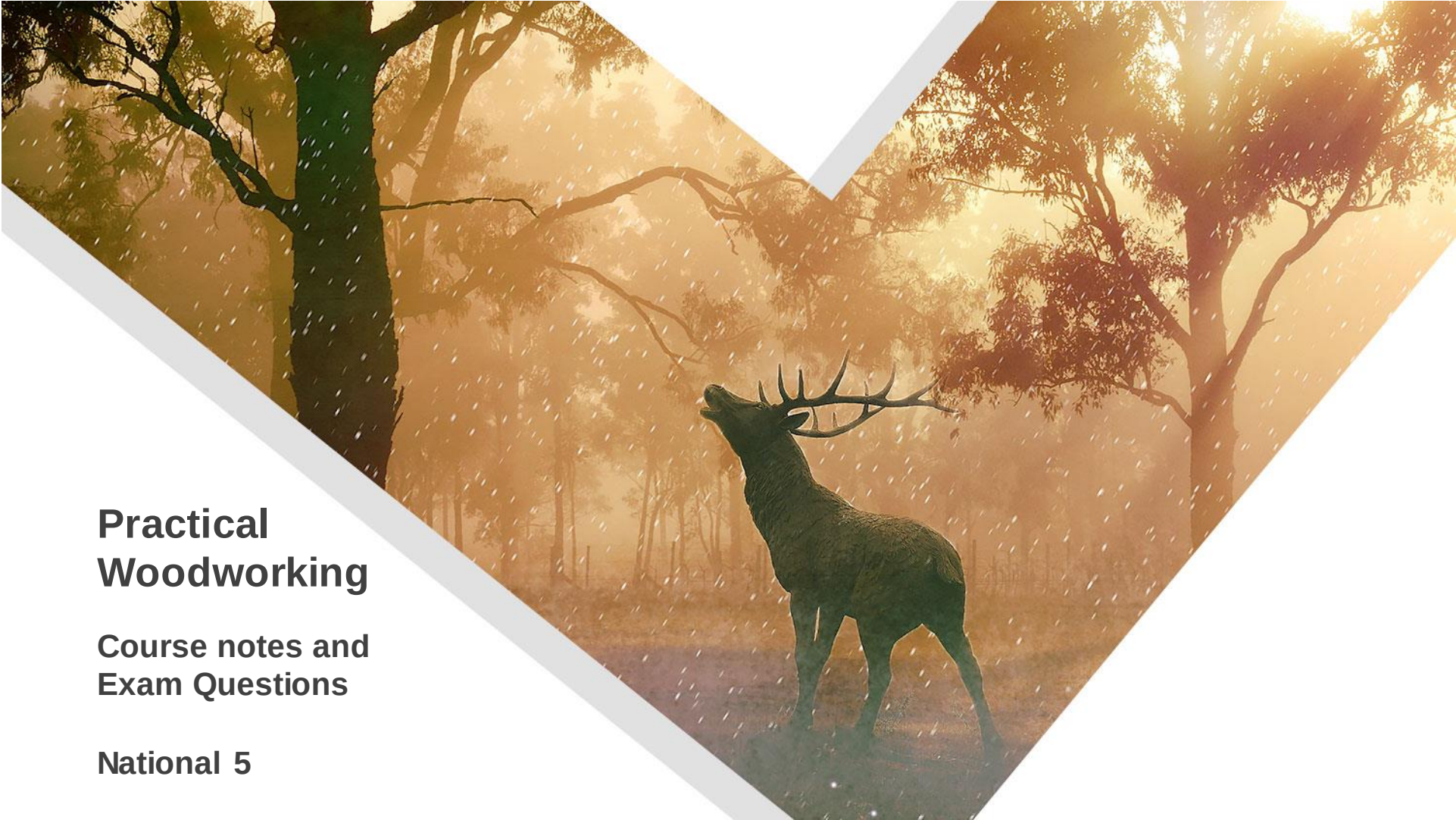


Practical Woodworking

Course notes and Exam Questions

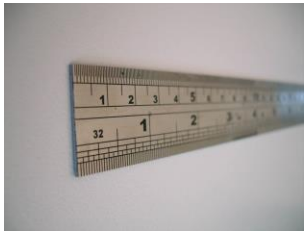
National 5

Measuring and marking out

The use of the tools and equipment listed below:

- steel rule
- tape measure
- try-square
- marking gauge
- templates
- marking knife
- mortise gauge
- cutting gauge
- sliding bevel
- dovetail template
- outside calipers
- units of measurement
- ratio dimensioning (ie 1/3 thickness, 1/2 thickness)

Measuring and marking out

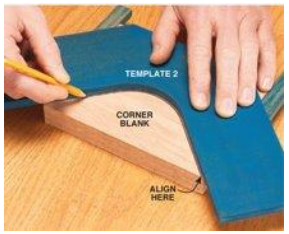


1 – Steel Rule

2 – Tape measure

3 – Try-square

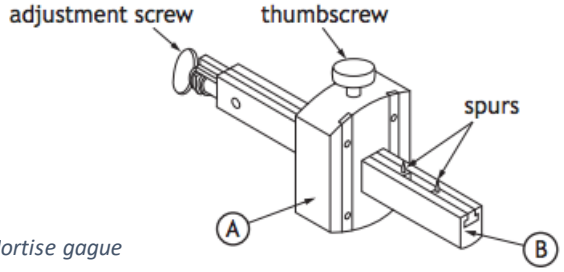
3 – Marking gague

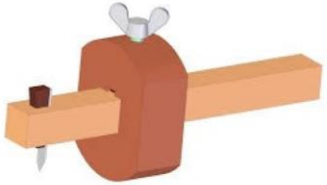


4 – Templates

5 – Marking knife

6 – Mortise gague





7 – Cutting gague

Measuring and marking out

8– Sliding bevel

An adjustable gauge for setting and transferring angles

9– Dovetail Templates

For marking out dovetail joints

10–Dovetail Joint

11– Outside Callipers

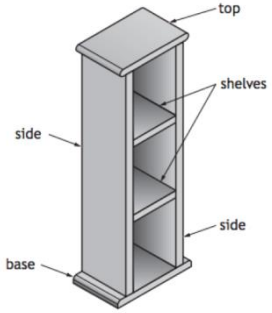
Measuring **outside** dimensions
Used when turning a blank for wo od turning.

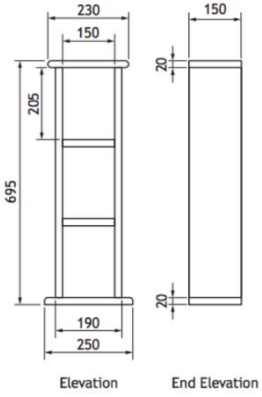
Reading and interpreting drawings and documents

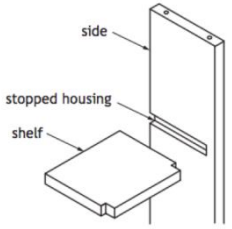
- working drawings, pictorial drawings, diagrams, cutting lists
- orthographic projection
- scale
- basic drawing conventions: line types outlines, centre lines, hidden detail and dimension lines
- reading and extracting information from working drawings: linear, radial, angular (45°) and diametric dimensions

Working Drawings

3. A DVD storage unit and its working drawings are shown below.
Note: All sizes are in millimetres. Hidden detail omitted for clarity.







stopped housing for shelves cut to half depth

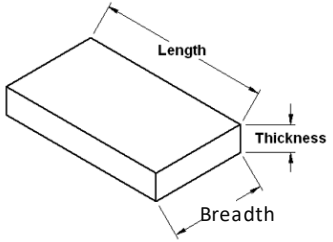
3. **(continued)**

(a) Complete the cutting list below, using the information in the working drawings shown opposite. 4

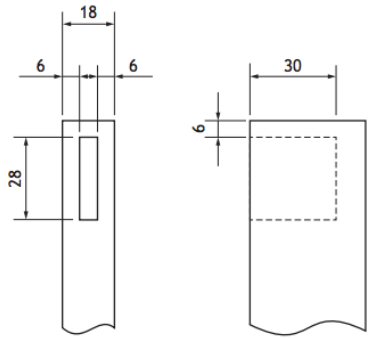
Cutting list					
Part	Quantity	Material	Length	Breadth	Thickness
Top	1	red pine	230	150	20
Sides	2	red pine		150	20
Shelves		red pine		150	20
Base	1	red pine		150	20

12 – Cutting list

** ALWAYS IN EXAM*



The mortise was marked out using the working drawing shown below.
Note: All sizes are in millimetres.



(b) State the distance set between the spurs on the mortise gauge. 1

_____ mm

13 –Measurement

MM - Millimeters

Materials Properties

Materials Properties of woodworking materials listed below:

- **softwoods**: white and red pine, *cedar* and larch
- hardwoods: ash, oak, beech, mahogany and meranti (Philippine mahogany)
- manufactured boards and veneered manufactured boards: chipboard, plywood, hardboard, MDF and blockboard
- dowel rod

Softwoods

14 - Red pine

Properties: Pine is a soft, white or pale yellow wood which is light **weight**, straight grained

*15 - **Cedar***

It is a type of coniferous wood, meaning that it is classified as a softwood and its cones/needles remain all year round.

*16 - **Larch***

Valued for its tough, waterproof and durable qualities. Top quality knot-free timber is in great demand for building yachts and other small boats, for exterior cladding of *buildings, and interior paneling*

Hardwoods

*17 - **Ash***

Ash wood is strong, durable and g enerally light in colour. It is course but the grain is fairly straight.

As a result of its strength and dur ability, ash wood has an array o f uses but is commonly used in the making of tools, furniture and fra mes.

*18 – **Oak***

Oak wood is still commonly use d for furniture making and floori ng, timber frame buildings, and veneer production.

Barrels in which wines, sherry, a nd spirits such as brandy, Irish w hiskey, Scotch whisky and Bourb on whiskey are aged are made fr om European and American oak.

*19 - **Beech Timer***

Beech wood is used to m ake flooring, furniture, ve neer plywood, and railroa d ties.

Excellent for woodturning , knot free.

*20 – **Mahogany***

Mahogany is widely used in the furn iture and cabinet building industry.

*21 – **Meranti***

Meranti is one of the easi er hardwoods with which to work. It easily machine s, cuts, mills and sands.

Hardwoods

*17 - **Ash** – Hardwood*

Ash wood is strong, durable and generally light in colour. It is course but the grain is f airly straight. As a result of its strength an d durability, ash wood has an array of use s but is commonly used in the making of to ols, furniture and frames.

*18 – **Oak***

Oak wood is still commonly used for furniture making and flooring, timbe rf rame buildings, and veneer produ ction.

Barrels in which wines, sherry, and s pirits such as brandy, Irish whiskey, Scotch whisky and Bourbon whiskey are aged are made from European a nd American oak.

*19 - **Beech Timer***

Beech wood is used to make flooring, fu rniture, veneer plywood, and railroad ti es. Excellent for woodturning, knot free.

*20 – **Mahogany***

Mahogany is widely used in the furniture and cabinet building in dustry.

*21 – **Meranti***

Meranti is one of the easier h ardwoods with which to work. It easily machines, cuts, mills and sands.

Manufactured Boards

*22 – **Chipboard***

Material made in rigid sheets from co mpressed wood chips and resin, often c oated or veneered, used in furniture, b uildings, etc.

*23 – **Plywood***

a type of strong thin wooden board consi sting of two or more layers glued and pre ssed together with the direction of the gr ain alternating.

*24 – **Hardboard***

stiff board made of compressed and tr eated wood pulp.

*25 - **MDF** -*
Medium-Density Fiberboard

MDF is an abbreviation for a t ype of engineered wood. MDF consists of thin panels made fr om wood fiber, resin and wax.

*27 - **Dowel rod***

A dowel is a solid cylin drical rod, usually mad e from wood, plastic, o r metal.

*26 – **Blockboard***

A building material consisting of a c ore of wooden strips between two la yers of plywood.

Bench Work Tools

The safe use of the bench tools and their component parts listed below:

- bench vice
- saws: tenon/back, coping, rip, cross-cut and panel
- chisels: bevel edged, mortise and firmer
- parts of chisels: tang, ferrule, leather washer and handle
- mallet
- hammers: cross-pein and claw
- pincers
- planes: jack, smoothing, plough, bull-nose, block, rebate and combination
- main parts of plane: cap iron, cutting iron, adjusting lever and adjusting nut, depth stops and f ences
- spoke shave - A **spoke shave** is a tool used to shape and smooth woods in woodwork jobs.
- hand drills and braces
- screwdrivers: straight and cross-head
- sawing board/bench hook
- hand router
- hammers: cross-pein and claw
- bradawl - used to make indentations in wood
- nail punch

Saws

*28 - **Bench vice***

Used to hold a workpiece stationary.

*29 - **Tenon saw***

A small saw with a strong brass or steel back for precis e work.

*30 - **Coping saw***

A coping saw is a type of saw used to cut intricate exte rnal shapes and interior cut-outs in woodworking.

*31 - **Cross-cut saw***

A saw with a handle at each end, used by two people fo r cutting across the grain of timber.

*32 - **Panel saw***

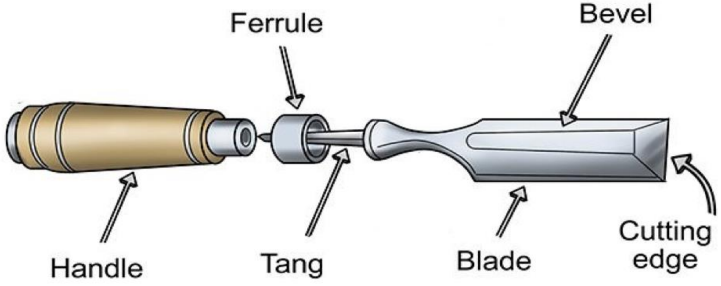
A light saw with small teeth, for cutting thin wood.

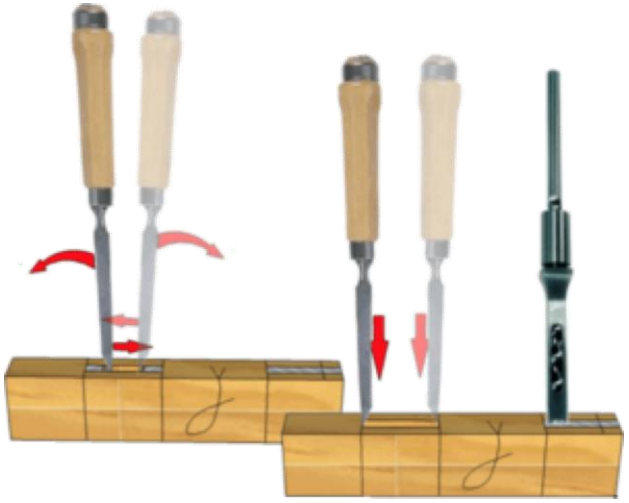
Exam

33 - Bevel edged chisel

*34 - **Firmer chisel***

Firmer chisels have a blade with a rectangular cross-section. This means that they are stronger and can be used for tougher/heavier work.





*35 - **Mortise chisel***

Mortise chisels are used for 'chopping out' joints (chiselling away the waste wood). They are particularly useful for cutting mortise joints as they are strong enough to withstand heavy blows with a mallet. The handle is normally made of ash or beech with a steel hoop at the top to stop it splitting.

Exam

*37 – **Mallet***

Wooden mallets are usually used in carpentry to knoc k wooden pieces together, or to drive dowels or chisels

*38 - **Claw hammer***

A hammer with one side of the head split and curved, u sed for extracting nails.

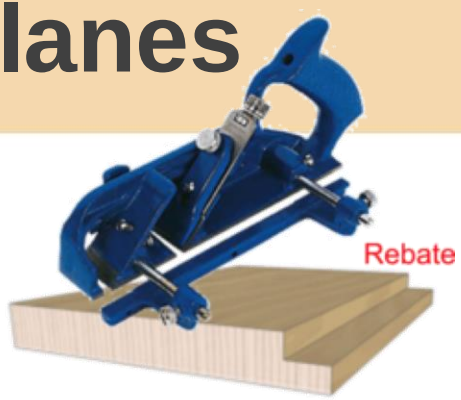
*39 - **Cross-pein hammer***

The pein can be used for starting panel pins and tac ks. Handles are normally wood, usually Ash.

*40 – **Pincers***

Used for gripping and pulling things.

Planes



*41 - **Rebate plane***

It is a hand plane designed for cutting rabbets in wood.

*42 - **Bull-nose plane***

Allowing trimming right up to the edge of a workpiece

*43 - **Plough plane***

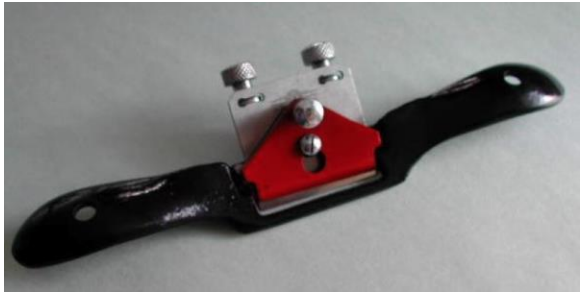
It is a plane to make grooves.

*44 - **Smoothing plane***

A small plane for finishing the surface of wood.

*46 - **Jack plane***

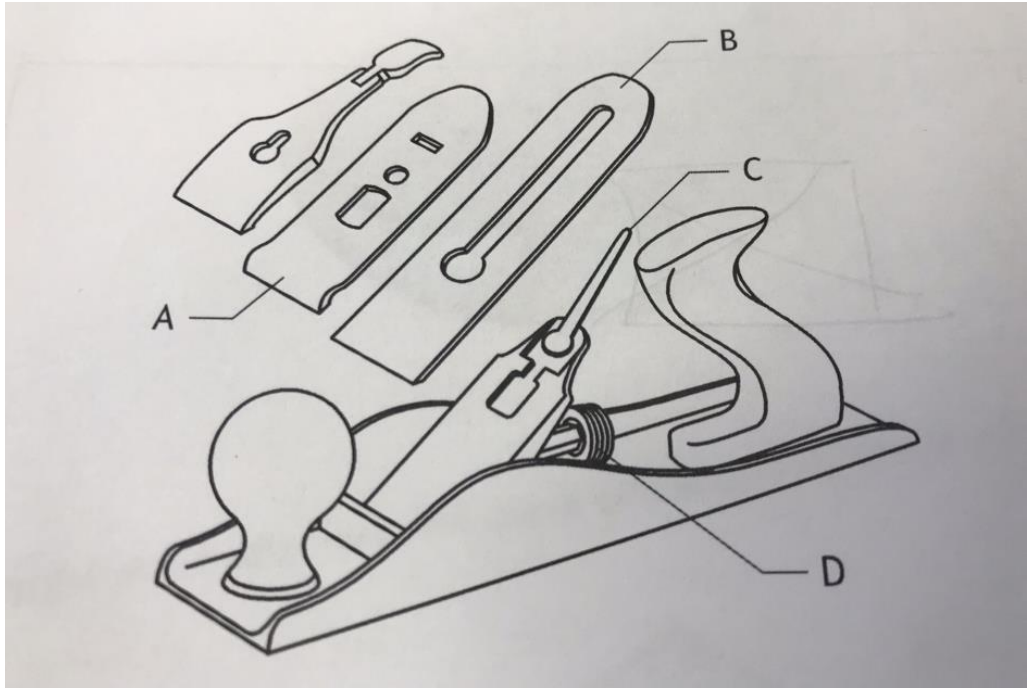
A medium-sized plane for use in rough joinery.



*47 - **Spoke shave***

It is a tool used to shape and smooth woods in woodworking jobs

Parts of a plane



A - Cap Iron

B - Cutting iron or cutting blade

C - Adjusting lever

D - Adjusting nut

Hand tools

*48 – **Braces***

*A **brace** is a hand tool used with a bit to drill holes.*

*49 - **Hand drill***

These are used for drilling a range of sizes of hole and they are very useful especially if machine drills are not available.

*50 - **Sawing board/bench hook***

Its purpose is to provide a stop against which the piece of wood being worked can be firmly held, without havi ng to use the vice, this saves time.

*51 - **Hand router***

A router plane is a great tool for working shallow mortices, trimming tenons, hinges, inlay, door locks and anywhere t hat requires an area cut to a precise depth.

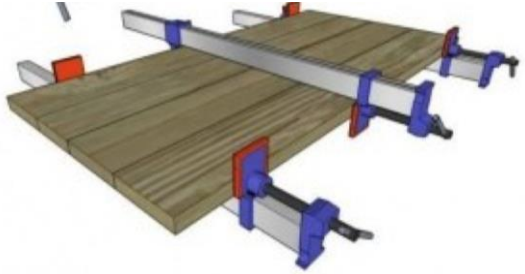
*52 – **Bradawl***

Used to make indentations in wood.

53 - Nail punch

A tool hit with a hammer to sink the head of a nail below a surface.

Cramping



54 - *Sash cramp*

Used for clamping projects together during gluing.

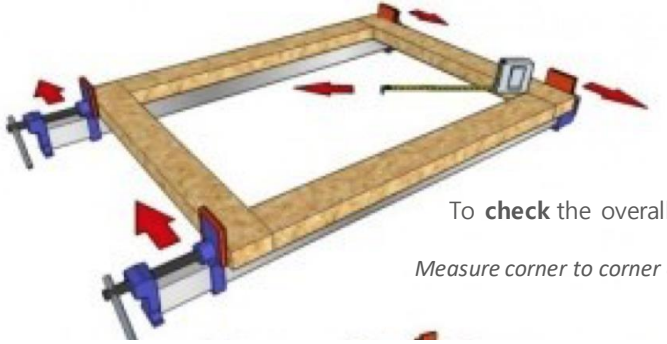
55 - ***G-cramp***

56 - ***Mitre cramp***

Miter clamps are designed to hold miter joints together . (45 degrees eg. Picture frames)

57 - ***Band cramp***

Clamp that allows the clamping of items where the surf aces to be clamped are not parallel to each other; wher e there are multiple surfaces involved.



To **check** the overall **squareness**

Measure corner to corner or use a try square

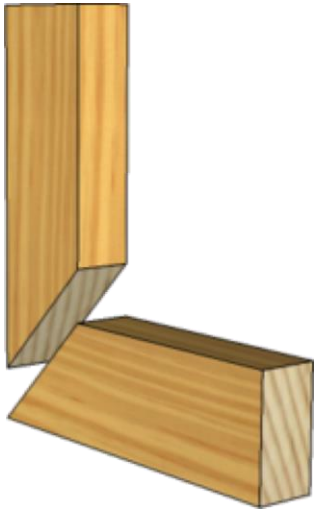
Flat-frame

Flat-frame jointing techniques The construction and use of the flat-frame joints listed below:

- corner: butt, mitre, dowel, halving, bridle, haunched mortise and tenon
- T joints: butt, dowel, halving, bridle, stub and through mortise and tenon
- cross halving
- dovetail halving

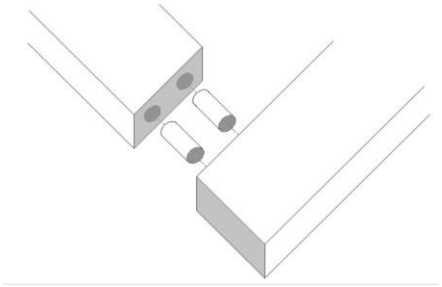
Selecting appropriate flat-frame joint types for given scenarios.

58 - Butt

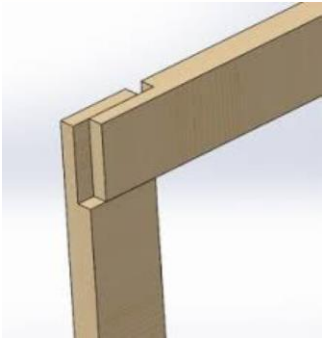


59 - Mitre - Picture Frame

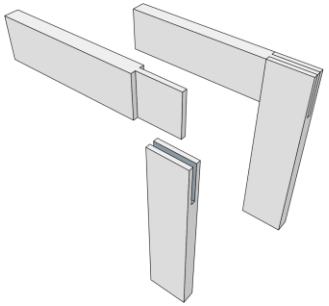
Corner Joints



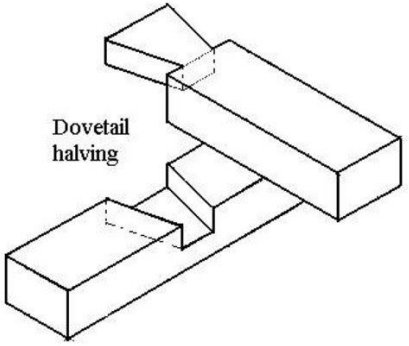
60 - Dowel

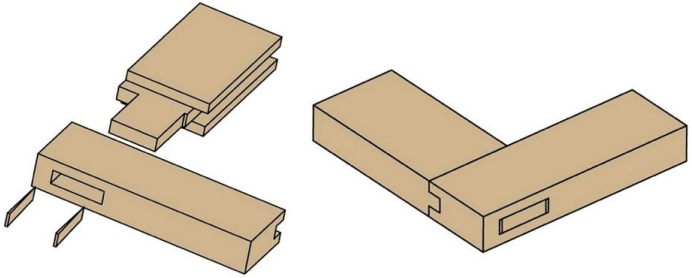


61 - Corner halving joint

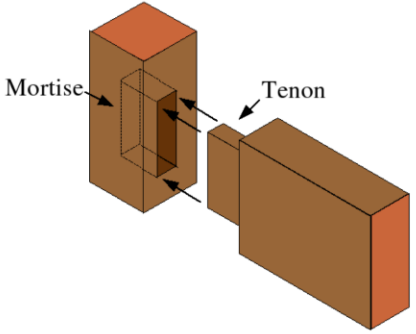


62 - Bridle

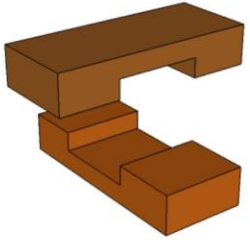




63 - Haunched mortise and tenon



64 - Mortise and tenon



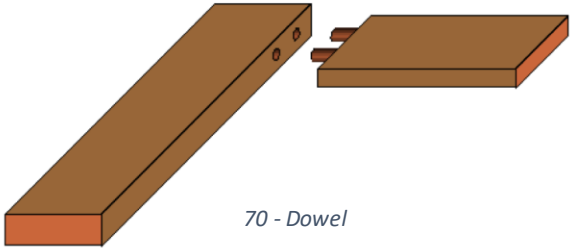
65 - Cross halving

Carcase construction

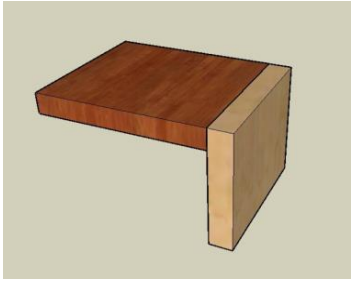
Construction and use of the carcase joints listed below:

- butt
- corner rebate
- through housing
- stopped housing
- dowel

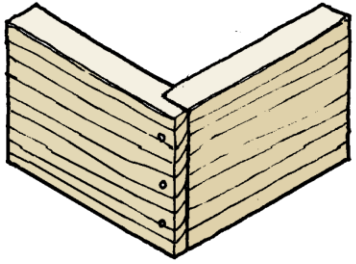
Selecting appropriate carcase joint types for given scenarios.



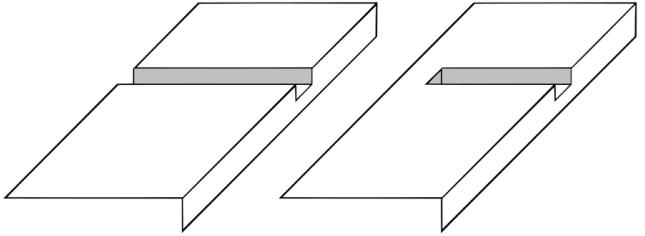
70 - Dowel



67 - Butt



68 - Corner rebate



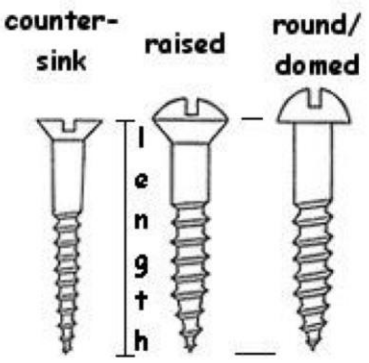
69 - Through and Stopped Housing

Mechanical fixings

Mechanical fixings and adhesives Ironmongery listed below:

- nails: round, oval, brads, panel pins
- screws: round/dome head, countersink, slotted, crosshead
- angle brackets
- corner blocks
- knock down fixings

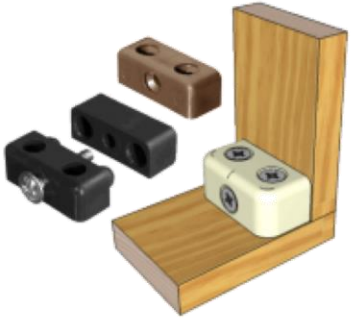
Uses of wood adhesives and glues: interior and exterior



71 - Screws

72 - Slotted screw

73 - Crosshead screw



76 - Knock down fixings

Knock-down fittings are those that can be put together easily, normally using o nly a screw driver, a drill, a mallet/ham mer and other basic tools. They are tem porary joints although many are used to permanently join together items such as cabinets and other pieces of furniture th at are purchased in a flat pack.

75 - Corner blocks

74 - Angle brackets

Machine tools

Safe use of machines and power tools Safe working practice for operating the machines, tools and processes listed below and, where indicated, the component parts:

Machine tools:

- woodturning lathe: face plate and between centre turning
- **lathe tools:** forked/butterfly centre, dead centre, revolving centre, gouge, scraper, parting chisel and skew chisel.
- parts of the lathe: bed, tailstock, tool rest, headstock
- preparing a blank for turning
- belt sander
- disc sander
- pedestal/pillar drill
- drill bits: twist, countersink rose, flat and Forstner
- mortise machine: setting depth, checking cutting chisel/drill, positioning and securing work piece

Power tools:

- drills: corded and cordless
- sanders: orbital and belt
- cordless screwdrivers
- jig saw

Machine tools

Tool care and maintenance:

- reporting faults
- inspecting cables, tool holding and guards
- dust extraction
- disc sander
- pedestal/pillar drill
- drill bits: twist, countersink rose, flat and Forstner
- mortise machine: setting depth, checking cutting chisel/drill, positioning and securing work piece

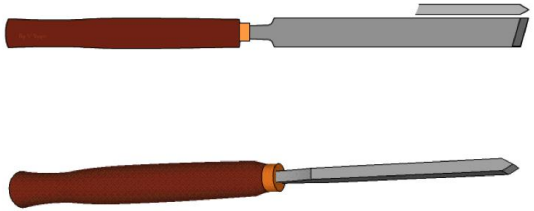
Power tools:

- drills: corded and cordless
- sanders: orbital and belt
- cordless screwdrivers
- jig saw

Tool care and maintenance:

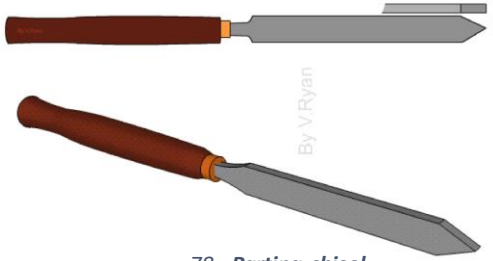
- reporting faults
- inspecting cables, tool holding and guards
- dust extraction

Woodwork lathe tools



*77 - **Skew chisel***

A skew chisel can also be used to produce a smooth and acc urate finish, after a gouge. The skew of the chisel allows the lathe operator to get into tight shapes / corners.

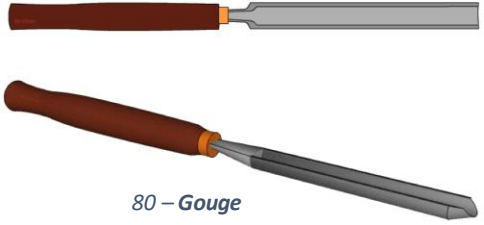


*78 - **Parting chisel***

Parting tools are used to cut almost all the wa y through the turned wood, before it is remove d from the lathe.

*79 – **Scraper***

A full round scraper is used to cut hollow ar eas / internal curves. Some experienced wo od turners prefer to use scrapers, ground to various shapes. If sharpened regularly, they produce a good finish.



*80 – **Gouge***

A roughing out gouge is used to remove the majority of wood when tu rning. It is useful in the initial stages of wood turning. Other tools are used to produce a more accurate finish.

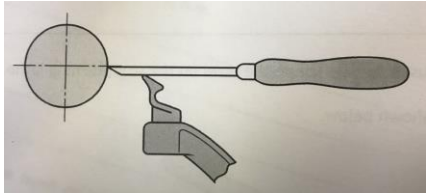
Woodwork lathe

*81 - **Revolving centre***

Used to support the workpiece at end of the machine.

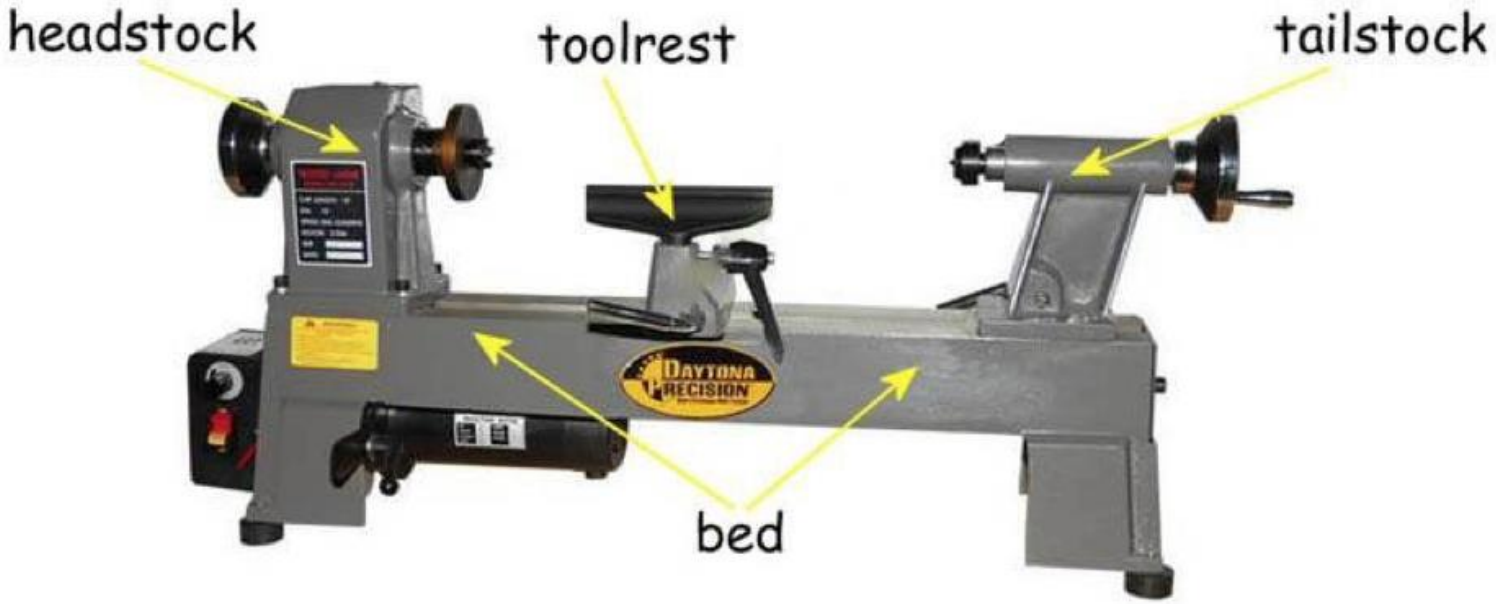
*82 - **Forked/butterfly centre***

Used for holding and driving a length of wood held between centres. It has a centre point and two prongs.



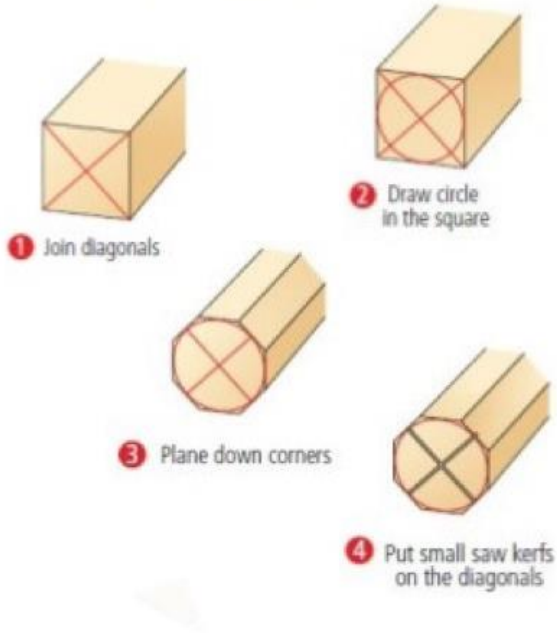
83 - Correct height for the cutting tool on the tool rest

Woodwork lathe



Woodwork lathe

Preparing to turn – spindle turning



- Join the diagonals to find the centres at each end of the piece
- Draw a circle in the square
- Plane down the corners
- Small saw kerfs can be cut into the ends for added grip

- Insert the piece into the lathe at both centres, lining the centres up carefully

*85 - **Preparing a blank for turning (REWRITE AND DRAW DIAGRAMS)***

*86 - **Plane the edges***

Machine tools

87 - **Belt Sander**

88 - **Disc sander**

89 - **Pedestal Drill**

90 - Mortise machine

A mortiser machine is a specialised woodworking machine used to cut square or rectangular holes in a piece of wood.

91 - Cordless Drill

Electric drill which uses rechargeable batteries.

92 - **Flat Bit**

Used when drilling in wood.

93– **Forstner**

Cutting precise, large-diameter holes with a portable power drill.

94 – **Countersink**

A pilot hole is first drilled for the screw, followed by countersinking the hole to allow a flathead screw to seat flush with the work surface.

95 - **Twist bit**

They will cut anything from wood and plastic to steel and concrete.

Machine tools

*96 - **Belt Sander***

A belt sander is a sander used in shaping and finishing wood and other materials. I t consists of an electric motor that turns a pair of drums on which a continuous lo op of sandpaper is mounted.

*97 - **Orbital sander***

A sander in which the sanding surface has a minute circular motion without r otating relative to the workpiece.

98 - cordless screwdrivers

*99 - **Jig saw***

A jigsaw power tool is a jigsaw mad e up of an electric motor and a recip rocating saw blade.

A jigsaw with a bevel function on th e sole plate allows cutting angles of typically up to 45 degrees.

Health and Safety - Machine

Health and Safety checks to be carried out on the machine before switching it on. (Pedestal drill)

- Secure work piece.
- Make sure drill bit is in securely.
- Remove chuck key.
- Set correct cutting speed on the machine.
- Ensure all guards are down.
- Ensure table is secure.
- Where required, ensure depth stop is set.
- Know location of emergency stop on machine.

Health and Safety checks to be carried out on the machine before switching it on. (Woodwork Lathe)

- Secure work piece.
- Make sure tool rest is secure.
- Ensure the tail-stock is secure.
- Rotate piece of work before switching on to check it's clear from tool rest.
- Ensure the tool-rest is set to the correct height.
- Know location of emergency stop.

Surface preparation and finishing

Surface preparation and finishing

The wood preparation techniques listed below:

- use of planes
- sanding
- abrasive types: glass and garnet
- abrasive grades: fine, medium and coarse
- scraping
- stopping

Wood Stopping is a natural, **wood** floor **stopping** for filling small holes, cracks and gaps. Made from **wood** pulp, it is the traditional method for making repairs in unfinished **wood**. Quick drying and easy to sand, it dries as hard as **wood**, and is available in a wide range of colours.

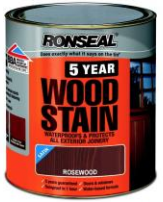
Smoothing plane

Abrasive paper

Scrapping

Filling Techniques required to prepare for, and apply, the finishes listed below:

- varnish
- stain
- wax
- oil: Danish, linseed and vegetable



Safety – Personal protective equipment

Safe working practices Good practices and safe systems for general workshop and individual activities when manufacturing a wood product. Personal protective equipment:

Apron

Gloves

Safety goggles

Safety specs

Visors

Dust protection

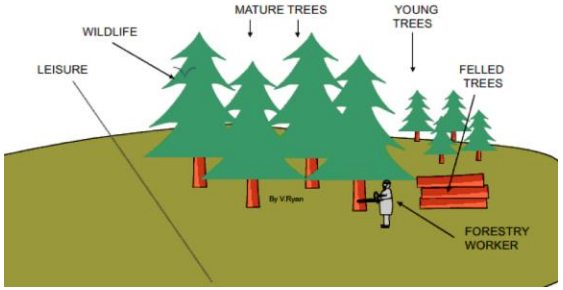
Personal Safety Precautions you should take before switching on any power tools.

- Goggles/safety specs/visor.
- Tie hair back/tuck away any loose clothing/ remove loose jewellery.
- Wear apron.
- Wear dust mask/face mask.
- Be aware of emergency stop buttons.
- Ensure your working area is clear

Sustainability

Sustainability and recycling Best practice in selecting materials that are appropriate for a specific use.

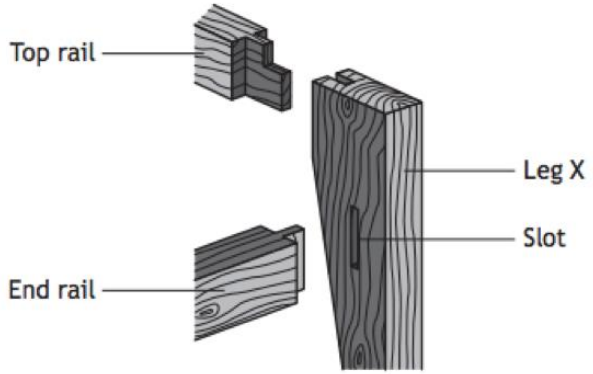
A **sustainable forest** is a **forest** that is carefully managed so that as trees are felled (cut) they are replaced with seedlings that eventually grow into mature trees. This is a carefully and skillfully managed system.



Environmental reasons for selecting softwood instead of hardwood

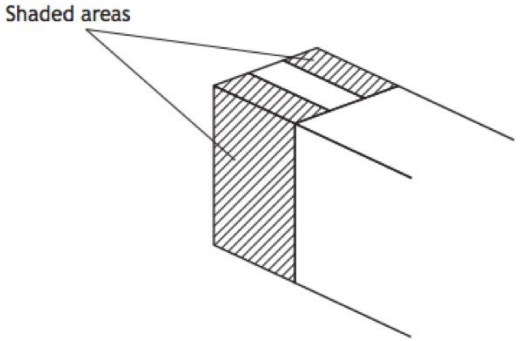
- Reduced deforestation.
- Softwoods grow faster.
- Smaller transport distances (smaller carbon footprint).
- Could come from sustainable forests.

Exam Questions 1



(a) Name the joint used to join the top rail to leg X. **1**

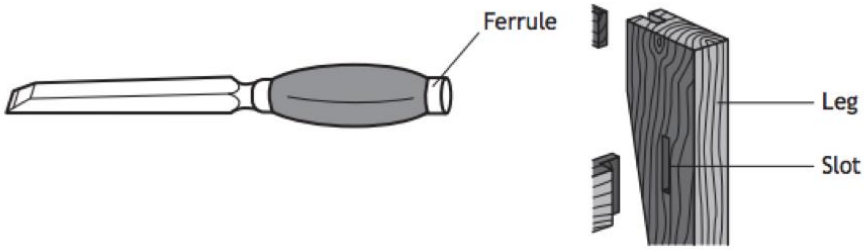
The diagram below shows how the end rail is marked out before it is cut.



(b) Explain the purpose of shading in the areas shown in this diagram. **1**

Exam 2

(c) The tool shown below is used to cut the slot in the leg of the table as shown in the diagram.



(i) Name this tool.

_____

(ii) Describe the purpose of the ferrule, shown on the tool above.

_____

_____

In the diagram above, the slot in the leg is cut to a depth of 15mm.

(iii) Describe a method of ensuring the slot is cut to the correct depth. **2**

You may use sketches to support your answer.

Health and safety in a workshop is always a priority.

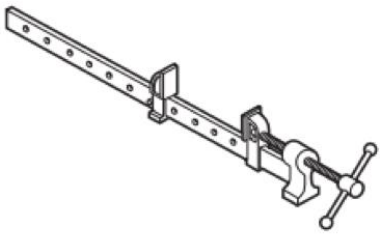
(iv) State two health and safety checks that must be carried out before starting to cut out the slot in the leg. **2**

_____

_____

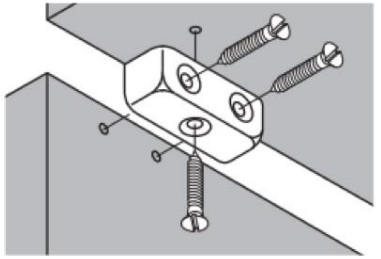
Exam 3

The device shown below is used during the assembly of the coffee table.



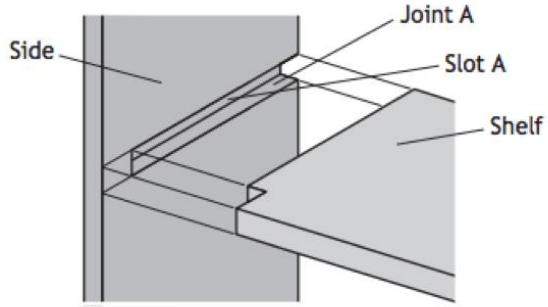
(e) Name this device. **1**

The knock down fixings shown below are used to attach the table top to the frame.



(g) Describe two advantages of using knock down fixings over traditional wooden joints. **2**

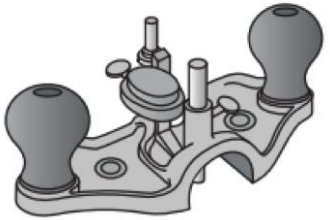
Exam 4



(a) Name joint A. 1

Slot A, shown above, is cut using hand tools. The first stage is to mark out the slot. The last stage is to accurately level off the bottom of the slot.

The tool shown below is used to level off the bottom of the slot accurately.



(ii) Name this tool. 1

Exam 5

The diagram below shows the decorative top piece of the shelving unit. This has to be reproduced many times.

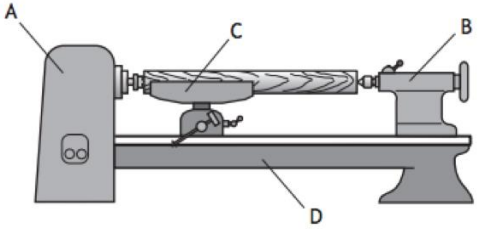
(c) Name the marking out aid that is used to ensure all the decorative top pieces are marked out identically. 1

_____

(d) Name the power tool used to cut the curved shape of the decorative top piece. 1

_____

A diagram of a woodwork lathe is shown below.



(f) Name parts A, B, C and D of the woodwork lathe shown above. 4

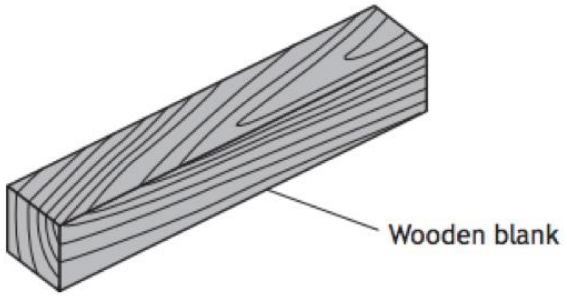
A _____

B _____

C _____

D _____

Exam 6



The wooden blank is prepared for the turning process before it is mounted on the woodwork lathe.

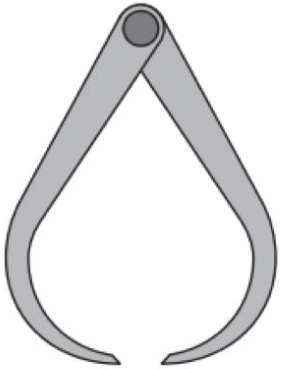
There are five stages in the preparation of the wooden blank before fitting it between the centres on the lathe. The **first** stage is to draw diagonals on the ends of the wooden blank.

(e) Describe the **next** four stages in the correct order. You may use sketches to support your answer. 4

Stage 2
Stage 3
Stage 4
Stage 5

Exam 7

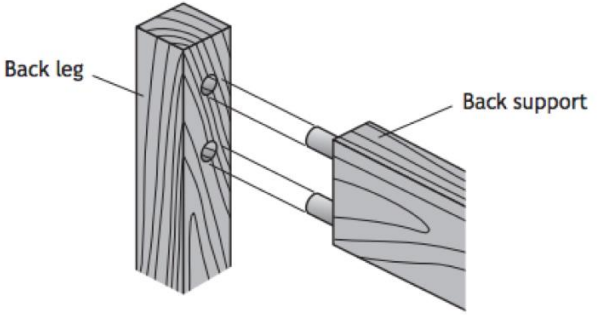
The tool shown below is used to check the diameters of the feet of the shelving unit.



(iii) Name this tool. **1**

_____

) This diagram shows the joint used to join the back supports of the chair to the back legs.



(i) Name this joint. **1**

_____

(ii) The holes in the back leg are drilled using the pedestal/pillar drill.

State two safety checks that should be carried out on the pedestal/pillar drill **before** switching it on.

Check 1 _____ **1**

Check 2 _____ **1**

Exam 8

The chair is constructed from red pine. A clear varnish finish is applied to the chair.

(i) State one reason why a **clear** varnish is a suitable finish. **1**

(ii) Describe three stages to be carried out to prepare the wood **before** the clear varnish is applied. **3**

1

2

3

(iii) Explain why each part of the chair is prepared for a finish **before** it is assembled. **1**

(iv) Health and safety is a priority when preparing wood for a finish.

State two safe working practices which should be carried out when **preparing** wood for a finish. **2**

Exam 9

Red pine is a softwood.

(v) Describe three **environmental** reasons for choosing red pine **instead** of a hardwood. **3**

1 _____

_____

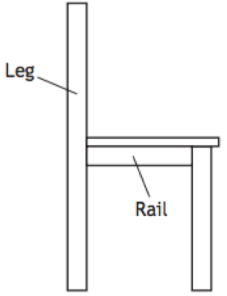
2 _____

_____

3 _____

_____

It is essential to make sure the legs and rails are square to each other when assembling the chair as shown in the diagram below.



(i) Explain what is meant by the term square. **1**

_____

_____

(ii) Describe two methods of checking that the leg and rail are assembled correctly and are square. **2**

Method 1 _____

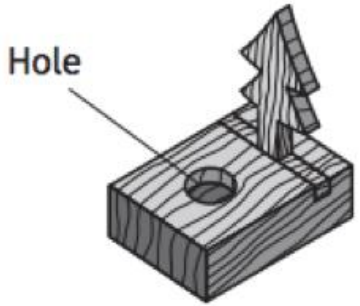
_____

Method 2 _____

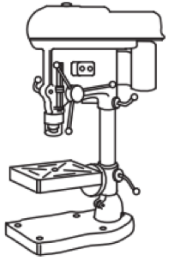
_____

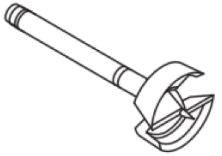
Exam 10

3. A wooden tealight holder is shown below.



The diagrams below show the **machine** and **forstner bit** used to cut the hole in the tealight holder.





(a) (i) Name this machine. **1**

_____

(ii) Explain why the forstner bit, shown above, was used to create the hole. **1**

_____

_____

_____

Exam 11

3. (continued)

Health and safety is a priority when using the machine shown opposite.

(b) Describe three health and safety checks that would be carried out **on the machine** before switching it on.

1 _____

_____

_____

2 _____

_____

_____

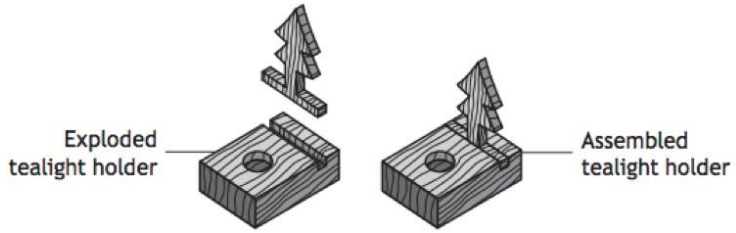
3 _____

_____

_____

3. (continued)

The tealight holder is joined, as shown below.



(c) Name this joint. **1**

_____

Exam 12

3. (continued)

Diagram A shows the marked out joint used in the tealight holder. Diagram B shows the wood that is removed.

Diagram A

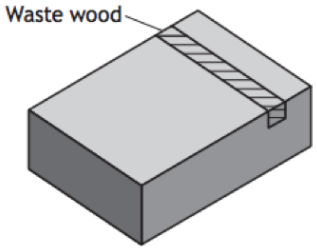
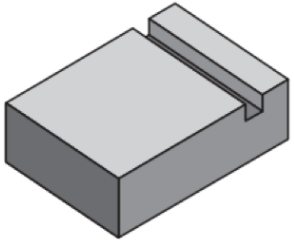


Diagram B



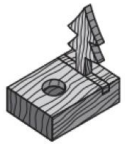
(d) Describe three stages in **cutting and removing** the wood from the joint shown above. You may use sketches to support your answer. **3**

Stage 1
Stage 2
Stage 3

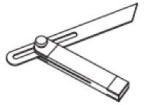
Exam 13

3. (continued)

The tealight holder, shown below, is manufactured using various hand tools.



(e) Name the tools shown below and describe what they are used for.



(i) Name 1

_____

(ii) Use 1

_____

(iii) Name 1

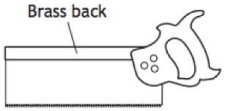
_____

(iv) Use 1

_____

3. (continued)

(f) Explain the purpose of the brass back on the tenon saw shown below. 1



_____

_____

(g) Describe three actions that will ensure a good quality **surface finish** is achieved **before** applying the varnish. 3

1 _____

_____

_____

2 _____

_____

_____

3 _____

_____

_____

Exam 14

Health and safety in a workshop is a priority.

(h) Describe three **personal** safety precautions you would take **before** switching on the woodturning lathe. **3**

1 _____

_____

_____

2 _____

_____

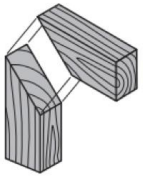
_____

3 _____

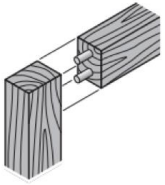
_____

_____

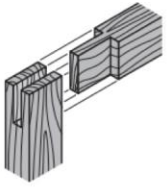
(a) Name the joints shown.



(i) _____ 1



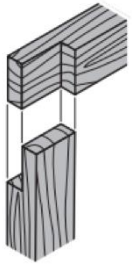
(ii) _____ 1



(iii) _____ 1

Exam 15

The corner halving joint used in the mirror frame is shown below.



An important part of making any joint is marking out.

There are four stages in the marking out process.

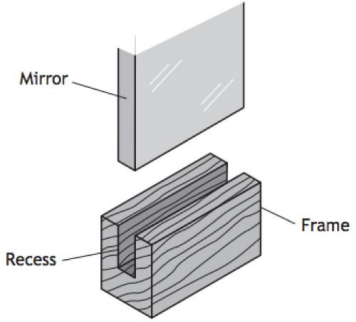
(b) Describe three stages in the **marking out** process in the table below. You may use sketches to support your answer.

The stages must be in the correct order.

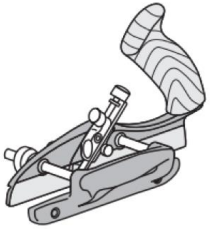
The final stage is completed for you. **3**

Sequence	Process
Stage 1	
Stage 2	
Stage 3	
Stage 4	Mark the waste wood.

Exam 16



The tool shown below is used to cut the recess.



(c) Name this tool. **1**

_____

Various types of woods were considered to make the mirror frame.

(d) Complete the table below identifying if the woods listed are hardwood **or** softwood.

The first one is completed for you. **4**

Wood	Hardwood/Softwood
Meranti	Hardwood
Oak	(i)
Ash	(ii)
Cedar	(iii)
Larch	(iv)

It was decided to use softwood to make the mirror frame.

(e) Describe two environmental reasons for selecting a softwood **instead** of a hardwood. **2**

1 _____

_____

2 _____

_____

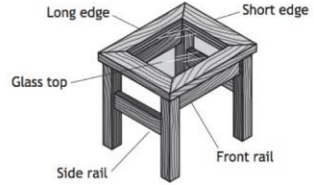
The mirror frame requires a finish to be applied which will protect the wood and show off the natural wood grain.

(f) State a suitable finish. **1**

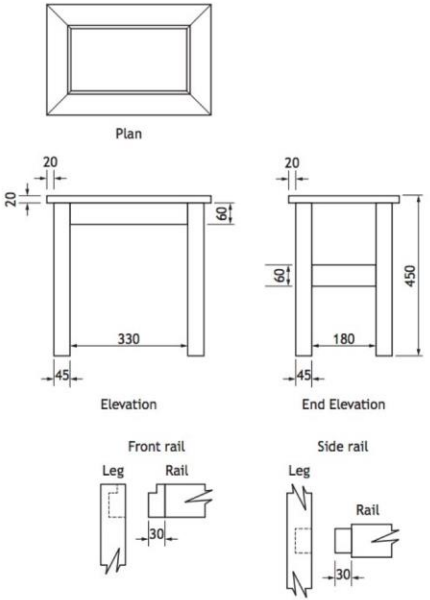
_____

Exam 17

2. A table is shown below.



The diagram below shows the working drawings for the table.



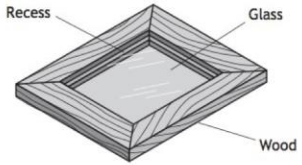
Note: The rails are joined to the legs using the joints shown in the drawings above. **All sizes are in millimetres.**

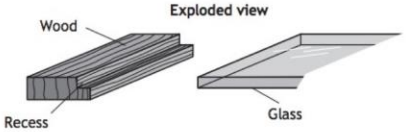
(a) Complete the cutting list below, using the information provided in the working drawings shown opposite. **6**

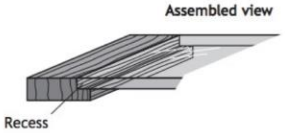
Part	Number	Length	Breadth	Thickness
Table top long edge	2		50	20
Table top short edge	2		50	20
Front Rails	2		60	18
Side Rails	2			18
Legs	4		45	45

Exam 18

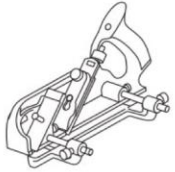
The table top has glass inserted, as shown below.







The hand tool shown below is used to cut the recess.

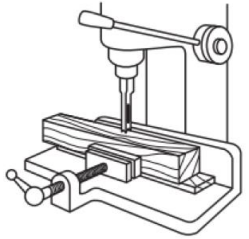


(c) Name this tool. 1

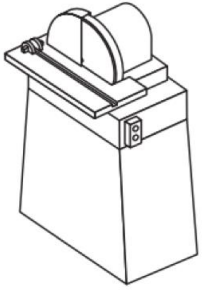
_____

Various machines are used to make the table.

(b) Name the machines shown below.



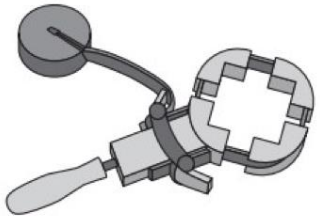
(i) _____ 1



(ii) _____ 1

Exam 19

The tool shown below is used during the assembly of the table top.



(d) Name this tool. **1**

Before final assembly, the table top is dry cramped.

(e) Explain the purpose of dry cramping. **1**

Glue is used to assemble the table.

(f) State the name of a wood glue. **1**

Before a finish is applied to the table it is prepared using different grades of glass paper: fine, medium and coarse.

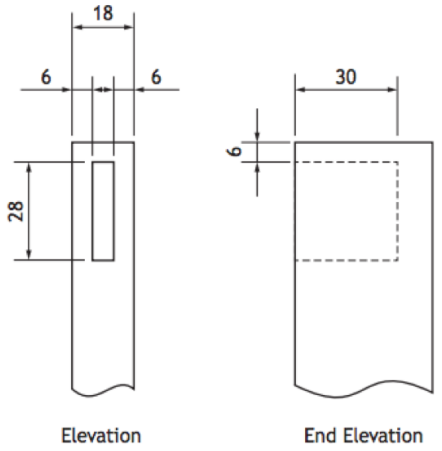
(g) State which grade of glass paper is used **first**. **1**

(h) Explain the purpose of wetting the wood before starting the **final** stage of sanding. **1**

Exam 20

The mortise was marked out using the working drawing shown below.

Note: All sizes are in millimetres.



(b) State the distance set between the spurs on the mortise gauge.

_____ mm

(d) State three health and safety checks that should be carried out **on the mortise machine** before switching it on. **3**

Check 1 _____

_____

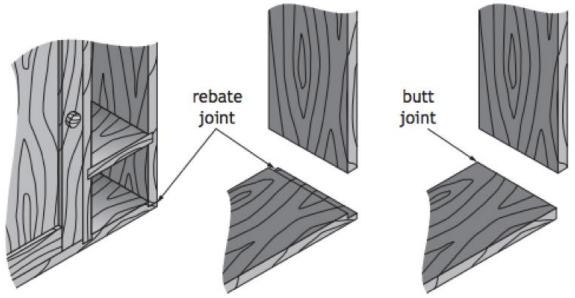
Check 2 _____

_____

Check 3 _____

_____

A rebate joint was chosen for the corner of the cabinet instead of a butt joint. Both joints are shown below.



(e) Explain why a rebate joint was chosen instead of a butt joint. **2**

_____

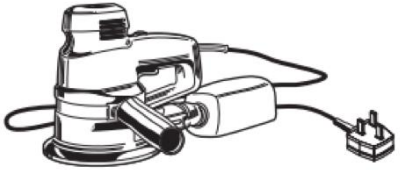
_____

_____

_____

Exam 21

The cabinet was sanded with the orbital sander.



(f) State two health and safety checks that should be carried out **on the orbital sander** before switching it on. **2**

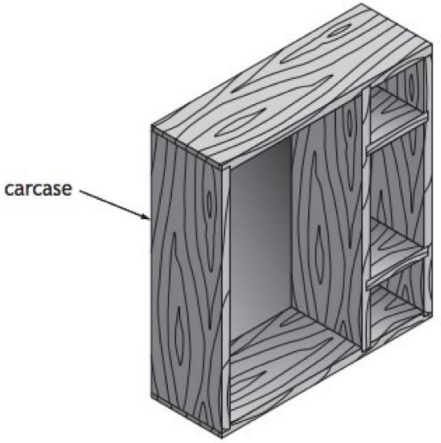
Check 1 _____

_____

Check 2 _____

_____

When the bathroom cabinet was assembled it was essential to ensure the carcase was square.

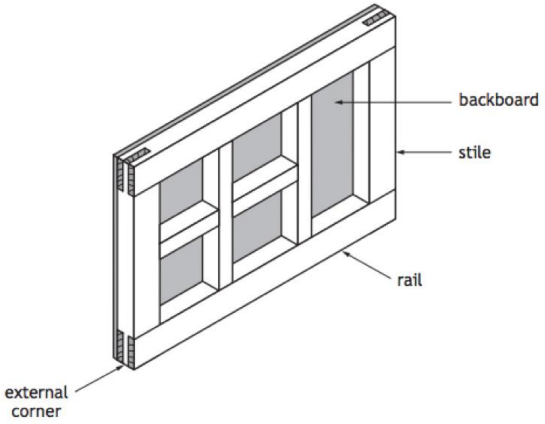


(g) Describe how you would **measure** the bathroom cabinet to find out if it was square.

You may use sketches to support your answer.

Exam 22

2. A wooden picture frame is shown.



A softwood was chosen for the picture frame.

(a) Describe three environmental reasons for this choice. **3**

Reason 1 _____

_____

Reason 2 _____

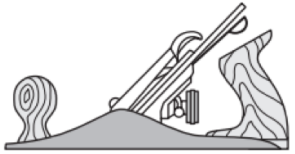
_____

Reason 3 _____

_____

2. (continued)

The smoothing plane shown was used to plane the rails to the correct width.



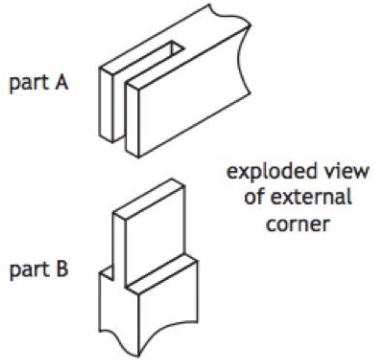
(b) Describe how to set up the smoothing plane before use. **2**

You may use sketches to support your answer.

Exam 23

2. (continued)

The joint used to construct the four external corners of the picture frame is shown.

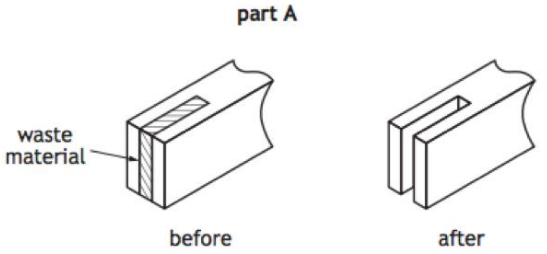


(c) Name this joint. **1**

_____

2. (continued)

Part A of the joint used to construct the external corners of the picture frame is shown.



(d) Describe **two** stages in removing the waste material from **part A** using hand tools. **2**

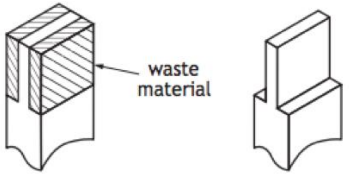
You may use sketches to support your answer.

Exam 24

2. (continued)

Part B of the joint used to construct the external corners of the picture frame is shown.

part B

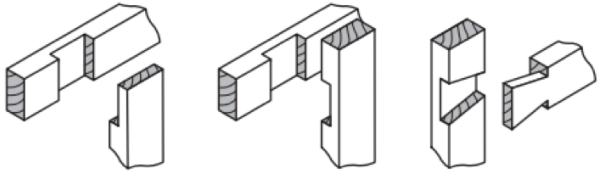


(e) State which **hand tool** was used to remove the waste material from part B. **1**

_____

2. (continued)

The following joints were considered for use in the construction of the picture frame.



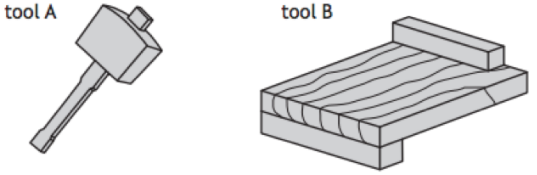
(f) Name the joints shown above. **3**

Joint A _____

Joint B _____

Joint C _____

The following tools were used in the manufacture of the picture frame.



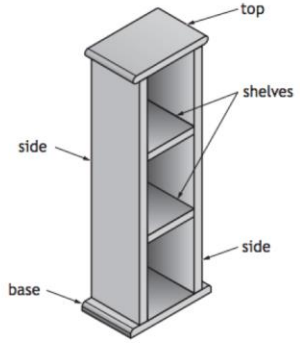
(g) Name these tools. **2**

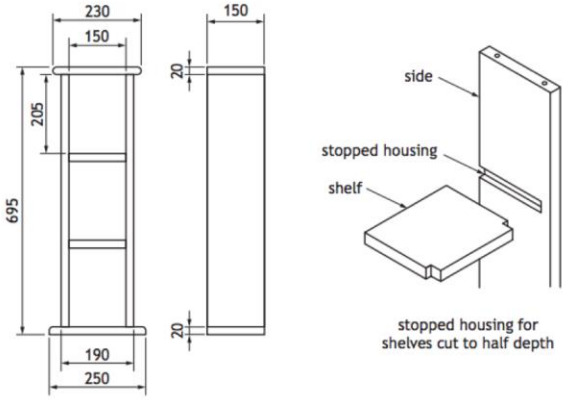
Tool A _____

Tool B _____

Exam 25

3. A DVD storage unit and its working drawings are shown below.
Note: All sizes are in millimetres. Hidden detail omitted for clarity.





3. (continued)

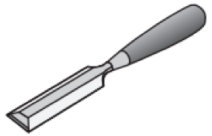
(a) Complete the cutting list below, using the information in the working drawings shown opposite. **4**

Cutting list					
Part	**Quantity**	**Material**	**Length**	**Breadth**	**Thickness**
Top	1	red pine	230	150	20
Sides	2	red pine		150	20
Shelves		red pine		150	20
Base	1	red pine		150	20

Exam 26

3. (continued)

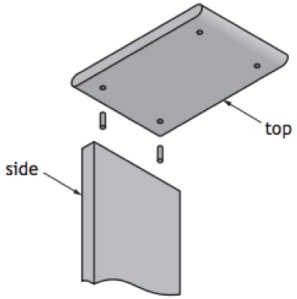
The stopped housing was cut using a bevel edged chisel.



(c) State one health and safety check that was made **on the tool** before chiselling out the waste material. **1**

_____

The joint shown was used to join the top to the sides of the DVD storage unit.

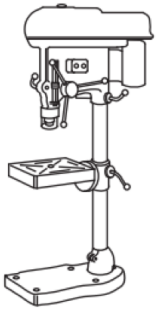


(d) Name this joint. **1**

_____

3. (continued)

(e) The pillar drill shown was used to drill the holes in the top and sides.



The holes were drilled using the drill bit shown below.

(i) State the name of this type of drill bit. **1**

_____

(ii) Describe two methods of ensuring the holes are drilled to a depth of 10 mm using the pillar drill. **2**

Method 1 _____

_____

_____

Method 2 _____

_____

_____

Exam 27

3. (e) (continued)

(iii) In the workshop, personal health and safety is a priority.

State three **personal** health and safety checks that should be carried out before the pillar drill is switched on. **3**

Check 1 _____

_____

Check 2 _____

_____

Check 3 _____

_____

3. (continued)

The base was attached to the sides using the type of screw shown.

(f) Name this type of screw. **1**

_____

(g) Explain why this type of screw was used instead of a round head screw. **1**

_____

_____

The DVD storage unit was dry cramped before final assembly.

(h) Explain what is meant by the term 'dry cramping'. **1**

_____

_____

_____

(i) Name a suitable wood glue that would be used when assembling the DVD storage unit. **1**

_____

Exam 28

4. A wooden highchair made from solid wood is shown.
A manufactured board was used for the removable table.

Manufactured boards are constructed in different ways.

(a) Two manufactured boards considered for the removable table were plywood and veneered chipboard.

(i) Describe how plywood is constructed. 1

You may use sketches to support your answer.

4. (a) (continued)

(ii) Describe how chipboard is constructed. 1

You may use sketches to support your answer.

Solid wood was also considered for the removable table before plywood was chosen.

(b) State two reasons why plywood was the preferred choice over solid wood. 2

Reason 1 _____

_____

Reason 2 _____

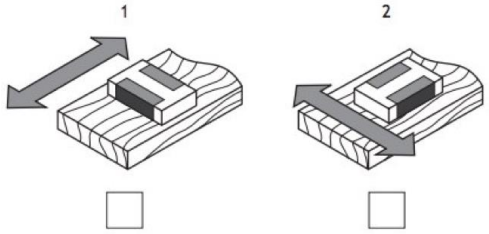
_____

Exam 29

4. (continued)

(c) Abrasive paper was used to prepare the surface of the solid wood prior to applying a finish to the highchair.

(i) Tick the box below that shows the correct direction of sanding. 1



A damp cloth was used to wet the solid wood during the surface preparation process.

(ii) Explain why a damp cloth was applied to the surface of the solid wood. 1

(d) Three grades of abrasive paper were used in the surface preparation process. They were 80, 120 and 240 grit.

(i) State which grade of abrasive paper was used last when preparing the surface. 1

(ii) Explain why this grade of abrasive paper was selected. 1

4. (continued)

(e) A range of finishes were considered for the wooden highchair, although some of them were not suitable.

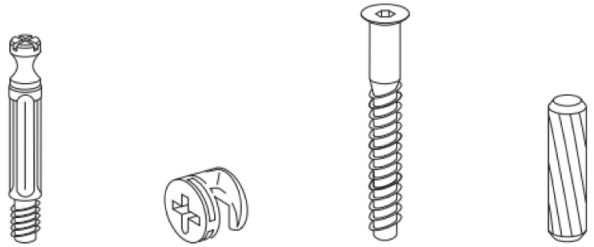
(i) State two suitable wood finishes that could be used for the wooden highchair. 2

1 _____

2 _____

(ii) Explain why some finishes are not suitable for the wooden highchair. 1

The fixings shown were used in the manufacture of the highchair.



(f) State the collective name for these fixings. 1