….

Outlines	———
Construction lines	———
Hidden details	- - - - -
Dimension arrow	←——— 3 cm ———→
Centre line	—·—·—·—·—

These are standard marks called British Standard Conventions - they ensure all drawings are the same to ensure quality and clear communication.

Tolerances- an acceptable margin of error.
Tolerances are used in when designing and making to ensure accurate, quality products every time.


Raymond Templier


Yinka Ilori


Charles Rennie Mackintosh


Robin and Lucienne Day

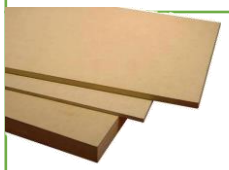

Alexander McQueen

Material properties are the **working and physical characteristics** that make a material suitable for a purpose.

working properties (how a material reacts to a type of applied force)		**physical properties** (a measurable characteristic of a material)	
strength	the ability to withstand a force or load that is applied (such as tension, compression, torsion and bending)	**density**	the mass of a material
hardness	the ability to resist wear or being scratched	**absorbency**	the ability to draw in moisture
toughness	the ability not to break when force is suddenly applied. This can also be called 'impact resistance'.		

Manufactured boards

- usually made from timber waste and **adhesive**
- often **veneered** to make them more aesthetically pleasing
- cheap to buy

	Working and physical properties	Uses
 **MDF Medium-density fibreboard**	• dense • absorbent – can be damaged by moisture • smooth, even surface– takes finishes well • light brown • no grain	• flat pack furniture • shelving
 **Plywood**	• very strong due to multiple layers glued at right angles • easy to cut and finish • can be stained or painted	• construction • furniture • toys
 **Chipboard**	• not very strong • absorbent – can be damaged by moisture • rough, uneven surface so often coated with a veneer	• cheap self assembly furniture

Hardwoods come from **deciduous** trees.
Deciduous trees have **broad leaves** and **lose their leaves** in winter.
They **grow slowly** so are **expensive to buy.**.

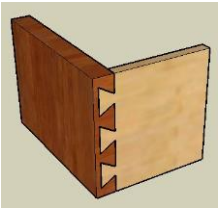
Hard Dogs Leave Bad Bite Marks On Arms

	working properties	physical properties	uses
oak	• very strong • hard • tough • durable	• attractive grain • light brown • polishes well	• high quality furniture • indoor flooring
mahogany	• fairly strong • durable	• reddish brown • very close grain • gives fine finish	high quality furniture
ash	• tough – absorbs shock well • flexible	• narrow grained • pale colour	• tool handles • sports equipment • ladders
balsa	• very soft • easy to form	• pale • low density	modelling
beech	• hard • tough • durable	• slight pink tint • close grain • smooth	• chairs • toys

Softwoods come from **coniferous** trees.
Coniferous trees have **needles** and are **evergreen.**
They **grow quickly** so are **cheaper** to buy than hardwoods.
Softwoods are considered a **sustainable** material.

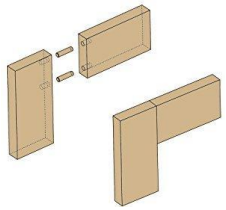
Soft Cats Eat Pork, Lamb and Sausages

	working properties	physical properties	uses
pine	• quite strong	• pale with brown streaks • lightweight	• cheap furniture • construction work • joinery
larch	• hard • tough • durable	• yellow to reddish brown • water resistant	• decking • building cladding • boats and yachts
spruce	• strong • hard • not very durable	• good strength to weight ratio	• crates • construction • aircraft frames



A **dovetail joint** is a joinery technique used in woodworking, such as furniture making. This type of joint is very resistant to being pulled apart.

A **finger joint** can be used with many types of timber and is commonly used for box making. The joint is strong, especially when used with adhesive.



A **dowel joint** is used to connect two pieces of wood by drilling holes in each piece and using a dowel to attach them.

Standard components are pre- manufactured parts, such as screws, rivets and buttons. They produced to make them available at a low cost

Finishing techniques are used to protect and enhance timbers.

- Before applying a technique the timber should be prepared by sanding
- Paint can be used to protect and change it's colour
- Varnish can be used to protect the timber and show off the grain
- Wax can be used for similar purposes but offers less protection

grain	the curves and lines shown when wood is cut
flexible	bent easily without being damaged
durable	ability to resist wear and tear