Design & Technology

Frame Design Project

Timbers

&

Wood Finishing

Health & Safety in The Workshop

What is Health and Safety?

Regulations and procedures intended to prevent accident or injury in workplaces or public environments.

Health & Safety Rules

1. Never enter a workshop without a member of staff present! You may be at risk of injuring yourself or others.
2. Always put bags in basket – trip hazard
3. Remove blazers and jumpers for a practical so you do not damage them. Or get them caught in machinery.
4. Remove tie for every practical – so it does not get caught in machines.
5. Put chairs away during all practical work—trip hazard.
6. Do not touch machines and equipment - you could injury yourself.
7. Tie back long hair to prevent it from being caught in machines.
8. Always wear goggles so you don't injury your eyes when using
9. machines.
10. No running so you don't hurt yourself or other people.
11. Always wear an apron so you do not damage your clothes.
12. Watch and listen to teacher demonstrations so you know how to follow the practical task. If you do not pay attention you may injury yourself or other people.
13. Only one person uses/operate machinery at a time. To prevent injury to yourself or others.

Health & Safety in The Workshop

Health & Safety Rules Questions:

Why must you never enter the workshop without a teacher?

……

……

Explain why bags and chairs can not be left out during a practical?

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Why must ties and blazers be removed and aprons worn during a practical?

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Why must long hair be tired back?

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……

When and why must goggles be worn?

……

……

Explain why there must be no running in the workshop?

……

……

Explain why it is important to watch the teacher demonstration, never touch and use machines or tool unless shown by the teacher?

……

……

……

Health & Safety in The Workshop

What is Health and Safety?

Regulations and procedures intended to prevent accident or injury in workplaces or public environments.

Health & Safety Rules Poster

Complete an information poster to help new Year 7's keep themselves and others safe when working in the workshop environment.

Include images: Add colour, be creative

Task

Health & Safety Rules Poster

Health and Safety Signage

Safety signs are found almost everywhere; in schools, hospitals, offices, shopping centres, hotels, conference facilities and construction sites. Clear signs convey an unambiguous and easily understood message. Internationally recognised symbols, such as the ‘fire exit running man’ help to support a sign’s instruction.

Safety signage can also be used to warn of potential hazards, indicate the location of the nearest emergency exit, first aid facility or fire fighting equipment. Effective safety signage can restrict access, ensure that personal protective equipment is worn, or convey that fire exit doors should be kept clear.

PROHIBITION

MANDATORY

WARNING

FIRE SAFETY

EMERGENCY

RECYCLING

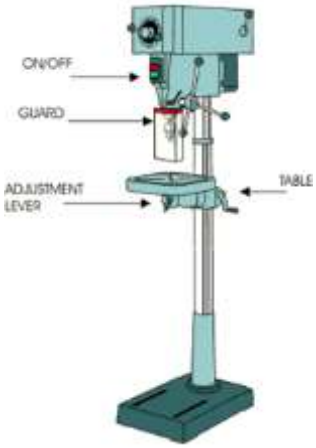
Task

Health and Safety Symbols	Sketch Diagram/ Symbol	Identify Symbol and explain why needed in the workshop?	Mandatory or hazardous signs
			
			
			
			
			
			
			

Tools used for the Timber Project

Draw and copy the tools in the boxes below. If you would lie to make drawing bigger use A4 paper.

Pillar Drill



Disc Sander

Mitre Saw

Coping Saw

Engineer Files

Machine Engineer Vice

Pillar Drill

Disc Sander

Mitre Saw

Coping Saw

Engineer Files

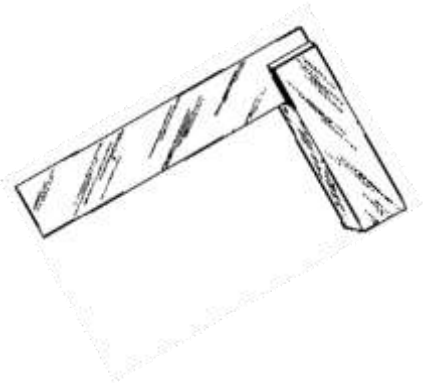
Machine Engineer Vice

Drawing Task

Draw the imagers, be creative add colour and label

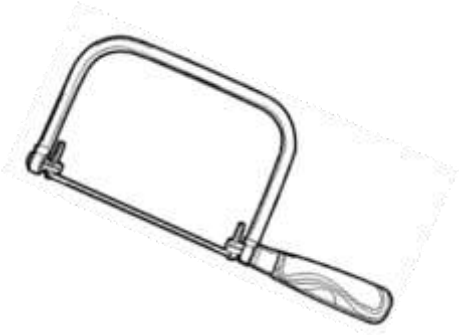
Try Square **(tri square/set square/carpenters square/engineers square)**

A device for testing the squareness of carpentry work or the like, or for laying out right angles, consisting of a pair of straightedges fixed at right angles to one another



Coping saw

A saw with a very narrow blade stretched across a D-shaped frame, used for cutting curves in wood



Theory Subject Knowledge

Read and learn the following information. It is important to be able to identify different timbers.

Hardwood

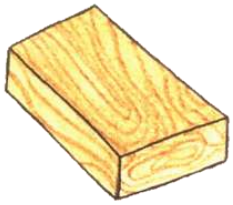
- Usually grow in warm climate and are slow growing (deciduous) trees, which shed their leaves each autumn

- Expensive
- Tighter grain, denser and harder

Softwood

- Usually grow in colder climate and are fast growing (Coniferous) maintain foliage all year round, which is one reason why they grow faster than hardwood trees.

- Fairly cheap – new trees planted as each one is cut - felled—to cut down trees
- Light, knotty, open grain
- Knots come from where the branches have been removed. They can be seen as being decorative but do tend to make the wood weaker when cut into planks etc.



Manufactured boards

- Boards are made by gluing together sheets, blocks, chips or fibers of wood

- Generally cheaper
- Easier to work with, great for creating curves
- MDF—Medium Density Fibreboard, Veneers , Plywood, Chipboard

An example of the grain pattern and knots.

Theory Subject Knowledge

Read and learn for the Mind Map Poster

Hard-wood	**Characteristic Properties** Deciduous trees, which shed their leaves each autumn	**Typical Uses**
Oak	Very Strong and hard, but easy to work with. Open grained; light brown colour	High quality furniture
Birch	Hard but easy to work with. Close, fine grain; pale, very light brown colour	Furniture and cabinets and turned items
Ash	Tough and flexible. Open-grained, light creamy brown colour	Tool handles. Sports equipment, wooden ladders
Mahogany	Fairly strong and durable. Some interlocking grain; pink to reddish-brown colour	High-quality furniture
Balsa	Soft: can be marked using a finger off-white to tan colour	Modelling
Soft-wood	**Characteristic Properties** Coniferous - maintain foliage all year round, which is one reason why they grow faster than hardwood trees	**Typical Uses**
Pine	Fairly strong and durable, but easy to work with. Straight grained, light brown or yellowish. Less expensive	Construction work and joinery furniture
Larch	Tough, water resistant and durable. Grain is generally straight or spiralled. Heartwood ranges from yellow to medium brown colour; sapwood is nearly white	Boats and yachts, exterior cladding or buildings, interior panelling
Spruce	Strong and hard, but low resistance to decay. Straight grained with yellowish-white colour	General construction. Wooden aircraft frames

Theory Subject Knowledge

Read and learn for the Mind Map Poster

Manufactured Boards	Description	Typical Uses
MDF – Medium-Density Fibreboard	Made from particles of timber, mixed with a bonding agent or glue and compressed. Smooth, even surface, easily machined.	Furniture, interior panelling
Plywood	Constructed from layers of veneer or plies; these are cut or shaved from timber, then glued together with the grain structure at 90degrees to each other.	Furniture making, marine plywood is used for boat building
Chipboard	Made from coarse particles (chips) of timber, mixed with a bonding agent or glue and compressed. Rough surface and uneven texture; often covered with a laminate of natural timber or a polymer such as melamine formaldehyde.	Kitchen worktops

Key Facts

Wood can be burnt as fuel. Wood is biodegradable.

Wood may be seasoned – this means that it is dried before to use to remove moisture

Plank sizes are limited by the size of the tree trunks

Felling/felled – cut down trees

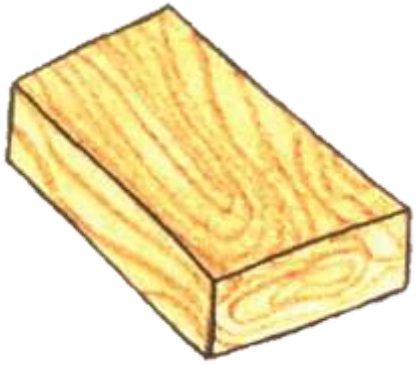
Manufactured boards – no grain, large sheets. thicknesses:; 3, 6, 9, 12mm etc. veneer from a high quality wood to give a good appearance.

Task

Mind Map Poster on Timbers

Drawing Task

Draw the imagers, be creative add colour and label the **knots, grain and veneers**



Drawing Task

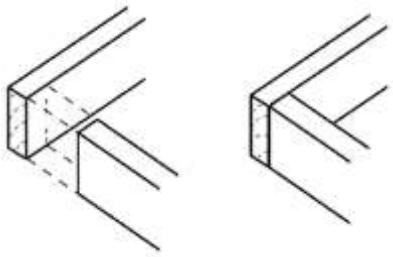
Draw the imagers, be creative add colour and label

Butt Joint

Basic

Not strong due to little adhesive area

Pins and nails often used

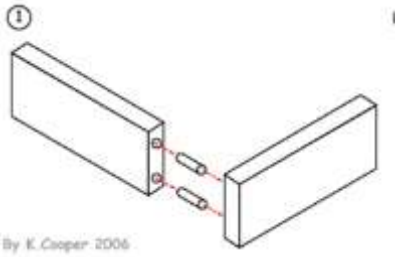


Dowel Joint

Similar t Butt Joint but with wooden dowels

Add strength

Glued for extra strength

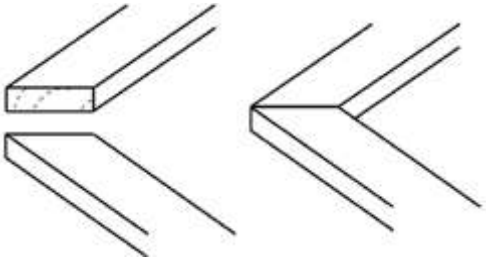


Mitre Joint

More attractive

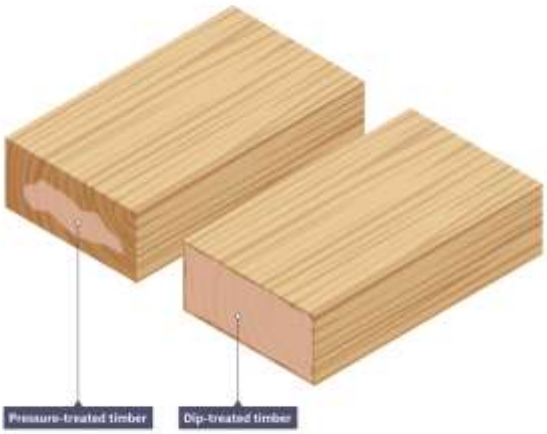
Used for frames

Weak due to lack of surface area



Drawing Task—Finishing for Timber

Label with arrows the correct wood finish



Paint

Pressure Treatment

Tanalising

Wax

Varnish

Drawing Task

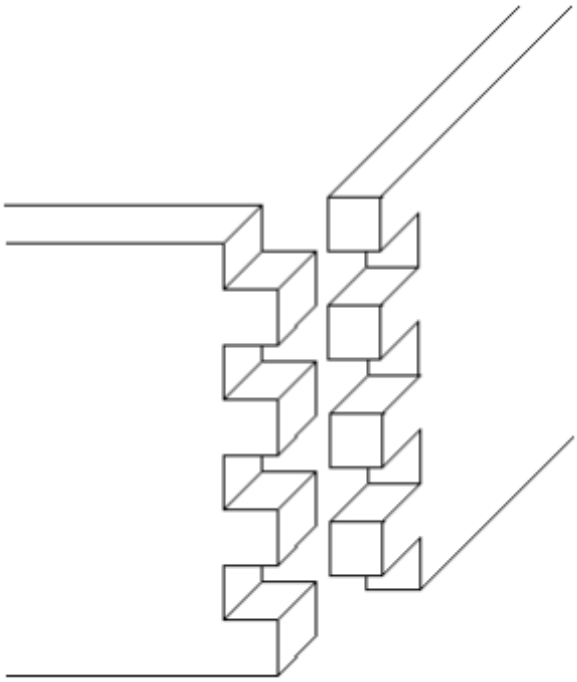
Draw the imagers, be creative add colour and label

Comb Joint

More attractive and decorative

Used for furniture

Strong



Art Movements

To inspire decorative ideas for the frames

Art Movements

To inspire decorative ideas for the frames

Art Nouveau 1890 - 1905

- Curvy 'whiplash' lines and stylised flowers
- Elongated lines, leaves, roots, buds & seedpods.
- Exotic insects and peacock feathers
- Inspiration from Nature and the female form
- Charles Rennie Mackintosh
- Designer & architect
- Use of geometric shapes in his work

Art Movements

To inspire decorative ideas for the frames

Art Deco 1925 - 1939

- Geometric forms
- Symmetry and repetition
- Zig-zagged geometric fan motifs and sunbursts
- Inspiration from ancient Egypt and Aztec Mexican Art
- Discovery of Tutankhamum's tomb
- Machine age; explicit use of man made materials

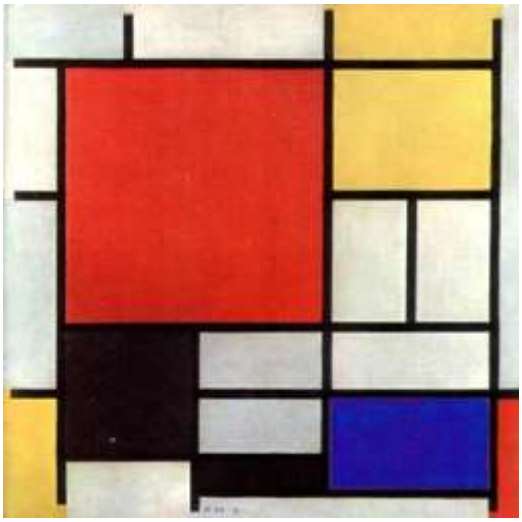
Key designer: Claris Cliff (ceramicist

Art Movements

To inspire decorative ideas for the frames

De Stijl 1917 - 1931

- Black outlines
- Inspiration using extreme geometric designs, rectangles and primary colours
- Ultimate simplicity and abstraction
- Disconnected lines
- Inspired completely new designs in furniture & architecture
- Artist: Mondrian & Designer: Rietveld



Art Movements

To inspire decorative ideas for the frames

Questions on Art Movements:

Name three different art movements and include the dates?

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Explain the main design feature of Art Nouveau?

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Explain the main design feature of Art Deco?

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Explain the main design feature of De Stijl?

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Research Of Other Peoples Work

Observe the frames and analyses the work and take inspiration form the work to help inspire your own ideas.

Questions on next page ……..

Research Of Other Peoples Work

Observe the frames and analyses the work and take inspiration from the work to help inspire your own ideas.

Questions: Product Analysis all Four Frames. Full paragraphs and use key words, characteristics of the timbers.

What do you like about the frame design?

How could you improve the frame design?

Describe what you see e.g. colours, shapes, texture?

What specific materials have been used to make this frame?

Can you identify the joints that have been used to make the frame?

What aspects/features of the frame could inspire/influence your own design ideas?

Could theses products have been influenced by a designer or design period?

What finish has been used on the frame? Why are finishes used on timber?

Examples of how to analyse work of other designers:

I really like the frame because it is so colourful and creative. The flowers are pretty and decorative and have been placed around the rectangle frame. The background is a navy blue and the flowers are a bright yellow with contrasting greens. The inside of the flowers have a light, vibrant blue. There is also a bead placed in the centre of the flower. The flowers have elongated swirls around them and the frame inspired by Art Nouveau the art movement where they used nature an swirls in their design work.

If I was going to remake the design I would add less blue and include another colour e.g. pinks and purples as they are more colourful and work well with yellow and greens. The flowers are very girly and I would add other things to do with nature, butterflies, bumble bees.

The flowers have been made from paper but the frame looks like it has been made from a soft woot such as pine. It is hard to see as it has been painted. Pine is cheap but does have knots which can make the wood split. It does have a grain which can be decorative. The finish used is a matt paint navy blue to protect the wood from water.

The joinery methods used could be either a butt joint or a mitre joint. Mitres are commonly used in frames around doors as they are strong.

Research Of Other Peoples Work

Observe the frames and analyses the work and take inspiration from the work to help inspire your own ideas.

Research Of Other Peoples Work

Observe the frames and analyses the work and take inspiration from the work to help inspire your own ideas.

Task

Design four Frames inspired by the art movements/research. You can use the template or draw your own frames

Be creative, add colour.

Questions to annotate around each frame design:

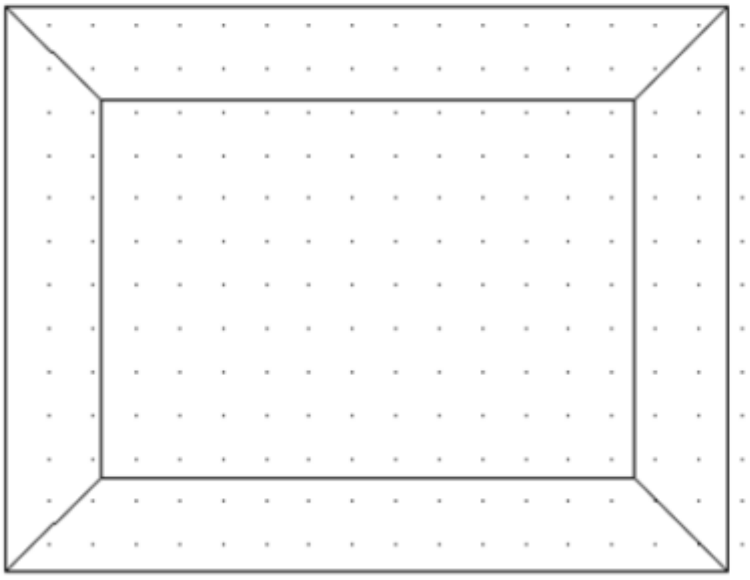
Annotate (label and explain)

What do like about your design?

What do like about the colour, shape?

How could you improve the design, colour, shapes?

What materials , joints and tools will you use to make the frame?



Example of how to annotate:

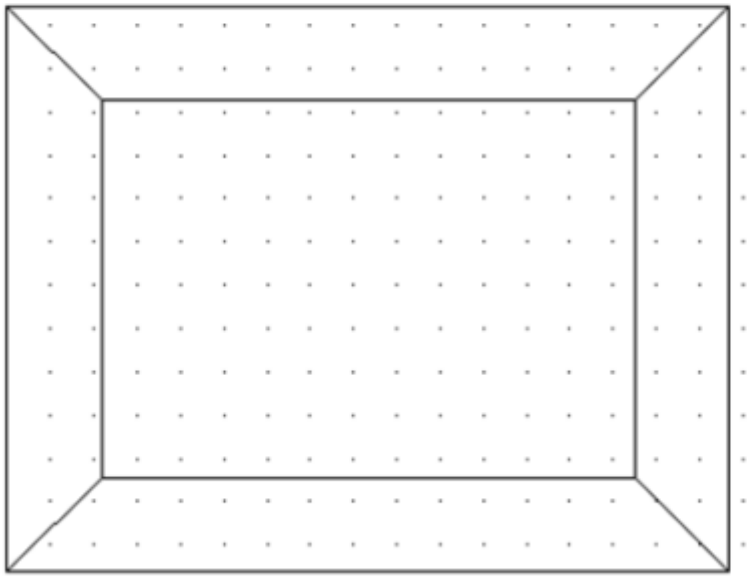
I like my design because it is colourful and I have used this pinks and blues. I am going to use football and butterflies' to decorate the surface of the frame because…..

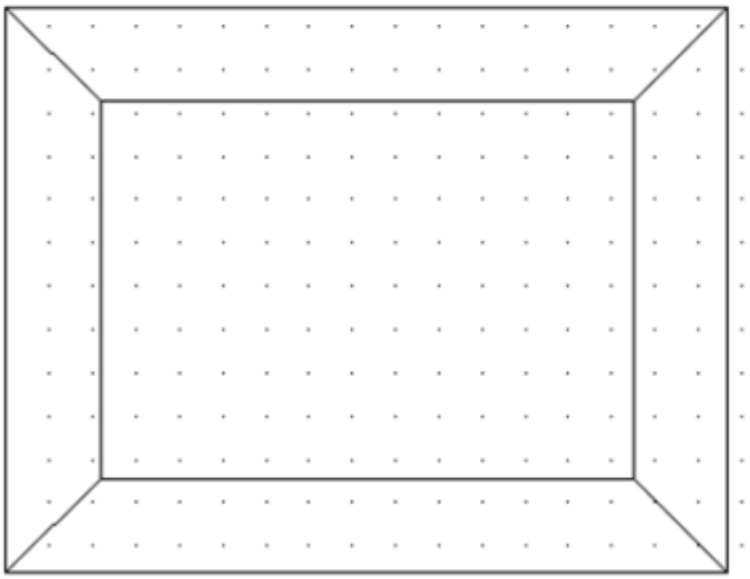
I could improve the design by……..

The materials I will use will be pine because it is cheap but it does have knots which makes the wood weak. The grain is decorative though. I will use the mitre joint as it is best suitable for frames. The back of the frame will use plywood which is a manufacture board and is made from layers of veneers. It is cheap but strong. The tools I will use will be the mitesaw, pillar drill for holes, pva glue to join the mitre joints together.

Task

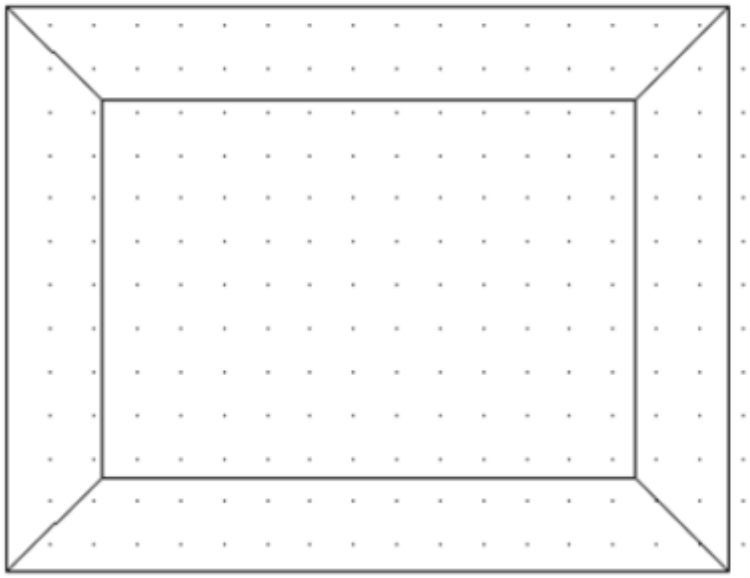
Design four Frames inspired by the art movements/research. You can use the template or draw your own frames

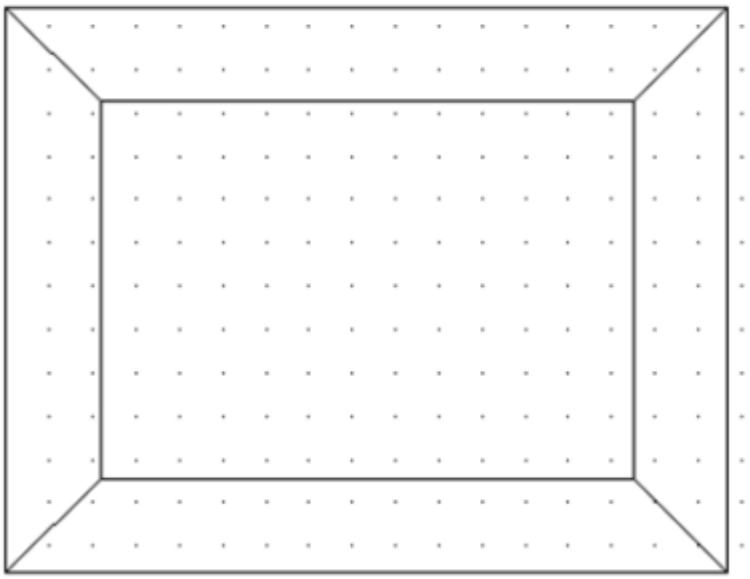




Task

Design four Frames inspired by the art movements/research. You can use the template or draw your own frames





Task

Design four Frames inspired by the art movements/research.

Drawing Task—Standard Components for Timber

Draw the imagers, be creative add colour and label - name/identify them