

What is Modelling?



example, cards and papers.

Models are used extensively in Design and Technology to illustrate an idea, or to test out some aspects of an idea. Modelling generally makes use of simple easy to work with compliant materials; for

St Ivo Academy

Design and Technology Department

Modelling Project

Knowledge Organiser

Perspective Drawing

One Point Perspective is a type of linear perspective that uses a single vanishing point to create the illusion of depth in a drawing.

Here's a list of useful vocabulary that is frequently used when describing a one point perspective drawing.

Parallel – Parallel lines are lines that never touch, even if they are extended indefinitely.

Horizontal Lines – Lines that are drawn from side to side, level with the horizon. Horizontal lines will be parallel to the top and bottom edges of your paper.

Vertical Lines – Lines that are drawn up and down and perpendicular (right-angled) to the horizon. Vertical lines should be parallel to the sides of your paper.

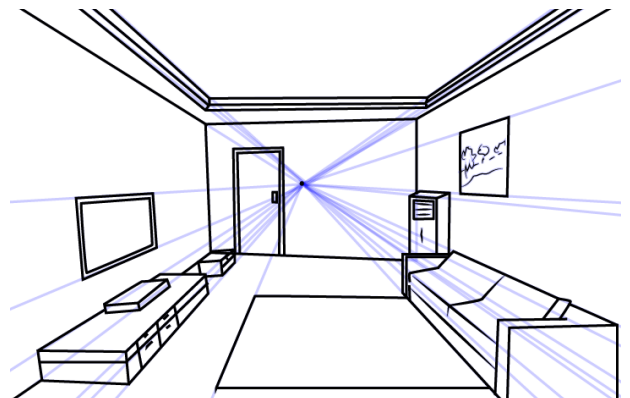
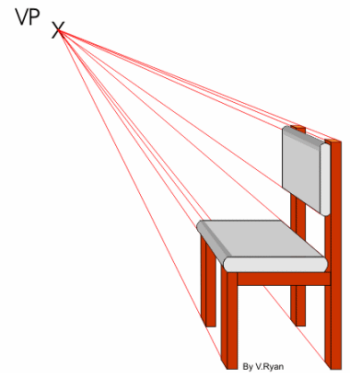
Slanted Lines – Lines that are neither vertical nor horizontal; slanted lines are diagonal.

Horizon Line – The horizon line is a special horizontal line that represents eye level to the viewer.

Vanishing Point – A point on the horizon line where all perspective lines meet.

Perspective Lines (orthogonal lines) – The lines that meet at the vanishing point. Perspective lines are parallel in real life, but converge in a one point perspective drawing.

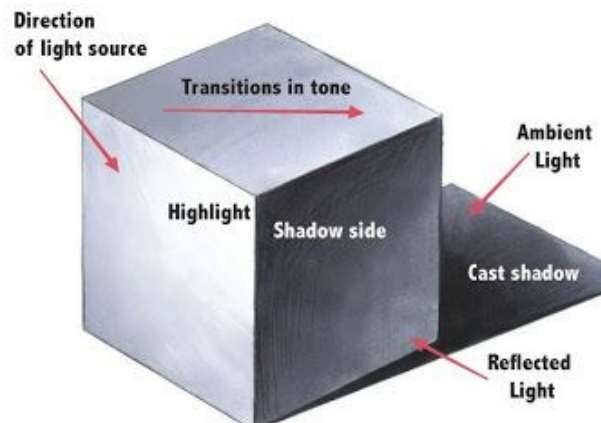
Plane – A plane is a flat, two-dimensional surface with no thickness. A cube, for instance, has 6 planes.



Rendering

Rendering means applying colour and shading to the drawing of an object to make it look more 'real' and more 3 dimensional (3D). This can be done with tone, showing the contrast between light and dark.

Tip: Remember that the shadow will always be on the opposite side to where the light comes from.



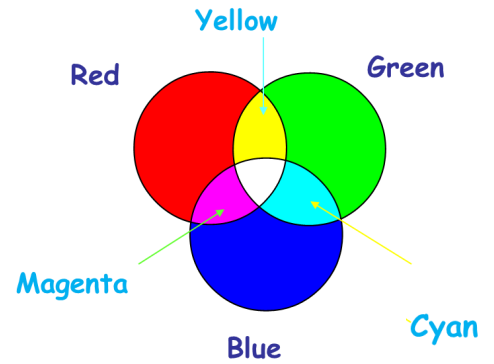
Colours

Colour is by far the single most important stimuli to reach the end consumer. Research suggests that a given item has less than a second to catch the consumer's eye before it is ignored.

Choose the right colours

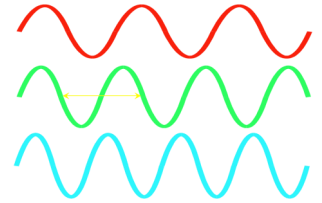
- Colour increases brand recognition by up to 80%.
- Colour adverts are read up to 42% more than similar adverts in black and white.
- Colour can be up to 85% of the reason why people decide to buy a product.

You can make any colour by mixing three colours. Do you know what they are? Each colour has a different wavelength. These wavelengths overlap each other to make the colour white.



Complementary Colours: These are colours that are opposite each other on the colour wheel.

Analogous Colours: Three colours that are next to each other on the colour wheel.



Key Project Terms

What is Menu?

It is a detailed list of food and beverage offerings, with their respective prices. It is prepared by a food and beverage businesses, to keep the customers informed about the availability of various items.

What is a Business Card?

A small card identifying a person, in connection with his or her business. This can be given to a client or potential customer.

What is a Flyer?

A flyer is a paper advertisement, often printed in bulk for distribution on a large scale in public places, through the post or directly handed out.

What is a Poster? A poster is a large piece of printed paper that has a message, usually with a picture. Posters may be used for advertising, education, propaganda and decoration.

Tools for this project

Craft knife
Glue gun
Cutting mat
Safety ruler
Scissors



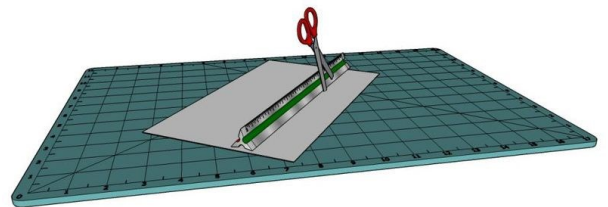
Observe all safety instructions when using these tools.

Sheet materials may be scored or

creased to make folding easier and more accurate. Scoring is the process of scribing, or even partly cutting through the material, along the line to be bent or folded.

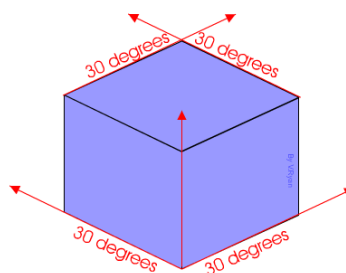
When working with card, this can be done using a pair of scissors, but thicker sheets may need to be partly cut through with a craft knife.

Scoring and Creasing



Isometric Drawing

Isometric projection drawing is way of presenting designs/drawings in three dimensions. In order for a design to appear three dimensional, a 30° degree angle is applied to its sides. The cube opposite, has been drawn in isometric projection.



Frontage/Facade: The extent of the front of a shop, along a street, river, etc.

Leaflet: A small flat or folded sheet of printed matter, as an advertisement or notice.

Why are wood joints used when working with timber?

Wood joints are a traditional method of joining timber. There are a range of different joints that can be used for different situations. These provide a variety of levels of strength. Joints are often glued to make them secure and permanent.

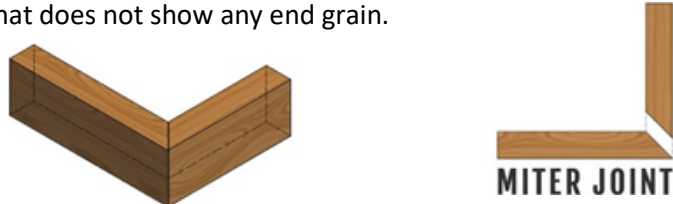
Comb/Finger Joint:

This joint works at the end of two timber pieces to build a seamless right angle. You cut out a series of symmetrical slots to form rectangular projections called fingers. When you adhesive, the fingers get inserted to create a permanent bond that results in a solid corner.



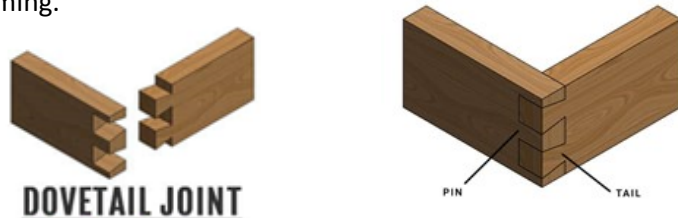
Mitre Joint:

This joinery option connects two ends that get cut at a 45° degree angle. The advantage of using this approach involves the strength of the corner. You receive a seamless look that does not show any end grain.



Dovetail Joint:

Woodworkers use this option to add strength to a corner. It uses a series of interlocking pins and tails to create a resilient edge, that can be used for furniture, cabinet making and framing.



Dowel Joint:

This joint is cut at 90° and is reinforced using wooden dowels. It requires you to drill a hole between the two pieces. The two pieces get connected with dowels to create a durable, flat surface.



Butt Joint:

This joint works at the end of two timber pieces, to build a seamless right angle. It is cut at 90°, but lacks strength. Additional fixings such as panel pins and dowels can be used to strengthen the joint.



What is isometric projection?

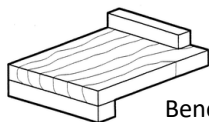
An isometric drawing is a 3D representation of an object, room, building or design on a 2D surface. One of the defining characteristics of an isometric drawing, when compared to other types of 3D representation, is that the final image is not distorted.

When joints are cut they are glued using Polyvinyl acetate (PVA). It is important to clamp wood joints together firmly while the glue dries. This ensures contact between surfaces, creating a strong bond. Once it is dry, the storage concept can be finished using abrasive paper/linisher and then bees wax.

Tools and machines you will use.



Coping saw

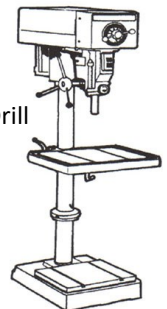


Bench Hook

Mitre Saw



Pillar Drill



What is Pyrography?

Pyrography, commonly known as wood burning. This is the art of drawing and writing using a burning tool for etching designs onto surfaces, usually wood.

Classification of Woods:

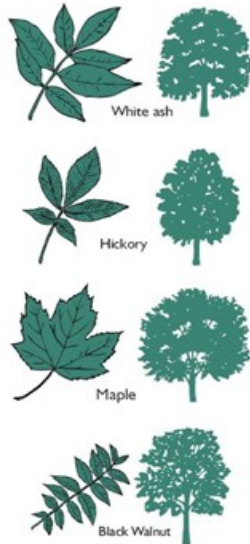
Classifying wood as either a hardwood or softwood comes down to its physical structure and makeup. It is overly simple to think of hardwoods as being hard and durable, compared to soft and workable softwoods. This happens to be generally true, but there are exceptions. A yew tree is a softwood tree, yet its wood is very hard and a balsa tree is a hardwood, yet its wood is softer than softwoods.

Hardwood:

Hardwood comes from angiosperm or

flowering plants, such as oak, maple, ash, mahogany, beech or walnut.

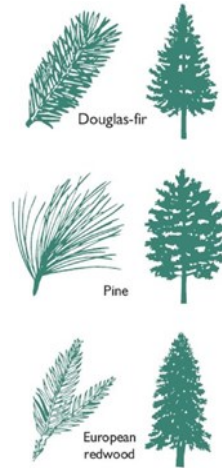
These deciduous trees are slow growing and have broad flat leaves, which they lose in the winter. Their seeds are covered with either a skin or shell. They have vessel elements that transport water throughout the wood. Under a microscope, these elements appear as pores. The variety of colours, textures and grain patterns makes for some beautiful and interesting looking furniture, flooring and sports equipment. The downside to hardwoods is their price.



Softwood:

Softwood comes from gymnosperm

trees, usually evergreen conifers, like pine, cedar or spruce. These coniferous trees are quicker growing and have needle like leaves, which they keep all year (evergreen). Their seeds can be found in cones. Most coniferous trees grow fast, straight and are generally less expensive than hardwoods. Medullary rays and tracheids transport water and produce sap. When viewed under a microscope, softwoods have no visible pores. They are used in woodworking, construction and furniture.



Recyclability:

A commonly asked question: is wood recyclable? The answer is yes, wood is recyclable. Although wood is not accepted in your typical household recycling bin. Wood is accepted at your local household waste recycling centres and wood recycling establishments.

The wood recycling process helps to save trees and reduce the environmental impact of cutting down more trees, which in turn reduces air and water pollution too. Wood recycling plants redirect wood waste away from landfill, so that this natural material can be repurposed into a long list of things, including:

- . Domestic furnishings.
- . Panel boards.
- . Biomass.
- . Mulches, composts and coverings.
- . Landscape surfaces.

The mark of responsible forestry.



Hardwoods vs Softwoods

Most hardwoods have a higher density than most softwoods.
Hardwood is typically more expensive than softwood.
Hardwood has a slower growth rate.
Hardwoods shed their leaves over a period of time in autumn and winter.

Hardwoods vs Softwoods

Most softwoods have a lower density than most hardwoods.
Softwood is typically less expensive than hardwood.
Softwood has a faster growth rate.
Softwoods tend to keep their needles throughout the year.

Man-made Board:

Manmade boards are commonly known as manufactured boards. They are used in

the construction industry, for interior fittings and furniture. They are more stable than natural woods and are less likely to warp and twist out of shape. They are made from wood fibres or particles, which are bonded together under pressure with adhesive. The three main types are; plywood (laminated), particle boards and fireboards.



Sustainable:

Wood is one of the most sustainable and environmentally friendly construction materials available. This is due to its absorption of carbon dioxide whilst growing, adaptability as a product and recyclability or use as a biofuel. Wood is the most eco friendly material we use.