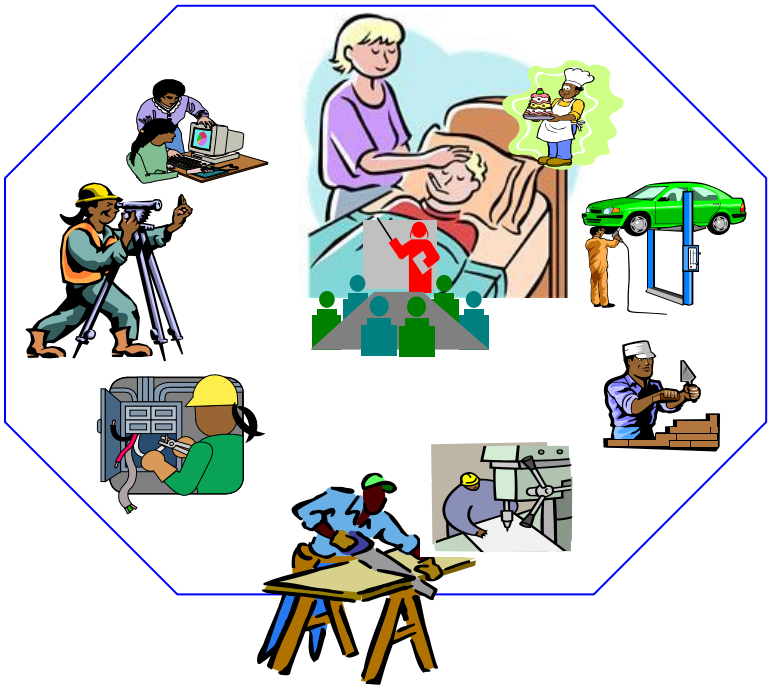
Furniture Making -Level-III

Based on Sep, 2012 Version 5 Occupational Standards

and Dec, 2020 V1 Curriculum



Module Title: Applying Hardware / Fixtures and Accessories

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L G# 26	LO #1- Prepare for work

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Obtaining & applying work instructions,
- Following safety requirements with safety plans and policies
- Identifying & selecting types of hardware
- Checking tools equipment and accessories to carry out tasks
- Calculating material quantity in accordance with plans /specifications
- Applying safe handling requirements for equipment, products and materials
- Identifying and applying necessary requirements

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Obtain & apply work instructions,
- Follow safety requirements with safety plans and policies
- Identify & selecting types of hardware
- Check tools equipment and accessories to carry out tasks
- Calculate material quantity in accordance with plans /specifications
- Apply safe handle requirements for equipment, products and materials
- Identify and apply necessary requirements

Learning Instructions:

Read the specific objectives of this Learning Guide.

1. Follow the instructions described below.
2. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them
3. Accomplish the “Self-checks” which are placed following all information sheets.
4. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
5. If you earned a satisfactory evaluation proceed to “Operation sheets

1.1 Obtaining & applying work instructions**,**

meaning of obtaining

To come into possession of; get, acquire, or procure, as through an effort or by a request: to obtain permission; to obtain a better income. Obsolete. to attain or reach.

Obtain means to get something that is not so easy to come by such as knowledge, rights, or a large amount of money.

Work Instructions are documents that clearly and precisely describe the correct way to perform certain tasks that may cause inconvenience or damage if not done in the established manner. That is, describe, dictate or stipulate the steps that must be followed to correctly perform any specific activity or work.

purpose of a work instruction

Work instructions are also called work guides, Standard Operating Procedures (SOPs), job aids or user manuals, depending on the situation. In any case, the purpose of the work instructions is to clearly explain how a particular work task is performed.

A **specification** often refers to a set of documented requirements to be satisfied by a material, design, product, or service. A specification is often a type of technical standard. ... The word specification is broadly defined as "to state explicitly or in detail" or "to be specific".

Four Types of "Specifications"

. **Product Specification**: This describes a manufacturer's product and its performance without consideration for a particular building.

. **Project Specification**: This describes an architect's design and performance requirements for a particular building.

- Master Specification.
- . Guide Specification.
- importance of specification

Let's look at the main reasons why the specification is so important to the construction process: It provides clear instructions on the intent, performance and construction of the project. It can reference the quality and standards which should be applied. Materials and manufacturers' products can be clearly defined.

Quality requirements are specifications of the quality of products, services, processes or environments. Quality is any element, tangible.

quality requirement refers to a condition or a capability that must be present in a requirement. They represent that which is needed to validate the successful completion of a project deliverable. ... This implied quality requirement, now being verifiable, should be captured.

Good requirements should have the following characteristics:

- ✓ Unambiguous.
- ✓ Testable (verifiable)
- ✓ Clear (concise, terse, simple, precise)
- ✓ Correct.
- ✓ Understandable.
- ✓ Feasible (realistic, possible)
- ✓ Independent.
- ✓ Atomic.

Type of Hinge

The hinges are mainly divided into stainless steel hinges, steel hinges, iron hinges, nylon hinges, and zinc alloy hinges according to the material classification; there is also a hydraulic hinge (also known as Damping hinge), the damping hinge is characterized by a buffer function when the cabinet door is closed, which greatly reduces the noise generated when the cabinet door is closed and collides with the cabinet body.
The hinges commonly used for cabinet doors can be divided into three categories according to the hinge curvature: Full overlay hinges , half overlay hinges and inset hinges .

Full overlay hinges are for individual cabinets or the cabinets on either end of a run of cabinets.

Half overlay hinges are intended for pairs of doors in the middle of a run of cabinets, where two doors have their hinges mounted on opposite sides of a shared middle partition.

Inset Cabinet Doors are set into the cabinet frame and fit flush with the face of the cabinet when closed.

How to choose hinge

1. Look at the weight of the material

The hinge quality is poor, and the cabinet door is easy to lean forward and back after a long time of use, and loose and sag. The cabinet hardware of the big brands are almost

all made of cold-rolled steel, stamped and formed at a time, with a thick feel and smooth surface. Moreover, due to the thick coating on the surface, it is not easy to rust, strong and durable, and has a strong load-bearing capacity. Inferior hinges are generally welded with a thin iron sheet and have little resilience. After a long time, they will lose their elasticity, causing the door to close Not strict, even cracked.

2. Open and close cabinet doors when purchasing, to experience the soft feel

The hinges with different pros and cons have different hand feelings. The hinges with excellent quality are relatively soft when opening the cabinet door, and will automatically rebound when closed to 15 degrees. Consumers can open and close cabinet doors when purchasing, to experience the feel.

3. View details

The details can determine whether the product is good, and thus confirm whether the quality is outstanding. The hardware used in high-quality wardrobe hardware has a thick hand feel and a smooth surface, which even achieves a silent effect in design. Inferior hardware is generally made of cheap metal such as thin iron sheet, cabinet doors stretch jerky, and even have a harsh sound.

In addition to visual inspection and smooth and smooth surface of the hinge, the hinge spring's return performance should be noted. The quality of the reeds also determines the opening angle of the door panel. A good quality reed can make the opening angle exceed 90 degrees.

4. Tips
The hinge can be opened 95 degrees, and the two sides of the hinge can be pressed hard by hand to observe that the supporting spring piece is not deformed or broken, and the very strong one is a qualified product. Inferior hinges have a short service life and are easy to fall off, such as cabinet doors and hanging cabinets falling off, mostly because the hinge quality is not close enough.

Cautions when using hinges

1. Wipe gently with a soft dry cloth. Do not use chemical cleaners or acidic liquids. If there are black spots on the surface that are difficult to remove, use a little kerosene

2. It is normal to have noise after long time use. In order to ensure a long-lasting smooth and silent mute, lubricating oil can be added regularly every 2-3 months for maintenance.

3. Prevent heavy objects and sharp objects from hitting and scratching.

4. Do not pull hard during transportation, and damage the hardware of the furniture connection.

A specification often refers to a set of documented requirements to be satisfied by a material, design, product, or service. A specification is often a type of technical standard.

There are different types of technical or engineering specifications (specs), and the term is used differently in different technical contexts. They often refer to particular documents, and/or particular information within them. The word specification is broadly defined as "to state explicitly or in detail" or "to be specific".

A requirement specification is a documented requirement, or set of documented requirements, to be satisfied by a given material, design, product, service, etc. It is a common early part of engineering design and product development processes, in many fields.

A **functional specification** is a kind of requirement specification, and may show functional block diagrams

design or product specification describes the features of the solutions for the Requirement Specification, referring to either a designed solution **or** final produced solution. It is often used to guide fabrication/production. Sometimes the term specification is here used in connection with a data sheet (or spec sheet), which may be confusing. A data sheet describes the technical characteristics of an item or product, often published by a manufacturer to help people choose or use the products. A data sheet is not a technical specification in the sense of informing how to produce.

Operational Details

Collective operation is executed by having all processes in the group call the communication routine, with matching arguments.

Self-Check1	Written Test

Directions: Fill the blank space. Use the Answer sheet provided in the next page:

1._____ are one of the commonly used hardware for panel furniture wardrobe cabinet doors(4)point

2._____ often refers to a set of documented requirements to be satisfied by a material, design, product, or service (4)point

3. _____is a kind of requirement specification, and may show functional block diagrams (4)point

Note: Satisfactory rating 100 points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 2 Following safety requirements with safety plans and policies

1.2.Following safety requirements with safety plans and policies

Safety rules safety policy is a written statement by an employer stating the company's commitment for the protection of the health and safety of employees and to the public. It is an endorsed commitment by management to its employees regarding their health and safety**.**

Safety ; is appreciation to avoid accident (the person /human being, the wood

General safety rules

- **Always dress properly**
  - ✓ Over all gown (apron)
  - ✓ Eye protection (goggle)
  - ✓ Ear protection
  - ✓ Dust musk (mouth musk)
  - ✓ Head protection (helmet)
  - ✓ Hand protection (glove)
  - ✓ Foot protection (safety shoe)
- **follow direction**
  - ✓ study the properties of hardware and fixtures tools.
  - ✓ properly Arrangement of hardware and fixtures tools
  - ✓ Use safe cutting system
  - ✓ Clean work shop area
  - ✓ Prepared first aid kit (box) in the work shop.
  - ✓ Keep your work bench.
  - ✓ In general safe all raw materials , machines tools measurements
  - ✓ **Learn to us the tools /timber correctly**. Use the timbers for their intended purpose /function.
  - ✓ **To avoid horse ply**
  - ✓ **Report all accidents** (daily problems

Self-Check 2	Written Test

Directions: Write the answer this question . Use the Answer sheet provided in the next page

1.what safety?(2)point

_____

_____

2.Write at list five (5)safety tools?

a._____

b._____

c._____

d._____

e._____

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 3 Identifying & selecting types of hardware

3.1 Identifying & selecting types of hardware

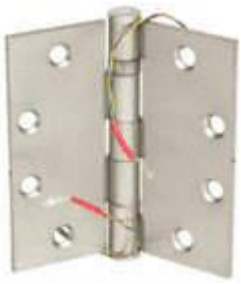
Hinges are a feature that most people don't give much thought behind. Though their design may be simple, there are many different types of hinges.

hinges are a feature that most people don't give much thought behind. Though their design may be simple, there are many different types of hinges. Don't know which one is right for you?
Check out our easy hinge selection table to find out:

- **Types of Hardware**

Table 3.1 Hardware

Hinge type	Description	Can be used with	Features	Looks like
Barrel hinges	Hinges made of solid brass with brass plated connecting links	Doors, cabinets and smaller sized furniture	They come in different diameters and are invisible when doors are closed	

Concealed hinges	Connectors that are nearly entirely hidden from view	Doors, cabinets, windows, furniture, displays, etc.	Easy door adjustment and installation	
Door and butt hinges	Consists of two rectangular leaves with screw holes joined by a metal rod	Interior or exterior doors	Clean and neat appearance with only the pin showing	
Gate hinge	Made with two parts: shorter hinge and longer leaf	Used for gates and fences	Can be easily mounted and attached to posts	
Electrified hinges	An intermediate connector passes a constant flow of current between the power source and device in the door	Doors, cabinets, and various furniture with the right components	Allows for extreme control and security with the maximum voltage being 48 volts	
Piano hinges	A long hinge with narrow leaves and many screw holes designed for a piano (hence the name)	Doors, pianos	Also called a continuous hinge, they are good for high-frequency areas	

Pivot hinges	Shaped like a butterfly when open, pivot hinges reduce stress on the frame and sagging	Flush door applications and some recessed doors	Durable and easy to install, recommended for use in public buildings	
Specialty hinges	Various styles and sizes	Different applications based on particular design	Can be manufactured to fit your specific needs or requirements	
Spring hinges	Consists of a spring mechanism for a self-closing hinge	Doors leading into a garage and outward swinging cabinets	Automatic shutoff and easily adjustable	
Strap hinges	Used mostly for utility, these hinges consist of two long, narrow leaves extending from one knuckle	Heavy doors, wooden gates, fences	Can be installed on the left or right-hand side	
T-hinges	Designed with wider leaves and larger pin diameter	Ideal for doors, gates, cabinets and tool boxes	Extra strength and durability, can be installed on the left or right-hand side	

Self-Check 3	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page

1._____is used Doors, cabinets and smaller sized furniture?
2._____is used Doors leading into a garage and outward swinging cabinets?
3._____ is used Doors leading into a garage and outward swinging cabinets?

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 4: Checking tools equipment and accessories to carry out tasks

1.4.Checking tools equipment and accessories to carry out tasks

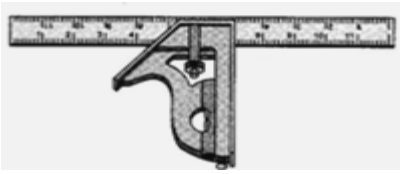
checking refers to verification of assumptions and adjusting mental maps when experiences differ from expectations.

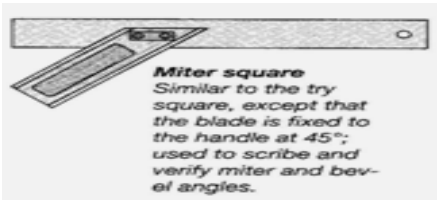
Checking and testing tools

Try-square

Try-square: it is used for testing the squares of surfaces and edges of -pieces, outside and inside corners of joints, and for marking lines at right-angles to a given surface or edge.

Miter square: that is used for checking of 450.



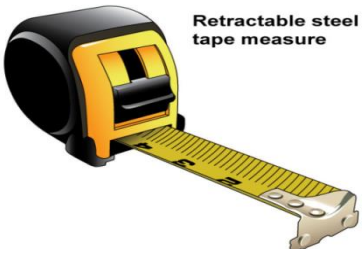


Combination squire Using a Combination Square to Mark 90-Degree and 45-Degree Angles.

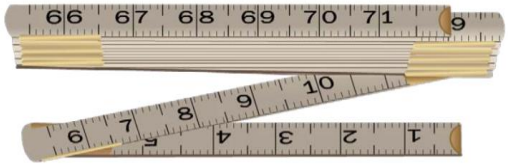
Measuring tools

- Measuring tool that is used for setting out and checking distance on a work piece.

Tape rule



Zigzag rule (folding rule):



Self-Check 4	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page

1._____ is used for checking of 450 degree (4)point

2._____ is used for setting out and checking distance on a work piece(3) point

3._____ is Using a Combination Square to Mark 90-Degree and 45-Degree Angles. (3) point

Note: Satisfactory rating 100%

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 5 Calculating material quantity in accordance with plans /specifications

1.5. Calculating material quantity

Material quantity calculation calculates component, operation, phase, and scrap quantities for which a formula has been defined. Product quantity calculation is not carried out during automatic material quantity calculation.

The process is as follows:

Calculate Quantities. Each project task is estimated by calculating the quantities of resources, materials, tools, and incidentals necessary to perform the task.

Estimate each task. Analogous or parametric techniques are used to estimate the task.

Produce Project Estimate.

How do you prepare an estimate?

Review the Project Scope. Don't start writing your **estimate** until you understand what your client wants.

Estimate a Timeline. An **estimate** only needs an approximate timeline.

Price Out Subcontractors.

Estimate Material Costs.

Check out the Competition

NO	Description	Quantity	Unit	Specification	Unit Price	Total Price	Remarks
1	Bolt and Nut	4	Pc	8	5	20	
2	Handle	1	Pc	Straight	20	20	
3	Hinge	2	Pc	Standard	15	30	
4	Drawer lock	3	Pc	Standard	30	90	
5	Castors	4	Pc	Small plastic	30	120	
6	Nail	1	Kg	5cm	90	90	
7	Screw	1	Pack	2cm	20	20	

Self-Check 5	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page

1. _____ is Each project task is estimated by calculating the quantities of resources, materials, tools, and incidentals necessary to perform the task.
2. **is** component, operation, phase, and scrap quantities for which a formula has been defined. Product quantity calculation is not carried out during automatic material quantity calculation.
3.

Note: Satisfactory rating 100% %

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 6 Applying safe handling requirements for equipment, products and materials

6.1.Applying safe handling requirements for equipment, products and materials

Apply hard ware's or fixtures

In many large projects, such as chests, cabinet and desks, hinges, locks, pulls and knobs are needed to complete the project. When fitting hard ware's or fixtures, precise marking, cutting and screw positioning is important.

Procedures of applying hard ware's:-

The steps in installing hard ware's are as follows;

1. Choose the correct size and kind of hard wares.
2. Find the positions of the hard ware according to working drawing.
3. Determine the distance of the hard wares will be set on the face, edge and end of furniture.
4. Extend the marks on the edge or at the required position with sharp pencil and try square.
5. Cut out a place where marked for the installation of hard wares.
6. Place the hard ware in its correct position and make the positions of the holes for the screws with a pencil.
7. Drill pilot holes in to the wood that smaller than the size of the screws.
8. Drive the screws with the screw driver to fasten the hard wares firmly. Etc.

- ❖ Quality standard of hard wares

The quality of hard wares are depend up on the selection of hard ware that fit the color of project, the material it made from and the method of installation.

Assemble components

- ❖ Furnishing components and their assembly
- ❖ Hand and power tools are used to assemble furnishing components.

Assembling

The steps in assembling a project are determined largely by how complicated it is. In a simple project, all the parts can be assembled at one time. In more complicated one, such as a table with four lags, rails and a top, it may be a job that has to be carried out in two or three stages. In the example given, it is often better to glue each pair of legs ends a rail to from the slides or ends, then to glue these two rails, and finally to fasten the top in place.

A. Clamps

Clamping is a method of temporary fastening which is often used in wood work. Pieces of stock are clamped together for gluing, nailing or any other method of fastening. The clamp holds the joint in place until the glue sets or until the other method of fastening has been complicated. The common movable clamps are wood hand screws, screw or c-clamps and quick clamps. The hand screw can be adjusted to different angles Hand screws and screw clamps are used for clamps are used for clamping small parts and in gluing face, while bar clamps and quick clamps are used for larger pieces of work – for example, in gluing stock edge to edge and in the assembly of frames for all kinds of cabinet and construction. If there are no bar clamps, you can make an arrangement for clamping with the help of wedges. The wedges apply the pressure.

Self-Check 6	Written Test

Directions: write short answer . Use the Answer sheet provided in the next page

1. write at list five (5)the steps in installing hard wares?

a._____

b._____

c._____

d._____

e._____

Note: Satisfactory rating 100%

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 7 Identifying and applying necessary requirements

During furniture production the following hard ware/fixtures are commonly used

- ✓ Hinge
- ✓ Handles
- ✓ Drawer runner
- ✓ Metal drawer system
- ✓ Sliding rail systems
- ✓ Rotating storage system
- ✓ Slide out system and etc

Accordingly the above hardware /fixtures are commonly fitted using screw and you can see the general screw fixing procedures

1. Make the positions for the screw holes.
2. Choose a bit of the correct size for drilling or boring the pilot hole. The bit should be large enough to make a hole that will clear the shank of the screw.
3. Choose a bit of the correct size for drilling or boring the anchor hole. The size of the bit should be about 70% of the root diameter of the screw for soft wood and about 90% for hard ware
4. Fix the bit in the brace, or the drill in the hand drill and make the pilot hole
5. Place the parts of the joint position, and make the position for the anchor hole with the owl
6. Bore or drill the anchor hole
7. Counter sink the pilot hole slightly if a flat head or over head screw is to be used. Make sure that you do not countersink too deeply, or the head will put in to wood. A countersink bit fitted into a file handle service excellently for the purpose
8. Choose the screw driver which fits the slot of the screw driver has been ground properly.
9. Drive in the screw with the screw driver hold the screw driver firmly and in line with the screw to prevent it frame slipping out of the screw slot. If the screw is hard to turn, unscrew it and coat if with ordinary soap.

Self-Check 7	Written Test

Directions: short answer . Use the Answer sheet provided in the next page

1.what are the commonly hard ware/fixtures are During furniture production(Each 5 point)

A._____

B. _____

C. _____

D ._____

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer Sheet

Name: _____ Date: _____

L #- 27	LO #2. Apply and fit hardware/ fixtures

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Laying out/placing hardware/fixtures& accessories in the required design
- Operating and handling machines
- Joining/securing process according to workplace procedures
- Applying adhesives according to workplace procedures
- Checking work against required quality standards

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Lay out/place hardware/fixtures& accessories in the required design
- Operate and handle machines
- Join/secure process according to workplace procedures
- Apply adhesives according to workplace procedures
- Check work against required quality standards

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Information Sheet 1 Laying out/placing hardware/fixtures& accessories in the required design

Laying out/placing hardware/fixtures& accessories in the required design

FITTINGS

The main ways of joining wood to wood are by using metal or plastic fittings or by using woodworking joints**.**

Hinges are fittings that allow doors, gates or lids, etc. to be opened or closed while staying attached. The hinges we will look at are the butt hinge the piano hinge and the concealed hinge.

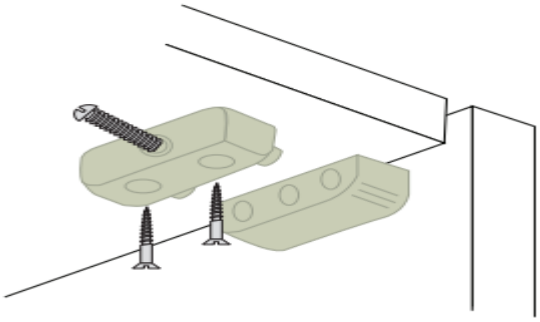
Butt Hinge The butt hinge is a very commonly used hinge in cabinet making and carpentry. They are usually the hinges fitted to doors in houses. This hinge contains two leaves. One leaf is recessed into the door and the other into the door frame. Butt hinges are mostly made from steel or brass and countersunk screws are used to fit them. Butt hinges come in a range of sizes from 13mm to 150mm in length

Piano Hinge The piano hinge is a long type of butt hinge. It is sold in 1830mm and in 2440mm lengths and is cut to the length required. It is often used to hold the lids on cabinets and also to hold small doors on lockers etc. It is fitted along the full length of the door or lid to which it is being fitted with countersunk screws. Piano hinges are usually made from brass or brass coated steel.

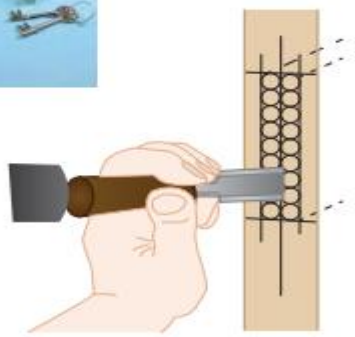
Concealed Hinge The concealed hinge is mostly used on doors in kitchen and bedroom units. They are hidden from view when the cabinet door is closed. They are made of 2

parts: One part is the hinge cup and the arm which is fitted to the door; the other part is the mounting plate which is fitted to the frame of the unit. An exact hole must be drilled into the door to fit the hinge cup. This hinge allows for a lot of adjustments to be made to a door after it has been fitted. The concealed hinge is very suitable for chipboard or MDF.

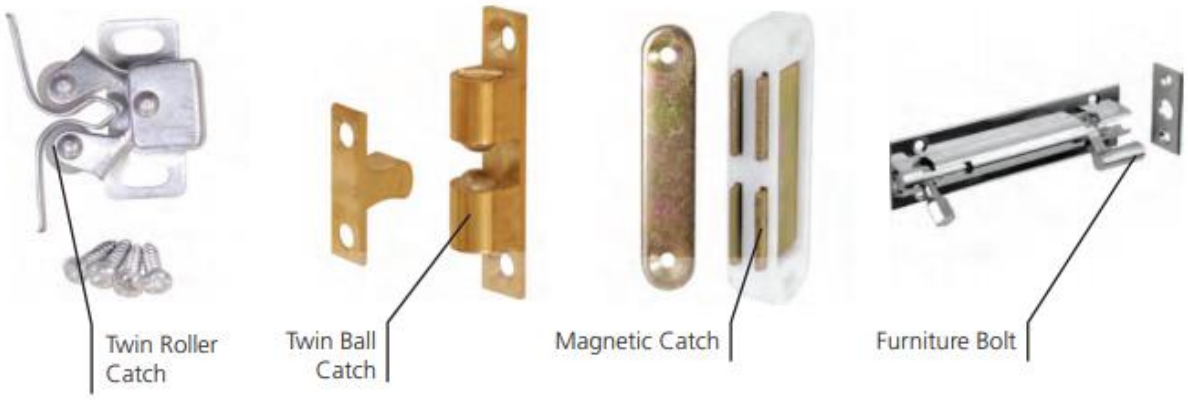
Knock Down (KD) Fittings Knockdown (KD) fittings are mainly used to assemble flat pack furniture or for assembly by the user. They are used within kitchen units or self-assembly furniture. Knockdown (KD) fittings are often fittings which can be joined together with one screw or bolt. Most KD fittings are cheap and are quick and easy to use. They are usually made from plastic or metal. There are many types of Knockdown (KD) fittings



Locks A lock is a fitting that can be used to keep doors, drawers, etc. closed and secure. They can be fitted onto the surface (surface mounted lock) or fitted into the edge (mortice lock) of a door or drawer. The mortise lock fits into a mortise that has been ‘cut out’ of a timber door edge. The locking action is achieved by a bolt that shoots out of the lock into the striker plate on the door frame when the key is turned. Catches A catch or bolt is a fitting that is used to keep doors, drawers, etc. close



Catches A catch or bolt is a fitting that is used to keep doors, drawers, etc. closed but not secure. There are many types of catches and bolts. The ones most commonly used in the woodwork room are; the twin roller catch; the twin ball catch; the magnetic catch and the furniture bolt.



Self-Check 1	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page.

1. _____are fittings that allow doors, gates or lids, etc. to be opened or closed while staying attached.

2._____ is a very commonly used hinge in cabinet making and carpentry.

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 2 Operating and handling machines

Operating is performance of a practical work or of something involving the practical application of principles or processes Practice until you can go through the whole **operation** without hesitation or thinking.

Common Machine Safety Devices

Safety Light Curtains. Safety light curtains protect personnel from injury and machines from damage by creating a sensing screen that guards machine access points and perimeters.

- ✓ Safety controller.
- ✓ Two-hand control devices.
- ✓ Indicator lights.
- ✓ Safety scanner.
- ✓ Safety interlock switches.
- ✓ Enabling devices.
- ✓ Tower light.

Material handling is the movement, protection, storage and control of materials and products throughout manufacturing, warehousing, distribution, consumption and disposal. As a process, material handling incorporates a wide range of manual, semi-automated and automated equipment and systems that support logistics and make the supply chain work. Their application helps with:

- Forecasting
- Resource allocation
- Production planning
- Flow and process management
- Inventory management and control
- Customer delivery
- After-sales support and service

A company's material handling system and processes are put in place to improve customer service, reduce inventory, shorten delivery time, and lower overall handling costs in manufacturing, distribution and transportation.

When designing a material handling system, it is important to refer to best practices to ensure that all the equipment and processes including manual, semi-automated and automated in a facility work together as a unified, system. By analyzing the goals of the material handling process and aligning them to guidelines, such as the 10 Principles of Material Handling, a properly designed system will improve customer service, reduce inventory, shorten delivery time, and lower overall handling costs in manufacturing, distribution and transportation. These principles include:

- ✓ **Planning:** Define the needs, strategic performance objectives and functional specification of the proposed system and supporting technologies at the outset of the design. The plan should be developed in a team approach, with input from consultants, suppliers and end users, as well as from management, engineering, information systems, finance and operations.
- ✓ **Standardization:** All material handling methods, equipment, controls and software should be standardized and able to perform a range of tasks in a variety of operating conditions.
- ✓ **Work:** Material handling processes should be simplified by reducing, combining, shortening or eliminating unnecessary movement that will impede productivity. Examples include using gravity to assist in material movement, and employing straight-line movement as much as possible.
- ✓ **Ergonomics:** Work and working conditions should be adapted to support the abilities of a worker, reduce repetitive and strenuous manual labor, and emphasize safety.
- ✓ **Unit load:** Because less effort and work is required to move several individual items together as a single load (as opposed to moving many items one at a time), unit loads—such as pallets, containers or totes of items—should be used.
- ✓ **Space utilization:** To maximize efficient use of space within a facility, it is important to keep work areas organized and free of clutter, to maximize density

in storage areas (without compromising accessibility and flexibility), and to utilize overhead space.

- ✓ **System:** Material movement and storage should be coordinated throughout all processes, from receiving, inspection, storage, production, assembly, packaging, unitizing and order selection, to shipping, transportation and the handling of returns.
- ✓ **Environment:** Energy use and potential environmental impact should be considered when designing the system, with reusability and recycling processes implemented when possible, as well as safe practices established for handling hazardous materials.
- ✓ **Automation:** To improve operational efficiency, responsiveness, consistency and predictability, automated material handling technologies should be deployed when possible and where they make sense to do so.
- ✓ **Life cycle cost:** For all equipment specified for the system, an analysis of life cycle costs should be conducted. Areas of consideration should include capital investment, installation, setup, programming, training, system testing, operation, maintenance and repair, reuse value and ultimate disposal.

Self-Check 2	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page.

1._____ is the movement, protection, storage and control of materials and products throughout manufacturing, warehousing, distribution, consumption and disposal.(3)points.

2._____ Define the needs, strategic performance objectives and functional specification of the proposed system and supporting technologies at the outset of the design.(2)points.

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 3 Joining/securing process according to workplace procedures

3.1 Joining

combine, unite, connect, link, associate, relate mean to bring or come together into some manner of union. join implies a bringing into contact or conjunction of any degree of closeness.

Every woodworking joint must fulfill important requirements:

It must support the load transmitted from other parts of wooden construction, or the load that has direct influence on the members of the woodworking joint. ...
It must let the wood move as it expands and contracts with changes in temperature and humidity.

The mortise and tenon is a classic wood joinery method. These joints have been used since the early times of woodworking, and are still among the strongest and most elegant methods for joining wood.

Jointing is a process that prepares the edges and faces of boards for gluing to another board. The first jointing tools were long hand planes that removed fine shavings of wood from the surface to flatten it. A number of jointing methods exist today that use hand tools, shop tools or power hand tools.

Steps in the Woodworking joining Process

- ✓ Read the plans.

Familiarize yourself with the plans and procedures before you buy or cut any wood. Make sure the project is something you can handle.

- ✓ **Check and double-**check **the materials list.**

Organize the list so that you can efficiently get the supplies you need before you cut a board.

- ✓ **Plan your cut list. Pre-mill all the** boards to get straight and flat pieces.

  This goes hand in hand with the cut list planning procedure in Step 3.
- ✓ **Mill the boards to** their final dimensions**.**

  This involves planning and jointing the boards.
- ✓ **Cut the** joints**.**
- ✓ **Dry fit the** assemblies to make sure everything fits properly

Make sure that your assemblies and subassemblies fit together properly before you add any glue. You also want to use this step to practice the assembly procedure. Repeat the procedure until you can do it smoothly and efficiently.

- ✓ **Glue the** assembly **and clamp it.**

  Work quickly and pull each joint fully together before moving on. This minimizes the possibility of joint freeze-up. When clamping, be careful not to use too much pressure. Use just enough force to pull the joints together. You don't want to squeeze all the glue out.

- ✓ **Square the parts.**

  Tabletops should be perfectly flat and other assemblies should be perfectly square. Use a straightedge to check for flatness and a tape measure (measuring diagonally across the assembly) to check for square.

- ✓ Clean up.

  Put the assembly aside where it won't get bumped and clean up all the glue seepage before it dries.

- ✓ **Take a break.**

Mortise-and-Tenon Joint.

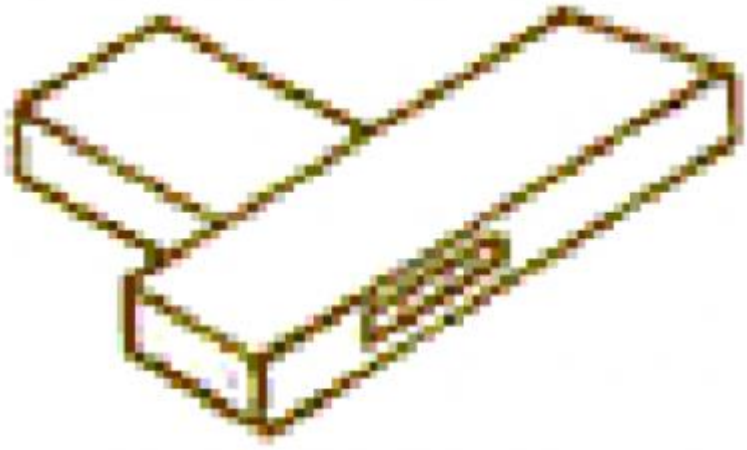


FIG.3.1

Self-Check 3	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page

Part I Fill blank space

1. _____ is combine, unite, connect, link, associate, relate mean to bring or come together into some manner of union.**2**point
2. _____and _____is a classic wood joinery method. **3**point

Part II Short answer

1.Write at list five in the woodworking joining process steps

a.

b.

c.

d.

e.

Note: Satisfactory rating 100% points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet.4 Applying adhesives according to workplace procedures

4.1 Applying adhesives

Adhesive bonding of wood components has played an essential role in the development and growth of the forest products industry and has been a key factor in the efficient utilization of our timber resource. The largest use of adhesives is in the construction industry. By far, the largest amounts of adhesives are used to manufacture building materials, such as plywood, structural flake boards, particleboards, fiberboards, structural framing and timbers, architectural doors, windows and frames, factory-laminated wood products, and glass fiber insulation. Adhesives are used in smaller amounts to assemble building materials in residential and industrial construction, particularly in panelized floor and wall systems. Significant amounts are also used in nonstructural applications, such as floor coverings, countertops, ceiling and wall tile, trim, and accessories.

Adhesives can effectively transfer and distribute stresses, thereby increasing the strength and stiffness of the composite. Effective transfer of stress from one member to another depends on the strength of the links in an imaginary chain of an adhesive-bonded joint. Thus, performance of the bonded joint depends on how well we understand and control the complexity of factors that constitute the individual links wood, adhesive, and the inter phasing regions between which ultimately determine the strength of the chain.

Surface Properties of Wood adhesive

Because adhesives bond by surface attachment, the physical and chemical conditions of the adhesive surface is extremely important to satisfactory joint performance. Wood surfaces should be smooth, flat, and free of machine marks and other surface irregularities, including planer skips and crushed, torn, and chipped grain. The surface should be free of burnishes, exudates, oils, dirt, and other debris.

Steps of Adhesive Bonding

Adhesive bonding is a manufacturing process in which two or more surfaces are joined using an adhesive. While glue is commonly used for this process, epoxy or other types of adhesives may be used as well. The adhesive, however, must bind to the surfaces on which it's applied. While adhesive bonding may sound complicated, it's actually a relatively simple manufacturing process that consists of just a few basic steps.

Step #1) Degreasing

The first step of adhesive bonding is degreasing. As the name suggests, this step involves the removal of all grease — as well as other contaminants — on the surfaces that will be joined. While small amounts of grease may sound harmless, it can reduce the bond created by the adhesive. Therefore, manufacturing companies must degrease the surfaces before applying the adhesive.

Degreasing is often performed using a solvent. Known as vapor degreasing, the surfaces are submerged in a solvent that dissolves grease and other contaminants. In addition to vapor degreasing, another degreasing method involves wiping the surfaces with a solvent-soaked cloth.

Step #2) Abrasion

The second step of adhesive bonding is abrasion. During this step, the surfaces are prepared by exposing them to abrasive material, such as sandpaper. The purpose of abrasion is to increase the surface area to which the adhesive will be exposed. By

exposing the surfaces with an abrasive material, it becomes rough and rugged. In turn, the adhesive will spread to fill the micro-sized cracks and crevasses, allowing for a stronger bond.

Step #3) Adhesive

After the surfaces have been degreased and exposed to an abrasive material, the adhesive is applied. During this step, the adhesive is carefully applied to the surfaces. Adhesives can be organic or inorganic. Regardless, they must be able to create a strong enough hold to prevent the surfaces from separating.

Step #4) Curing

The fourth and final step of adhesive bonding is curing. Not all glues or adhesives require curing, but many do. Heating, for example, is a common curing method used in adhesive bonding. The adhesive is heated, resulting in a chemical reaction that strengthens its bond. To cure the adhesive, manufacturing companies typically place the work pieces in a large commercial drying oven where they are heated to a specific temperature.

To recap, adhesive bonding is a manufacturing process that involves the use of adhesive to join two or more surfaces. It consists four basic steps, including degreasing, abrasion, adhesive and curing.

Self-Check 4	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page.

1._____is a manufacturing process in which two or more surfaces are joined using an adhesive.(3)point.

2. _____The fourth and final step of adhesive bonding is curing.(2)point.

Note: Satisfactory rating100% points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet.5 Checking work against required quality standards

Quality standards are defined as documents that provide requirements, specifications, guidelines, or characteristics that can be used consistently to ensure that materials, products, processes, and services are fit for their purpose

Three levels of quality

The levels of quality that the authors talk about are:

Acceptable quality.

Appropriate quality.

Aspiration quality

Why are quality standards important?

It's about safety, delivering on a promise and meeting the very basics of customer expectations. But, by meeting quality standards, companies often reap better profits and reduce losses. Those that exceed quality standards stand out above their competitors and further their potential for profit and consumer loyalty.

Furniture quality control approach

AQF technical engineers, work hand in hand with your team to understand key risks. This ensures the AQF product-specific furniture inspection checklist is fully customized to your needs.

AQF inspectors verify the quality of mass production based on your acceptable quality limits (AQL), perform product function and safety tests, and assess compliance with your product's specifications and authorized samples. We also check the suitability of packaging to protect your furniture, marking, instruction manuals, accessories, and barcodes.

AQF provides value-added services to improve the efficiency of your quality control in China & Asia. We use our expertise in furniture inspection and leading edge quality management software to support you and your suppliers. We set up, monitor, and optimize your quality control program to achieve your quality objectives and lead-times.

AQF offers furniture inspection services at every stage of the supply chain: from sourcing new suppliers, through to in-process furniture quality control and final

shipment. Our expertise includes product categories such as indoor, outdoor, or contractual furniture made of wood, plastic, metal.

AQF verifies the quality, specifications, functions, safety, and compliance of your furniture with relevant standards.

- ✓ Main tests performed during an inspection of furniture

Performance check	Static loading test	Accessories check
Size measurement	Stability check	Packing
Material & color check	Moisture content	Export carton drop test
Adhesive test on logo	Rub test on fabric	Shear & press point check
Hole, tubular components, and fixed gaps check	Fatigue test	Cap removal strength
	Wobbly base test	Assembly check
	Smell test	

Furniture lab testing approach

Some tests on furniture require a controlled environment to ensure compliance with applicable safety standards and regulatory requirements. AQF inspectors select production samples and forward them to an accredited laboratory for testing.

Furniture performance and safety are critical to guarantee consumer satisfaction. Our furniture lab testing services include a wide range of performance and mechanical tests which can take from 5 to 10 days depending on the product. We can test indoor and outdoor products, such as chairs, tables, storage units, beds and sofas.

In collaboration with furniture lab testing experts, we've put systems in place to expedite the furniture testing process. We propose several furniture testing packages which focus on the basic and essential requirements from different regions of the world. Our lab testing recommendations are available online, based on your product specifications, and include a transparent price so that you can book instantly and minimize time-to-market.

There are 6 steps to develop a quality control process:

- ✓ Set your quality standards.
- ✓ Decide which quality standards to focus on
- ✓ Create operational processes to deliver quality.
- ✓ Review your results.
- ✓ Get feedback.
- ✓ Make improvements.

Self-Check 5	Written Test

Directions: Short answer . Use the Answer sheet provided in the next page.

1. Write at list four (4)steps to develop a quality control process(5)point.

a._____

b._____

c._____

d._____

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

L #- 28	LO #3. Complete/finalize work

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Handling of materials and hardware
- Cleaning, maintaining & storing hand& power tools
- Cleaning & lifting tools and equipment in a safe mode
- Tagging & reporting faulty and/or defective equipment
- Collecting & storing unused hardware for reuse or disposal purpose
- Dealing with waste and scrap materials following workplace procedures

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Handle of materials and hardware
- Clean, maintain & store hand& power tools
- Clean & lift tools and equipment in a safe mode
- Tags & reporting faulty and/or defective equipment
- Collect & store unused hardware for reuse or disposal purpose
- Deale with waste and scrap materials following workplace procedures

Learning Instructions:

Read the specific objectives of this Learning Guide.

1. Follow the instructions described below.
2. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
3. Accomplish the “Self-checks” which are placed following all information sheets.
4. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
5. If you earned a satisfactory evaluation proceed to “Operation sheets

Information Sheet 1 Handling of materials and hardware

Material Handling Definitions

- Material handling is the combination of art and science of:
  - ✓moving
  - ✓storing
  - ✓protecting
  - ✓controlling the material

Material handling means providing the

- ✓ right amount
- ✓ in the right condition
- ✓ at the right place
- ✓ in the right position
- ✓ in the right sequence
- ✓ in the right time
- ✓ for the right price
- ✓ by the right method

Goals of Material Handling

In a typical manufacturing facility: 25% of the work-force is used in material handling ,55% of the factory floor is reserved for it ,87% of the production time! It may represent 15% to 70% of the total cost generated in the company

Goals of material handling: Reduce unit costs of production , Maintain or improve product quality, reduce damages, and provide for protection of materials ,Promote safety and improve working conditions ,Promote productivity , Promote increased use of facilities , Control inventory.

Self-Check 1	Written Test

Directions: I Fill the blank space . Use the Answer sheet provided in the next page.

1._____ is the combination of art and science.**2**point

Part II short answer

2. How to provide Material handling? 3point.

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 2 Cleaning, maintaining & storing hand& power tools

2.1 Cleaning

Cleaning is the process of removing unwanted substances, such as dirt, infectious agents, and other impurities, from an object or environment. Cleaning occurs in many different contexts, and uses many different methods. Several occupations are devoted to cleaning.

Here we break cleaning into three easy-to-master categories:

Immediate cleaning

Maintenance cleaning

Remedial cleaning.

Hand & Portable Power Tools

Fig.2:1

Hand and power tools are a common part of our everyday lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous and have the

potential for causing severe injuries when used or maintained improperly. Special attention toward hand and power tool safety is necessary in order to reduce or eliminate these hazards.

Air Tools

Pneumatic power tools must be secured to the hose in such a way as to prevent accidental disconnection. Safety clips or retainers must be securely installed to prevent attachments from being inadvertently expelled.

Never exceed the manufacturer's safe operating pressure for all fittings.

Hoses exceeding ½ inch inside diameter must have a safety device at the source of supply or branch line to reduce pressure in the event of hose failure.

Hand Tools

All hand tools, whether furnished by the department or employee owned, must be maintained in safe condition.

Hand tools must be inspected before each use. Unsafe hand tools must not be used on any campus worksite**.**

Hand tools must be used for the designed purpose.

Impact tools must be free of mushroomed heads.

Wooden handles must be free of cracks or splinters and be tight to the tool.

Wrenches must not be used when jaws are sprung to the point that slippage occurs.

Electric power operated tools must be double-insulated or properly grounded.

Appropriate personal protective equipment, such as safety glasses with side shields, face shields, leather work gloves, or leather work boots must be worn when using hand tools.

Self-Check 2	Written Test

Directions: Short answer . Use the Answer sheet provided in the next page.

1._____ are a common part of our everyday lives and are present in nearly every industry (2)point.

2. _____ must be secured to the hose in such a way as to prevent accidental disconnection. (2)point.

3._____ is the process of removing unwanted substances, such as dirt, infectious agents, and other impurities, from an object or environment. (2)point.

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 3. Cleaning & lifting tools and equipment in a safe mode

3.1**Cleaning**

Cleaning occurs in many different contexts, and uses many different methods. Several occupations are devoted to cleaning.

There are two types of customers when cleaning houses: one-time and recurring. One-time customers only want their home cleaned once. Recurring customers want their home cleaned on a regular basis.

Lifting equipment, also known as lifting gear, is a general term for any equipment that can be used to lift loads.

Product Description. Lifting tools, or Lifting Appliances, is work equipment for lifting or lowering loads, including people, and attachments used for anchoring, fixing or supporting

There are generally two types of lift, classifications

- ✓ Routine and
- ✓ Non-Routine

- **What is a routine?**

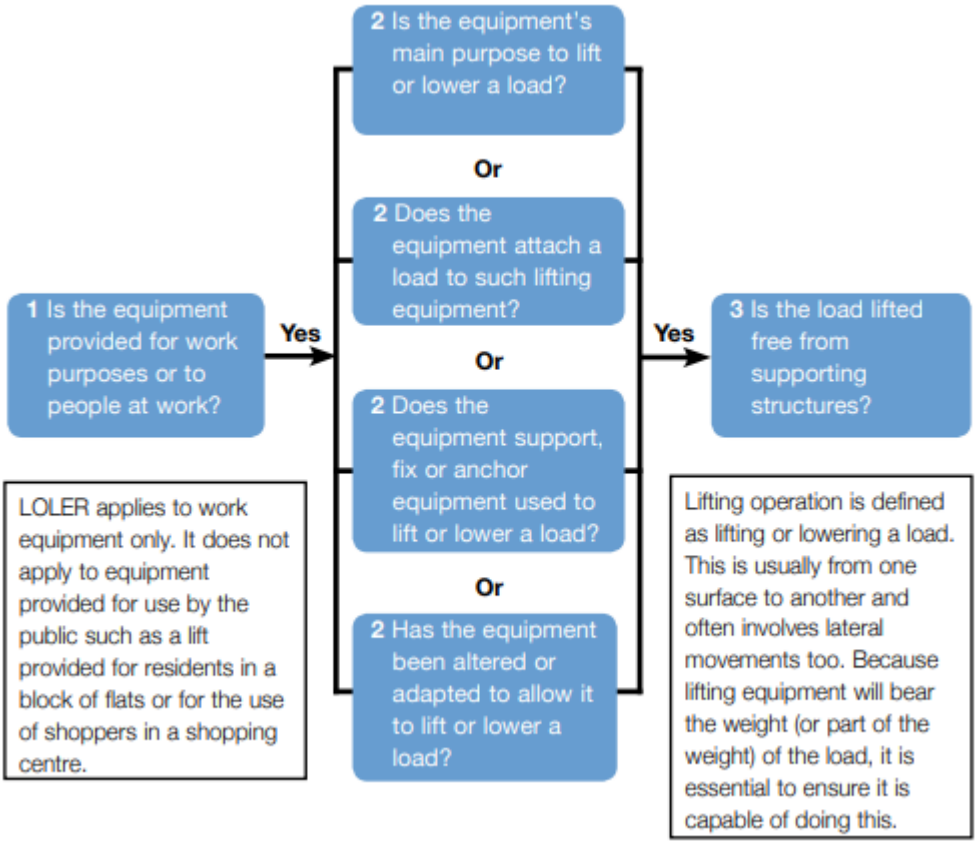
A **routine** is the usual series of things that you do at a particular time. A routine is also the practice of regularly doing things in a fixed order. The players had to change their daily routine and lifestyle. They include the floor exercises as a regular part of their fitness routine.

- Important of routine

Your daily routine influences your quality of rest. Your sleep schedule and bedtime habits affect your mental sharpness, performance, emotional well-being and energy level. It's best if you can maintain a consistent time for waking and going to bed. Better health is a result of just a little extra planning.

- non routine mean?

not routine : not of a commonplace or repetitious character a non routine situation an extended shutdown necessary for non routine repairs.


1 Is the equipment provided for work purposes or to people at work?
Yes
2 Is the equipment's main purpose to lift or lower a load?
Or
2 Does the equipment attach a load to such lifting equipment?
Or
2 Does the equipment support, fix or anchor equipment used to lift or lower a load?
Or
2 Has the equipment been altered or adapted to allow it to lift or lower a load?
Yes
3 Is the load lifted free from supporting structures?
LOLER applies to work equipment only. It does not apply to equipment provided for use by the public such as a lift provided for residents in a block of flats or for the use of shoppers in a shopping centre.
Lifting operation is defined as lifting or lowering a load. This is usually from one surface to another and often involves lateral movements too. Because lifting equipment will bear the weight (or part of the weight) of the load, it is essential to ensure it is capable of doing this.

Self-Check 3	Written Test

Directions: Fill blank space . Use the Answer sheet provided in the next page.

1. _____ is the usual series of things that you do at a particular time

2, _____ is also known as lifting gear, is a general term for any equipment that can be used to lift loads.

3. _____.is Lifting tools, or Lifting Appliances, is work equipment for lifting or lowering loads, including people, and attachments used for anchoring, fixing or supporting

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet 4 Tagging & reporting faulty and/or defective equipment

3.1 Tagging

What are some of the safety issues that must be considered when using equipment?

Moving parts, exposed blades, and nip points are the major hazards of working with kitchen equipment (such as mixers, miners, processors, and slicers). Cuts, bruises, fractures, and amputations to hands can occur from mincing or cutter plates, and rotating blades

What are the greatest hazards of woodworking?

The three main health hazards in woodworking are exposure to wood dust, excessive noise, and equipment vibration. Exposure to wood dust can cause a variety of health problems, including skin conditions, respiratory effects (such as asthma and chronic bronchitis).

Fault reporting is a maintenance concept that increases operational availability and that reduces operating cost through mechanisms.

Defective Equipment means any Equipment that is unsafe or suffers from any design or manufacturing defect which could reasonably be expected to make it .

What are Safe Working Practices?

Not taking unnecessary risks.

Always look out for hazards.
Always use Personal Protective Equipment (PPE)
If you must smoke, do so only in designated areas.
Keep your work area clean and tidy.
Enter and leave the workplace using proper routes

Why are table saws so dangerous?

- The majority of these injuries are due to kickback.
- The two main causes of injury from kickback is trauma from the wood striking the head, chest, or torso of the woodworker, or the wood moving so quickly that an operator doesn't have time to take their hand off of it and it gets pulled across the saw blade

Self-Check 4	Written Test

Directions: Short answer . Use the Answer sheet provided in the next page.

1. _____ is a maintenance concept that increases operational availability and that reduces operating cost through mechanisms.

2. _____means any Equipment that is unsafe or suffers from any design or manufacturing defect which could reasonably be expected to make it .

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet.5 Collecting & storing unused hardware for reuse or disposal purpose

5.1 Collecting

The meaning of the word collate is to collect, arrange and assemble in a specific order of sequence. In printing terminology, it is to assemble multiple sheets or parts together to create a set. Collating is most commonly used in the preparation of booklets, catalogs, manuals & collated color copies.

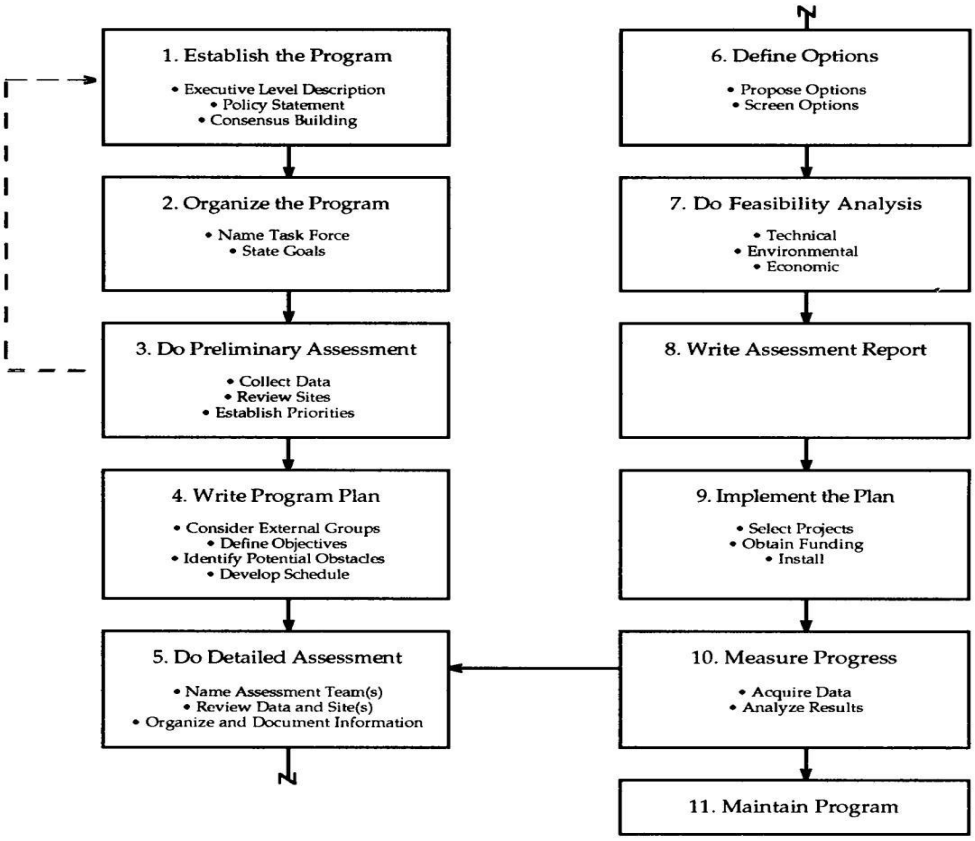
storage

space where you put things when they are not being used. : the state of being kept in a place when not being used : the state of being stored somewhere. : the act of putting something that is not being used in a place where it is available, where it can be kept safely, etc. : the act of storing something.

role of storage

Storage is the activity of storing products at warehouses and logistics centers. Its role is to provide a steady supply of goods to the market to fill the temporal gap between producers and consumers. It also plays an important role in maintaining quality at warehouses and logistics centers and value of products.

The following are the steps recommended by developing a waste reduction Program.



Some key factors for success include visible commitment from facility leadership, program ownership and support by all employees, multi-functional participation, establishment of waste reduction goals, management systems for tracking the types and amounts of materials, wastes and associated costs, and the measurement and celebration of progress.

Reuse or disposal purpose hardware

Equipment Disposal refers to both physically removing properties from a department and to the removing of the item from a department's active inventory, relieving the department of accountability for reporting and tracking. The terms disposal and surplus are often used interchangeably.

Recyclable materials include many kinds of glass, paper, cardboard, metal, plastic, tires, textiles, batteries, and electronics. The composting or other reuse of biodegradable waste such as food or garden waste is also a form of recycling.

examples of reuse.

- Containers can be reused at home or for school projects.
- Reuse wrapping paper, plastic bags, boxes, and lumber.
- Give outgrown clothing to friends or charity.
- Buy beverages in returnable containers.

importance of reuse

Reuse provides an excellent, environmentally-preferred alternative to other waste management methods, because it reduces air, water and land pollution, limits the need for new natural resources, such as timber, petroleum, fibers and other materials

Self-Check 5	Written Test

Directions: Short answer . Use the Answer sheet provided in the next page.

1. _____materials include many kinds of glass, paper, cardboard, metal, plastic, tires, textiles, batteries, and electronics.
2. _____ is the activity of storing products at warehouses and logistics centers.
3. _____Is the meaning of the word collate is to collect, arrange and assemble in a specific order of sequence

Note: Satisfactory rating 20 points **Unsatisfactory - below 20**

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Information Sheet.6 Dealing with waste and scrap materials following workplace procedures

Waste is something that is thrown away because it is no longer useful. Items should only be considered waste if they cannot be recycled. Generally, waste is disposed of by Curbside Collection or personal delivery to a Landfill where it can be properly

handled so it cannot contaminate groundwater or harm the surrounding environment

waste

It is unwanted materials and objects that people have thrown away. It is often also called trash, garbage, rubbish, or junk. It can be solid, liquid, or gas, or it can be waste heat. There are many different kinds of waste.

Why waste is a problem

Air pollution, climate change, soil and water contamination…

Poor waste management contributes to climate change and air pollution, and directly affects many ecosystems and species. Landfills, considered the last resort in the waste hierarchy, release methane, a very powerful greenhouse gas linked to climate change

Ways of Disposing of Garbage

1. Recycle. Place recyclable trash into bins for pickup service or bring to recycling centers.
2. Compost. Place compostable garbage items in a bin outside your home.
3. Trash can. Put non-recyclable items in plastic bags and place into trash cans.
4. Hazardous material disposal. Properly dispose hazardous materials from your home.

safety procedures to follow when using machine. when using lathe

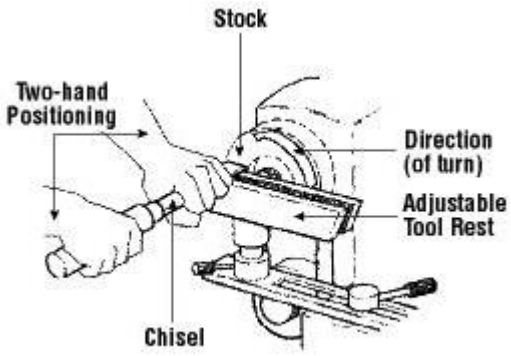
Only experienced and trained lathe operators should be allowed to operate lathes

- Wear safety goggles or face shield to protect from flying chips.
- Wear hearing protection suitable for the all level and frequency of the noise in the woodworking area.
- Wear a dusk mask when dust is generated (e.g., during sanding operations).
- Work in well-lighted area.

- Before the lathe is turned on, ensure that all clamps and fittings are secure and that the work piece is free to turn.
- Use stock free of defects.
- Hold tools firmly with both hands and against the tool rest.
- Hold the stock securely on the faceplate or between the centers.
- Use only furnished or approved tools.
- Use sharp, well-maintained chisels and gouges.
- Select a speed that is appropriate for the job. Operate the lathe at a low speed and use a moderate cut depth to prevent splinters from flying out during roughing operations. The actual speed of the lathe depends on type of wood, a diameter of stock, nature of work being done and type of tool used.
- Adjust tool rests so that they are parallel and as close as possible to the stock. They should also be set high enough so that tools will cut into the wood slightly above the centre of the work being turned.
- Remove the tool rest when sanding or polishing.
- Use appropriate tools to hold the sand paper or emery paper whenever possible. Examples include a 'nut cracker' or the paper fixed to a piece of flat wood. If you must use your hands always hold the paper in a way that will not allow the paper to catch, pull or entangle around the stock.
- To make a faceplate turning, the one hand steadies the tip of the chisel, which holds the edge against the tool rest while the other hand guides the tool. Keep the tip of the chisel held higher than the handle.

WHAT TO AVOID

- **Do not wear** gloves, loose clothing, rings or jewelry around the neck that can hang outside one's clothing. Clothing should be comfortable but not so loose that it can catch on the machine or get entangled with any rotating parts or the wood being turned; shirts should be tucked in and long hair tied back.
- **Do not leave** a running lathe unattended - leave only after the lathe has been turned off and it has come to a complete stop.
- **Do not use** makeshift tools.
- **Do not use** stock containing checks, splits, cracks, or knots**.**


Stock
Two-hand Positioning
Direction (of turn)
Adjustable Tool Rest
Chisel

Self-Check 6	Written Test

Directions: . Use the Answer sheet provided in the next page

Part I Fill blank space

1 _____It is unwanted materials and objects that people have thrown away.2.5 point

2. _____ Place compostable garbage items in a bin outside your home. 2.5 point

Part II Short answer

1. **Write at list five when using lathe machine safety procedures to follow each 5piont.**

Note: Satisfactory rating 25 points

Unsatisfactory - below 25

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Participant Name

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List of Reference Materials

Use Furniture Making-Sector Hand Tools and Power Tools.

Accoya® Wood Information Guide | V3.9 | 2020

Heinrich's law (Herbert William Heinrich, Pioneer of industrial safety in US)

Choosing the right hardware

Second edition 2014 (with amendments 2018)

STANDARD OPERATING PROCEDURES for COMMON TOOL & MACHINING EQUIPMENT

For the First Nations Communities of Quebec and Labrador