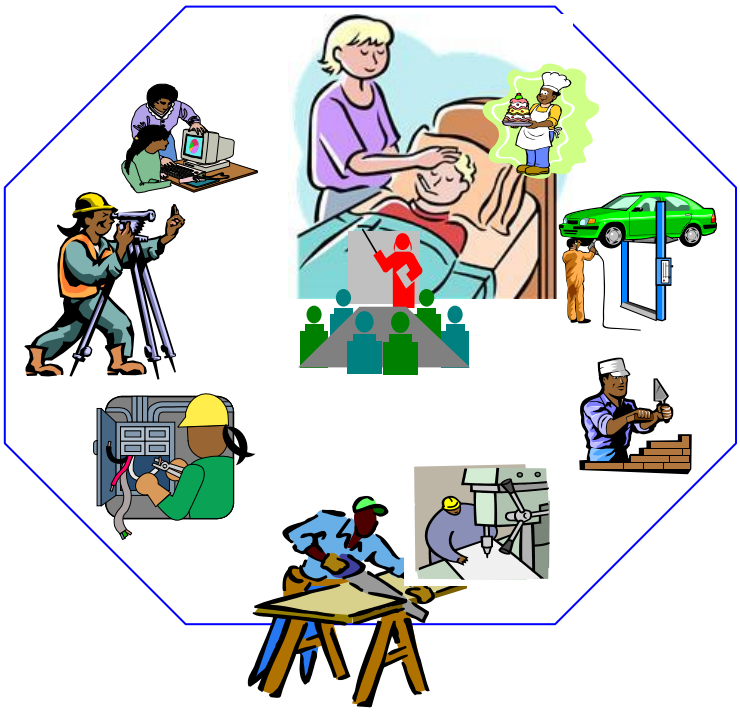
Furniture Making Level - III

Based on Sep, 2012 Version 5 Occupational Standards and Dec, 2020 V1 Curriculum



Module Title: Preparing Cutting List

LG Code: IND-FMK3 M03 LO(1-5)LG-(9 -13)

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L G # 09	**LO #1- Plan and Prepare**

Instruction sheet

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

- applying work instructions
- Applying OHS procedures
- Selecting tools and equipment to carry out tasks & serviceability
- Preparing & using materials in accordance with job requirements
- Identifying environmental protection requirements, plans & regulatory obligations

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 confirm and apply work instructions
- Apply OHS procedures
- Select tools and equipment to carry out tasks & serviceability
- Prepare & using materials in accordance with job requirements
- Identify environmental protection requirements, plans & regulatory obligations

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
6. Perform “the Learning activity performance test” which is placed following “Information sheets” ,

Information Sheet 1 Applying work instructions

Introduction

What is Work instruction

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.

A Procedure is more detailed than a process, but less detailed than a work instruction. It tells how a series of sequential tasks should be performed to achieve a specific outcome. ...
A Work Instruction is the most detailed description of a task. It's sole purpose is to explain step by step how to do a specific task.

- ✓ **work Plans,**

work plan is a set of goals and processes by which a team can accomplish those goals. ... Typically, work plans are used to organize large projects. Any structured work plan gives teams the project framework and the background, helps to visualize goals and timelines defined for the overall project.

Work plan include

A work plan is a written document designed to streamline a project. The goal is to create a visual reference for the goal, objectives, tasks and team member who is responsible for each area. Every member of your team should be included in the plan and should be updated based on progress and current status

How to Make a Work Plan

- ✓ Identify the Project Name, Purpose and General Timeline. ...
- ✓ Put Your Work Plan into Context. ...
- ✓ Establish Your Goals and Objectives. ...
- ✓ Define and Coordinate Your Resources. ...
- ✓ Understand Your Constraints. ...
- ✓ Discuss Risks and Accountability

Steps to Creating a Project Timeline

- ✓ Write a project scope statement.
- ✓ Create a work breakdown structure (WBS)
- ✓ Break each work package into tasks.
- ✓ Determine project dependencies.
- ✓ Determine total time needed for each task.
- ✓ Identify resource availability.
- ✓ Identify important milestones.
- ✓ Build your project management timeline
    - ✓ **Specifications,**

Specifications describe the products, materials and work required by a construction contract. They do not include cost, quantity or drawn information, and so need to be read alongside other information such as quantities, schedules and drawings.

- 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:

Four Types of "Specifications"

The meaning of the term "specification" varies depending on how it is used:

Product Specification:

This describes a manufacturer's product and its performance without consideration for a particular building. A manufacturer publish this information as part of its sales literature.

Project Specification:

This describes an architect's design and performance requirements for a particular building. It might contain requirements for how a product should be used for a the building.

Contractors and sub-contractors submit bids and supply products to meet a project specification.

Master Specification:

This is a template an architect can use to help him or her create a Project Specification. It may contain requirements for several products to help the architect select the one or ones best suited for a particular project. Some architects have their own library of master specification sections. Other architects subscribe to commercially published libraries of specifications such as "Master Spec" by Arcom. A manufacturer will try to encourage an architect or publisher to include its product in a master specification, but has little or no control over the document.

Guide Specification:

This is a type of master specification that is published by a building product manufacturer to help an architect write a project specification that is based on the manufacturer's products. There are publishers that, for a fee, will write a guide specification for a manufacturer and publish the specification on the publisher's website. Being included in the publisher's database is a form of advertising. Each publisher has its own "style" of specifying, and having your spec written in the house style will be useful to specifies that frequent the publisher's site. These benefits must be weighed against the costs and drawbacks. I frequently find it better for a manufacturer to write its own specification section (with the help of a consultant, if necessary) and publish the guide specification on the manufacturer's own website.

- ✓ Quality requirements

- ✓ A 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.
- ✓ Quality is critical to satisfying your customers and retaining their loyalty so they continue to buy from you in the future. Quality products make an important contribution to long-term revenue and profitability. They also enable you to charge and maintain higher prices.

Operational details

- ✓ Customer focus. ...
- ✓ Leadership. ...

- ✓ Engagement of people. ...
- ✓ Process approach. ...
- ✓ Improvement. ...
- ✓ Evidence-based decision making. ...
- ✓ Relationship management.

- **Operational details**

Operational needs are defined as "non-procedural-based responsibilities that consume staffing resources." The difference between these and indirect-effort tasks are these are further removed from the testing process and are much more operational in nature

How to write step-by-step instructions

- ✓Describe the detailed **instructions** for the work.
- ✓Identify roles and responsibilities.
- ✓Give each activity its own title.
- ✓One role activities.
- ✓Number each step.
- ✓Use consistent formatting.

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List types of specification

. _____

_____

_____

. _____

_____

_____

Note: Satisfactory rating - 100% points

Answer Sheet

Name: _____ Date: _____ Score = _____

Information Sheet 2: Applying OHS procedures,

- what is Applying OHS procedures,

The purpose of the health and safety policies and procedures is to guide and direct all employees to work safely and prevent injury, to themselves and others. All employees are encouraged to participate in developing, implementing, and enforcing health and safety policies and procedures.

Health & safety policy & procedures. ... Put simply, a policy is a statement that you are maintaining the required level of health and safety in the workplace; this should include the procedures (tasks, responsibilities, rules etc.) You have in place to achieve

Core elements of successful safety programs

Safety and health programs are recommended for all workplaces—from office buildings and construction jobsites to dairy farms and other industrial settings. These workplace safety programs protect your employees and empower them to confidently complete tasks without fear of injury or death.

Besides the most devastating (and incalculable) cost of a human life, osha states that businesses spend nearly $170 billion per year on costs associated with workplace injuries and illnesses. But companies that develop effective safety and health programs can cut those costs by anywhere from 20 to 40 percent. Combine that decrease in costs with the less quantifiable benefits of higher morale, better productivity, and improved reputation, and the benefits of implementing a company safety program become even more compelling.

Safety culture

Creating a culture of safety can be difficult, but there are five key elements that must be present for a safety and health program to get off the ground.

Employee training and empowerment

Before you can expect employees to follow best practices, you must educate them and empower them to hold each other accountable. Dedicate a day to safety training when you

share safety tips and plan activities that keep your employees interested. There are plenty of online safety training ideas and resources to help get you started.

As far as accountability goes, consider implementing a policy such as stop-work authority, which gives any employee (regardless of job title) the ability to stop a task if it becomes risky. Putting safety in the hands of every worker can help you foster accountability at all levels of your organization.

Hazard identification and control systems

Once your employees are trained, a safety management process must be put in place for them to easily identify hazards and take steps to contain them. For example, if workers will use an aerial lift on a job site, hazards like power lines and uneven ground should be identified and addressed before any work is done.

It's true that not all hazards can be eliminated, but most can be controlled. For each hazard you identify, try following the hierarchy of controls to ensure you've done everything you can to keep workers safe on the job.

Focus on compliance

Organizations like the occupational safety & health administration (osha) and the American national standards institute (ansi) were created to keep workers safe and promote jobsite safety. They outline best practices for all types of jobs and, in the case of osha, each best practice is actually a law.

Complying with osha's regulations is the best way to ensure you're doing everything you can to keep your workers safe. They even provide compliance resources organized by industry as well as email newsletters and a searchable database by safety topic.

Continuous improvement

Safety and health programs don't fall into the "set it and forget it" category. Not only are new regulations being released all the time, but new employees will join your team. Thus, it's important to adopt a continuous improvement mindset when it comes to safety.

Hold frequent safety meetings, retrain more tenured employees as you train new hires, and consider doing a full safety and health program audit each year. Also, encourage employees

to share their concerns with you. These concerns can most likely be turned into safety topics that will resonate with your entire team.

Leadership and organizational buy-in

For a safety and health program to be effective, there must be institutional buy-in from the top down. Workers will be faced with situations every day that force them to decide between a safe course of action and an unsafe one. Good safety leaders motivate workers to make the right decision even when no one is watching.

Like all forms of leadership, becoming a good safety leader starts with honest, consistent communication. Set high but attainable standards for your team. Offer an incentive for following your organization's safety management system. And, if an incident that requires disciplinary action occurs, always communicate the "why" along with the "what" when addressing it.

The safety manager role

Though safety leadership roles may be taken on by various workers, a safety manager is typically the official face of safety within an organization. Safety managers try to minimize workplace injuries and illnesses by training workers, staying up-to-date on current safety news, writing policies, and ensuring compliance.

What is a safety manager's job role*?*

The responsibilities of a safety manager vary by industry, but generally they are responsible for:

Identifying and monitoring health and safety hazards within the workplace

Training employees to minimize and/or avoid any risks associated with their jobs

Reviewing health and safety legislation to ensure compliance with the most recent standards

Performing safety inspections of the workplace environment

Writing workplace-specific safety policies and best practices

Coordinating emergency drills and procedures

Self-Check 2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. What is HOS?

_____

_____

2. **What Safety culture?**

_____

_____

Note: Satisfactory rating -100% points

Answer Sheet

Name: _____ Date: _____ Score = _____

Information Sheet 3. Selecting tools and equipment to carry out tasks & serviceability

3.1 Select hand tools and Equipments for papering Cutting list in furniture product

Select appropriate hand tools

- **Sawing tools**
  - ✓ Rip saw
  - ✓ Crosscut saw
  - ✓ Backsaw
  - ✓ Dovetail saw
  - ✓ Compass saw:
  - ✓ Keyhole saw
- **Marking Tools**
  - ✓ Marking gauge
  - ✓ Mortise gauge
  - ✓ Cutting gauge
  - ✓ Trammel point
- **Planers tools**
  - ✓ Try/ Jointer plane,
  - ✓ Jack plane,
  - ✓ Smooth plane
  - ✓ Rabbet plane
  - ✓ Block plane
  - ✓ Router plane
- **Drilling tools**
  - ✓ Hand drill
  - ✓ Hand brace
  - ✓ Center bit
  - ✓ Counter sink bit

- Impaling tools
  - ✓ Hammers
- Measuring and laying out tools
  - ✓ Try square,
  - ✓ Miter square
  - ✓ Combination squire
  - ✓ Tap measure calipee
- **Power saw (Equipment)**
  - ✓ Portable route
  - ✓ Portable drill
  - ✓ Portable planer

Tools and equipment for preparing Cutting List

No.	Items	Qty	Unit	Specification
1	Hammer		pc	
2	Circular table saw		Unit	
3	Jointer		Unit	
4	Thickness planer		Unit	
5	Radial Arm saw		Unit	
6	Cross cut saw		Unit	
7	Measuring tape		Pc	
8	Hand plane		Pc	
9	Cross cut saw		pc	
10	Try Square		Pc	
11	Pencil		Pc	

12	Working bench		Pc	
13	Ear protection		Pc	
14	Eye goggle		Pc	
15	Mouth mask		Pc	
16	Overall cloth		set	
17	Safety shoes		pair	

Self-Check5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. Measuring Tools for cutting List operation

_____

_____

_____

_____

_____

2. Write the types of power tools

_____

_____

_____

Note: **Satisfactory rating 100% points**

Answer Sheet

Score = _____

1 Name: _____

Information Sheet 4. Preparing & using materials in accordance with job requirements

5.1 Preparing & using materials in accordance with job requirements

The most common materials used in the production of furniture are:

- ✓ **Wood**: Solid wood and wood based products such as panels are widely used in furniture sector. Tables, desks and cupboards are the typical products where wood panels are used. The three main categories of wooden panels are:
- ✓ **Particleboard**: Wooden panels produced under heat and pressure with the addition of an adhesive to particles.
- ✓ **Fiberboard:** Wooden panels produced under heat and pressure with the addition of an adhesive to glue fibers. Types of fiberboard, in order of increasing density, include particle board, medium-density fiberboard and hardboard. Fiberboard, particularly medium-density fiberboard (MDF) is heavily used in the furniture industry.
- ✓ **Plywood:** Wooden panels produced under heat and pressure with the addition of an adhesive to sheets of wood.
- ✓ **Metal:** Is a base material used for example in cupboards, tables and chair legs. If the furniture is constructed and maintained properly, it may last for several years. Nowadays chairs and tables made up of metal are used extensively for exterior usage due to it can withstand strong sunlight, wind, snow, rain and hail. The main types of metals used in furniture industry are:
- ✓ **Aluminum**: It does not rust, is tough, light and durable. This material is used extensively for stamped and cast furniture, especially in molded chairs.
- ✓ **Steel**: Stainless steel is used widely for modern interior furnishings. It is especially suited for chair legs, supports and body pieces due to its high tensile strength, allowing it to be applied using hollow tubes and reducing weight.
- ✓ **Iron**: the properties that offer cast iron (hardness, heaviness and general tough composition) are adequate for **outdoor use**, and this material is common used for bench legs and solid iron tables. The furniture made up of pure iron corrodes when it is exposed to air.

- ✓ **Other metals** are also used in fittings, like **zinc, nickel, chrome, brass, bronze, magnesium** or **lead.**
- ✓ -**Plastic:** Initially, they are comparatively less environment friendly as compare to wood or steel due to they are made of harmful constituents but they are used extensively because of their light weight structure and high strength.

Bill of Materials

A Bill of Materials (BOM) sometimes referred to as the Material Take Off (MTO) lists all the items that go into a finished project or subassembly of that project. The Bill of Materials can be structured in levels indicating all the steps to final completion. This can let the bill of materials look like a tree with the finished good or subassembly as root. Items in a subassembly can be parts whose amounts would be counted as natural numbers of pieces or if it is simple materials being used, measurements of length or quantity. Bills of Materials are used as documents supporting the assembly process. They also play a role in Materials Requirement Planning (MRP) and Enterprise Resource Planning (ERP) management systems.

1.2 Purpose of the Bill of Materials

A bill of Materials has different functions depending on which level of the BOM you have and job description you are carrying out.

For example in pipe fitting you could have the following layers:

- ✓ BOM for each individual piping isometric
- ✓ BOM totals for all the piping isometrics for the clean steam system
- ✓ BOM totals for all clean systems that use high purity piping

The different levels of BOM give relevant information to the personnel using them.

Depending on the size of the project draughts person, estimators or Quantity Surveyors (QS) would be the first compile the information in the BOMs to prepare the quotation to win the project. These totals would then be used as a reference point for scheduling, tracking progress and tracking changes in the scope of work.

Self-Check5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. What is Bill of martial ?

_____

_____

_____

2. List the most common materials used in the production of furniture

_____

_____

_____

_____

_____

Note: **Satisfactory rating 100% points**

Answer Sheet

2 Name: _____

Score = _____

Information Sheet 5. Identifying environmental protection requirements, plans & regulatory obligations

- Identifying environmental protection requirements, plans & regulatory obligations

Environmental measurement is any data collection activity or investigation involving the assessment of chemical, physical, or biological factors in the environment which affect human health or the quality of life. Learn more about environmental measurement programs and tools that aid in environmental decisions

Environmental law is necessary to combat issues related to the environment and conservation of natural resources. ... In most countries, states have their own environmental protection agencies that administer laws pertaining to issues of concern to the natural environment and to protect human health.

Prevent and control degradation of land, water, vegetation and air. Conserve and enhance natural and man-made heritage, including biological diversity of unique ecosystems. Improve condition and productivity of degraded areas. Raise awareness and understanding of the link between environment and development.

Our five most effective pieces of environmental legislation are the Clean Air Act, the Endangered Species Act, the Montreal Protocol, the Clean Water Act, and Reformation Plan

Self-Check1	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. What is Environmental measurement ?

_____

_____

_____

_____

Note: **Satisfactory rating -100% points**

Answer Sheet

Score = _____

3 Name: _____

L G#10	LO #2 Read plans and specifications

Instruction sheet

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

- Determining job requirements
- Establishing job components and workplace procedures
- Establishing geometry components according to specifications

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

- Determine job requirements
- Establish job components and workplace procedures
- Establish geometry components according to specifications

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 Determining job requirements:

1.1 Determining job requirements:

Job requirements

Job requirements are qualifications and skills necessary for a certain position.

Job requirements are usually written in form of a list that contains the most important qualifications that a candidate must possess in order to be able to perform certain job duties.

Job requirements are qualifications and skills necessary for a certain position.

These qualifications include:

- ✓ Work experience - types and amounts (years) of work experience
- ✓ Skills (soft skills and/or technical skills)
- ✓ Specific knowledge
- ✓ Education level and type
- ✓ Professional licenses, accreditations and certifications

- Important of Job Requirement

- ✓ To improve the accuracy of the recruitment process, resulting to the company being able to hire the right person for the job, or the candidate with qualifications that match the requirements of the job.
- ✓ To reduce the number of potential applicants. Without the job requirements, pretty much anyone and everyone may apply, and would have to be considered, for an open position. By making the jobs requirements as specific as possible, employers are able to reduce the pool of applicants further, resulting in a shortlist of candidates that possess the necessary qualities and qualifications for the job.
- ✓ To assist applicants in making decisions on whether to apply for the job or not. They may be interested to apply for the open position in the company. However, when they go through the job requirements and realize that they do not meet these requirements, then they can look elsewhere for other job prospects.

- Components of job requirements

✓ Skill and knowledge requirements.

✓ Years of work experience.

✓ Educational requirements.

✓ Equivalent experience.

✓ Professional certification.

✓ Make a list of the factors that will be used as a guide in gathering information.

✓ Identify your sources of information.

✓ Collect or gather information.

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. Wright at List 8 Components of job requirements?

_____
_____

_____

_____

_____
_____
_____

_____

_____

_____

Note: **Satisfactory rating -100% points**

Answer Sheet

Score = _____

4 Name: _____

Information Sheet 2: Establishing job components and workplace procedures

Establishing job components and workplace procedures

Job Shop Production

Job shop production are characterized by manufacturing of one or few quantity of products designed and produced as per the specification of customers within prefixed time and cost. The distinguishing feature of this is low volume and high variety of products. A job shop comprises of general purpose machines arranged into different departments. Each job demands unique technological requirements, demands processing on machines in a certain sequence.

Characteristics

The Job-shop production system is followed when there is:

1. High variety of products and low volume.
2. Use of general purpose machines and facilities.
3. Highly skilled operators who can take up each job as a challenge because of uniqueness.
4. Large inventory of materials, tools, parts.
5. Detailed planning is essential for sequencing the requirements of each product, capacities for each work centre and order priorities.

Advantages

Following are the advantages of job shop production:

1. Because of general purpose machines and facilities variety of products can be produced.
2. Operators will become more skilled and competent, as each job gives them learning opportunities.
3. Full potential of operators can be utilized.

4. Opportunity exists for creative methods and innovative ideas.

Limitations

Following are the limitations of job shop production:

1. Higher cost due to frequent set up changes.
2. Higher level of inventory at all levels and hence higher inventory cost.
3. Production planning is complicated.
4. Larger space requirements.

Batch Production

Batch production is defined “as a form of manufacturing in which the job passes through the functional departments in lots or batches and each lot may have a different routing.” It is characterized by the manufacture of limited number of products produced at regular intervals and stocked awaiting sales.

Characteristics

Batch production system is used under the following circumstances:

1. When there is shorter production runs.
2. When plant and machinery are flexible.
3. When plant and machinery set up is used for the production of item in a batch and change of set up is required for processing the next batch.
4. When manufacturing lead time and cost are lower as compared to job order production.

Advantages

Following are the advantages of batch production:

1. Better utilization of plant and machinery.
2. Promotes functional specialization.
3. Cost per unit is lower as compared to job order production.
4. Lower investment in plant and machinery.
5. Flexibility to accommodate and process number of products.
6. Job satisfaction exists for operators.

Limitations

Following are the limitations of batch production:

1. Material handling is complex because of irregular and longer flows.
2. Production planning and control is complex.
3. Work in process inventory is higher compared to continuous production.

4. Higher set up costs due to frequent changes in set up.

Mass Production

Manufacture of discrete parts or assemblies using a continuous process are called mass production. This production system is justified by very large volume of production. The machines are arranged in a line or product layout. Product and process standardization exists and all outputs follow the same path.

Characteristics

Mass production is used under the following circumstances:

1. Standardization of product and process sequence.
2. Dedicated special purpose machines having higher production capacities and output rates.
3. Large volume of products.
4. Shorter cycle time of production.
5. Lower in process inventory.
6. Perfectly balanced production lines.
7. Flow of materials, components and parts is continuous and without any back tracking.
8. Production planning and control is easy.
9. Material handling can be completely automatic.

Advantages

Following are the advantages of mass production:

1. Higher rate of production with reduced cycle time.
2. Higher capacity utilization due to line balancing.
3. Less skilled operators are required.
4. Low process inventory.
5. Manufacturing cost per unit is low.

Limitations

Following are the limitations of mass production:

1. Breakdown of one machine will stop an entire production line.
2. Line layout needs major change with the changes in the product design.
3. High investment in production facilities.
4. The cycle time is determined by the slowest operation.
5. Proficiency

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1 What is Job shop production?

_____

_____

2. What are The Job-shop production system

_____

_____

_____

_____

_____

Score = _____

Rating: _____

Note :**Satisfactory –100%**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 3 : Establishing geometry components according to specifications

3.1 Establishing geometry components according to specifications

The geometry components according to specifications

A working drawing is frequently shown as a pictorial sketch with the dimensions added. This kind of drawing is very easy to read and understand because it looks like the actual object.

The method of figuring the amount of lumber used to make a project is discussed and illustrated in

Basic geometry is the study of points, lines, angles, surfaces, and solids. We put two points in order to name the line as line . However, there are an infinite amount of points. You can also name it line f. Line segment: a line segment is part of a line.

Geometry was almost exclusively devoted to Euclidean geometry, which includes the notions of point, line, plane, distance, angle, surface, and curve, as fundamental concepts.

- Example geometry components according to specifications

GEOMETRY QUICK GUIDE 5: 3D SHAPE FORMULAS

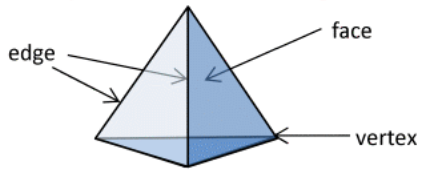
3D SHAPES

All 3d shapes can be described in terms of their faces, vertices and edges.

Face - a flat or curved surface

Edge - line where 2 faces meet

Vertex - point where 3 or more edges meet

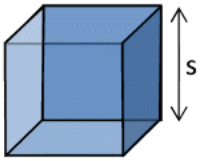


CUBE

Volume $= s^3$

Surface area $= 6s^2$

where s is the length of one side

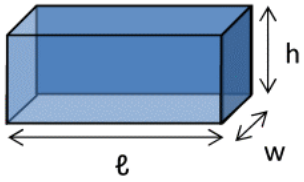


CUBOID (RECTANGULAR PRISM)

Volume $= \ell \times w \times h$

Surface area $= 2\ell h + 2\ell w + 2wh$

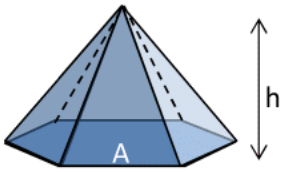
where ℓ = length, w = width, h = height



PYRAMIDS

Volume of a general pyramid $= {}^1/_3\,Ah$

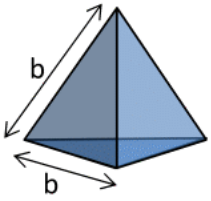
where A = base area and h = height



REGULAR TETRAHEDRON

Volume $= b^3/6\sqrt{2}$

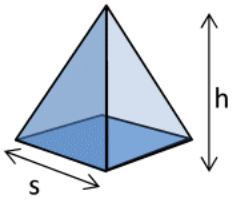
Surface area $= \sqrt{3}b^2$



SQUARE PYRAMID

Volume $= {}^1/_3\,s^2h$

Surface area $= s^2 + 2sh$

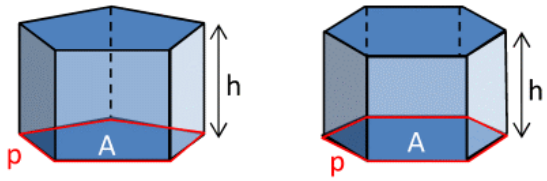


PRISMS

Volume of any prism $= Ah$

Surface area of a closed prism $= 2A + (h \times p)$

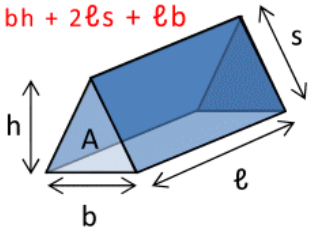
where A = base area, h = height, p = base perimeter



TRIANGULAR PRISM

Volume $= A\ell$ or $\frac{1}{2}\,bh\ell$

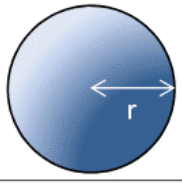
Surface area $= bh + 2\ell s + \ell b$



SPHERES

Volume $= {}^4/_3\,\pi r^3$

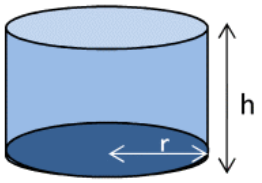
Surface area $= 4\pi r^2$



RIGHT CYLINDER

Volume $= \pi r^2 h$

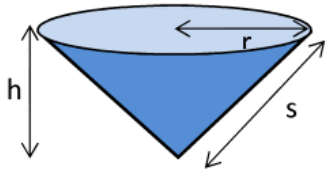
Surface area $= 2\pi r\,(r + h)$



RIGHT CIRCULAR CONE

Volume $= {}^1/_3\,\pi r^2 h$

Surface area $= \pi r\,(r + s)$



Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List geometrical Shapes at list 4 shapes ?

_____

_____

_____

_____

_____

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

Name: _____ Date: _____

Short Answer Question

LG # 11	LO #3- Prepare cutting list

Instruction sheet

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

- Workplace and equipment safety requirements
- Checking cutting list accordance with workplace procedures
- Identifying & describing components using common workplace terminology
- Establishing &documenting sizes and tolerance of components
- Identifying & documenting processing requirements
- Identifying & documenting dimensional allowances for further process

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:

- Workplace and equipment safety requirements
- Check cutting list accordance with workplace procedures
- Identify & describing components using common workplace terminology
- Establish &documenting sizes and tolerance of components
- Identify& documenting processing requirements
- Identify & documenting dimensional allowances for further process

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 Workplace and equipment safety requirements

3.1. Workplace and equipment safety requirements

- **Personal Safety**

✓ **Stay alert.** Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

✓ **Dress properly.** Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.

✓ **Avoid accidental starting**. Be sure the Power Switch is off before plugging in. Carrying power tools with your finger on the Power Switch, or plugging in power tools with the Power Switch on, invites accidents.

✓ **Remove adjusting keys or wrenches before turning the power tool on.** A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.

✓ **Do not overreach.** Keep proper footing and balance at all times. Proper footing and balance enables better control of the power tool in unexpected situations.

✓ **Use safety equipment.** Always wear eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

- **Tool safety**

✓ **Do not force the tool.** Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

✓ **Do not use the power tool if the Power Switch does not turn it on or off.** Any tool that cannot be controlled with the Power Switch is dangerous and must be replaced.

- ✓ **Disconnect the Power Cord Plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
- ✓ **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
- ✓ **Maintain tools with care.** Keep cutting tools sharp and clean. Properly maintained tools with a sharp cutting edge are less likely to bind and are easier to control. Do not use a damaged tool. Tag damaged tools “Do not use” until repaired.
- ✓ **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write types of tool safety?

_____

_____

_____

_____

_____

2. What are personal safety?

_____

_____

_____

_____

_____

Score = _____

Rating: _____

***Note :*Satisfactory –** **Unsatisfactory -**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 2 Checking cutting list accordance with workplace procedures

2.1 Checking cutting list accordance with workplace procedures

What is a cutting list?

A cutting list is a tabulated form containing information about the materials required for the job.

You will need to understand what information is to be included in each of the columns, for example:

Item No

Each item or component is assigned a number in ascending order. Each item machined by the machinist can be labelled or marked with the item number rather than a description for easy identification by the cabinet maker.

Part name

All part names are written in this column. Each part name is entered in systematic sequence to avoid a component being omitted or overlooked.

Quantity

After each item has been entered, the quantity of each component is listed.

Length

The length of each component is always measured in the direction the grain runs. Care must be taken, as there are times when the width measurement can be greater than the length. Where there is no grain or pattern on the board, then the length is always longer than the width and measurements are stated in millimetres.

Width and Thickness

These measurements refer to the end section size of each solid timber component. The width is the larger of the two sizes. Manufactured board materials are simply measured in length (along the grain where appropriate) by the width (across the grain) and by the thickness.

Material

With the wide variety of timbers and timber products used in the furniture industry, it is important to enter the type of material to be used in this column.

Remarks

This column is used to explain special requirements. Small moldings can also be drawn in this column to alert the wood machinist of any special machining requirements. Dressed timber is generally referred to as DAR (Dressed All Round). Solid tops, ends, panels or shelves should be marked as ‘boards jointed’.

Self-Check2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is Cutting List ?

_____

_____

_____

2. what information is to be included in each of the columns, for Cutting List

_____

_____

_____

_____

_____

Score = _____

Rating: _____

***Note :*Satisfactory 100 %**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 3 Identifying & describing components using common workplace terminology

3.2. Identifying & describing components using common workplace terminology

A cutting list is a tabulated list showing information about the materials required for the job. It shows you things like: the kind of material needed for each part; how much to use; length; width and thickness of the material; and any special notes on what needs to be done.

So to complete a cutting list you need to:

- assess the specifications - consider what needs to be done
- identify the process to be used - this must include the materials and machining sequence to be used
- complete the cutting list against specifications as outlined.

The cutting list really is a vital part of the communication process in the furniture factory. Together with the full size set out or shop rod, it gives each person involved all the information necessary to manufacture the project accurately.

Not so long ago, the cutting list was written on plywood and sealed with a substance such as shellac to help preserve it for use at a later date. But today it is more likely to be a computer printout laminated in plastic to protect it and clipped to a clipboard.

And now that we have computers, cutting lists can be stored on disk and changed or reprinted as needed.

Here's part of a cutting list for you to view. Roll your mouse over each column to read an explanation.

Preparing Bill of Materials

After a final drawing or print is ready, several additional steps must be taken before construction can begin. You must first make a list called a *bill of materials, materials list,* or

stock bill. The procedure for making the list is known as *stock billing*. The list includes the following (now always in this order):

a. Number of pieces
b. Name of part
c. Finish size in thickness, width, and length
d. Materials (This may not be necessary if only one kind of lumber, plywood or other material is involved.)
e. Rough or cut – out size, also called the *stock-cutting* list. (Sometimes a separate form is used for the stock – cutting list; if this is done, the number of pieces, name of part, and materials information should be repeated.)

It is standard practice to list the pieces in order of thickness, width, and length, but in the furniture industry this is sometimes reversed. Lumber thickness depends on whether the boards are purchased rough or surfaced two sides (S2S). Materials as plywood, hardboard or particleboard, the finish cut, and the cutout or rough thickness are the same. For solid lumber, the width of the cut – out or rough size is usually 1/8" to ¼" greater; from ½" to 1" is normally added to the length.

BILL OF MATERIALS (format 1)

No. of Pieces	Part Name	Material	Finish Size			Rough Size		
			T	W	L	T	W	L

Form for a bill of materials, materials list, or stock bill

Cutting lists of a project All dimensions are given in MM (format 2)

No	Name of parts	Types of Materials	No of pieces	dimensions					
				Initial dimension			final dimension		
				T	W	L	T	W	L
1									
2									
3									
4									
5									
6									

Points to Remember in Stock Billing

- The *net size*s are the actual or finish *size* of the part and are given in thickness, width, and length.
- Rough or cut – out size is the size that must be cut from the standard piece of lumber. This size allows the amount needed for machining.
- In the lumber order always list plywood, particleboard, hardboard, softwood, and hardwood separately.
- Always write sizes in cm/mm.

Self-Check3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Short answer

1. The procedure for making the list is known as ----------

Score = _____

Rating: _____

Note :**Satisfactory –** **Unsatisfactory -**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 4 Establishing &documenting sizes and tolerance of components

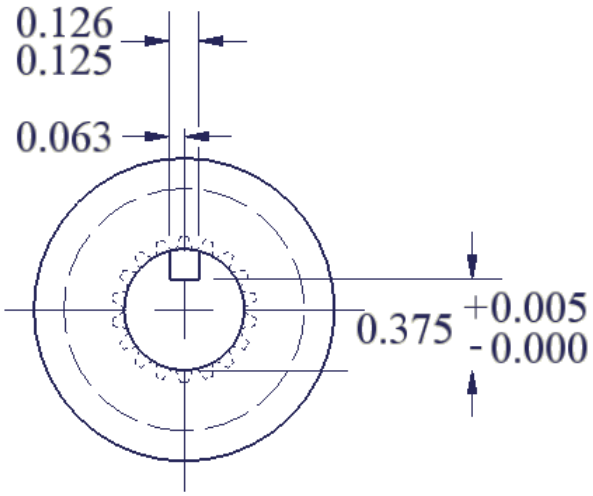
Establishing &documenting sizes and tolerance of components

Tolerance

A tolerance is an acceptable amount of dimensional variation that will still allow an object to function correctly.

Three basic tolerances that occur most often on working drawings are: limit dimensions, unilateral, and bilateral tolerances

1. Limit dimensions are two dimensional values stacked on top of each other. The dimensions show the largest and smallest values allowed. Anything in between these values is acceptable



2. A bilateral tolerance exists if the variation from a target dimension is shown occurring in both the positive and negative directions.

If no tolerances are specified at the dimension level, then general tolerances may be applied by deliberately controlling the number of values past the decimal point on each dimension.

Linear Dimensions

X.X = ± .020

X.XX = ± .010

X.XXX= ± .005

Angles = ± .5°

Tolerances

X.X = ± .020

X.XX = ± .010

X.XXX= ± .005

Capacity to endure pain or hardship : endurance, fortitude, stamina. 2a : sympathy or indulgence for beliefs or practices differing from or conflicting with one's own. B : the act of allowing something : toleration.

What is tolerance and its importance?

Tolerance is an important concept that helps people to live together peacefully. To be tolerant means that you accept other people's opinions and preferences, even when they live in a way that you don't agree with. ... Tolerant people show strength in that they can deal with different opinions and perspectives

Teaching tolerance is important not just because it is part of our American heritage, but because the person who learns to be open to differences will have more opportunities in education, business, and many other aspects of life. In short, your child's success depends on it

What is size tolerance?

Size tolerance - a size tolerance states how far individual features may vary from the desired size. Size tolerances are specified with ether unilateral, bilateral or limit tolerance methods. t reference & training boo

Tolerance Calculation Formulas

1. $c = a - b$. Upper limit dimension of the closing element:
2. $c_{max} = a_{max} - b_{min}$ Lower limit dimension of the closing element:
3. $c_{min} = a_{min} - b_{max}$ Tolerance of the closing element (subtracting equation 3 from equation 2)
4. $c_{max} - c_{min} = a_{max} - a_{min} - (b_{min} - b_{max})$ Such as.
5. $T_c = T_a + T_b$

Self-Check4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is Tolerance ? -

_____

_____

_____

2. What are The basic types of tolerance

_____

_____

_____

_____

_____

_____

Score = _____

Rating: _____

***Note :*Satisfactory – 100%**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 5 : Identifying & documenting processing requirements

5.1 Identifying & documenting processing requirements

- **Developing a Plan of Procedure (Procedure List)**

This plan or list details the step or operations needed to complete the product.

Planning is extremely important when using tools and materials.

It helps to avoid costly errors. While the specific steps or operations depend on the kind and complexity of the product, in general they include:-

- ✓ Getting out the rough stock
- ✓ Squaring up the solid stock
- ✓ Making or cutting (to size) the plywood
- ✓ Completing the straight parts
- ✓ Completing the curved and irregular – shaped parts
- ✓ Making the joints
- ✓ Sanding the parts
- ✓ Assembling
- ✓ Finishing
- ✓ Installing hardware

In industry, planning for production is done by the design and engineering department. No company would attempt to make wood products without such plans. Most furniture plants have a planning system which uses *route sheets* (actually plans of procedure for each part of the product).

- **Estimating Cost of Producing Furniture**

It is frequently the responsibility of the self – employed cabinetmaker or finish carpenter to estimate the total cost of producing a piece of furniture or cabinetwork. Larger cabinet shops and fixture manufacturers have full – time employees called estimators who specialize in this work. These men make accurate estimates of any job, based on known costs, standard formulas, and expert judgments. Three main factors must be considered, namely,

materials, labor, and combined overhead and profit. It would be good experience for you to include all of these items in the cost of the product you build. Too often the student considers only the cost of materials.

Materials

The materials estimate must allow for the cost of materials actually used in the product, plus an added amount for waste, spoilage, pieces built or machines wrong, and similar cost – increasing factors. This estimate is usually made in one of two ways. One method is based on actual cost of materials from the supplier. To this total is added a fixed percentage – usually about 35 per cent – for waste and similar items. The other method is simply to use a much higher figure than actual cost per board, square, or linear foot. This higher unit price takes into account such things as waste and spoilage.

Labor

Labor cost must include not only the actual amount per hour paid to the worker but also such items as social security tax, pension – fund allotment, and supervisory labor. Usually, total cost per hour ranges from 15 to 25 per cent more than the worker's wages. Even the self – employed worker must not forget about such "hidden" labor costs.

- **Overhead and Profit**

  Overhead refers to the more or less fixed costs of running a business. It includes buildings, machines, utilities, and office expenses, among other things. Profit must also be added so there will be a return to the investor, whether he runs his own business or is one of many stockholders. Usually the cost of labor and materials for one year are computed, and then a fixed percentage – up to 50 per cent – is added to cover overhead and profit. Even though labor, overhead, and profit are usually not considered in determining the cost of a school – shop project, you will understand industry better if you keep these factors in mind. When figuring the costs of your projects, estimate what an industrial firm would charge for the same products

Self-Check5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is title Panel?

_____

_____

_

Answer Sheet

Score = _____

Name: _____ Date: _____

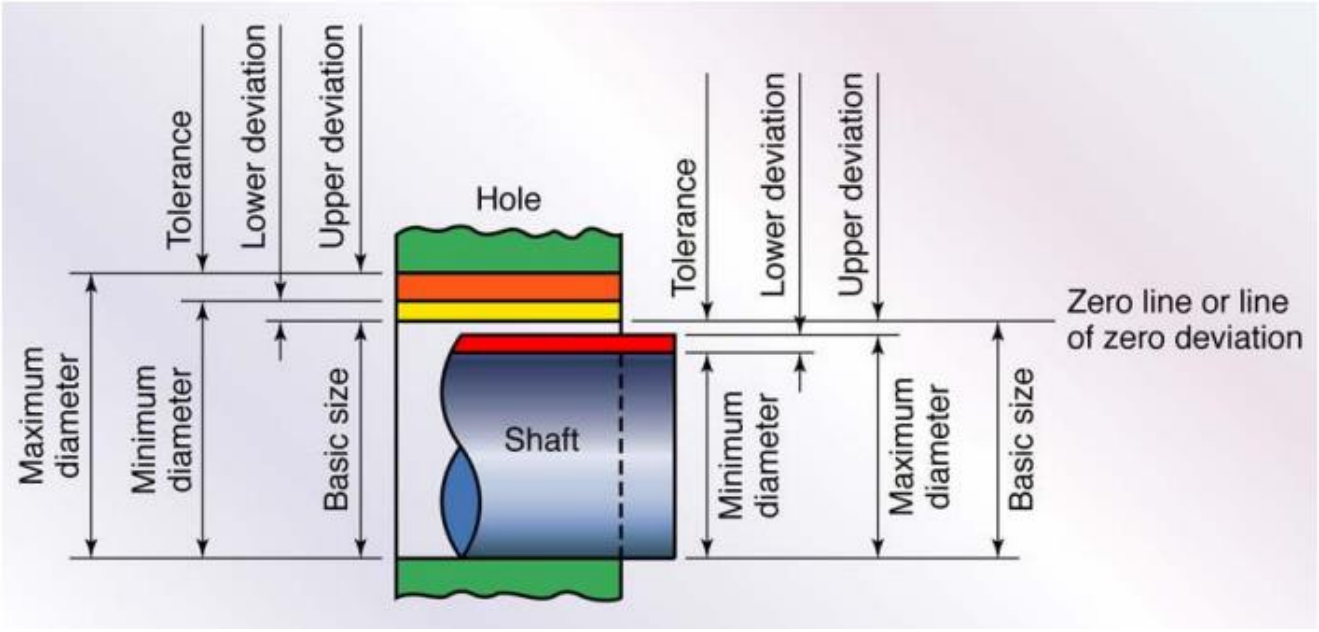
Information Sheet 6 : Identifying & documenting dimensional allowances for further process

6.1 Identifying & documenting dimensional allowances for further process

Allowance: it is the difference between the basic dimensions of the mating parts. .Tolerance: it is the difference between the upper limit and lower tolerance: it is the difference between the upper limit and lower limit of a dimension.

An allowance is an amount of money given or allotted usually at regular intervals for a specific purpose. In the context of children, parents may provide an allowance (british English: pocket money) to their child for their miscellaneous personal spending

Some definitions basic size: the size with reference to which the limits of size are fixed. Actual size: actual measured dimension of the part. Zero line: it is a straight line corresponding to the basic size. The deviations are measured from this line. The positive and negative deviations are shown above and below the zero line respectively



Self-Check6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is Allowance?

_____

_____

_

Answer Sheet

Score = _____

Name: _____ Date: _____

LG #12	LO #4- : Read and interpret cutting list

Instruction sheet

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

- Reading & interpreting cutting list in accordance with job requirements
- Interpreting quantities and dimensions based on specification
- Considering quality standards and waste factors with work place guideline
- Establishing processing methods in accordance with work procedure.
- Identifying processing time following working manual

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:

- Read & interpreting cutting list in accordance with job requirements
- Interpret quantities and dimensions based on specification
- Consider quality standards and waste factors with work place guideline
- Establish processing methods in accordance with work procedure.
- Identify processing time following working manual

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 : Reading & interpreting cutting list in accordance with job requirements

1.1 Reading & interpreting cutting list in accordance with job requirements

- Cutting List

A cutting list is a tabulated list showing information about the materials required for the job. It shows you things like: the kind of material needed for each part; how much to use; length; width and thickness of the material; and any special notes on what needs to be done.

So to complete a cutting list you need to:

- assess the specifications - consider what needs to be done
- identify the process to be used - this must include the materials and machining sequence to be used
- complete the cutting list against specifications as outlined.

The cutting list really is a vital part of the communication process in the furniture factory. Together with the full size set out or shop rod, it gives each person involved all the information necessary to manufacture the project accurately.

Not so long ago, the cutting list was written on plywood and sealed with a substance such as shellac to help preserve it for use at a later date. But today it is more likely to be a computer print out laminated in plastic to protect it and clipped to a clipboard.

And now that we have computers, cutting lists can be stored on disk and changed or reprinted as needed.

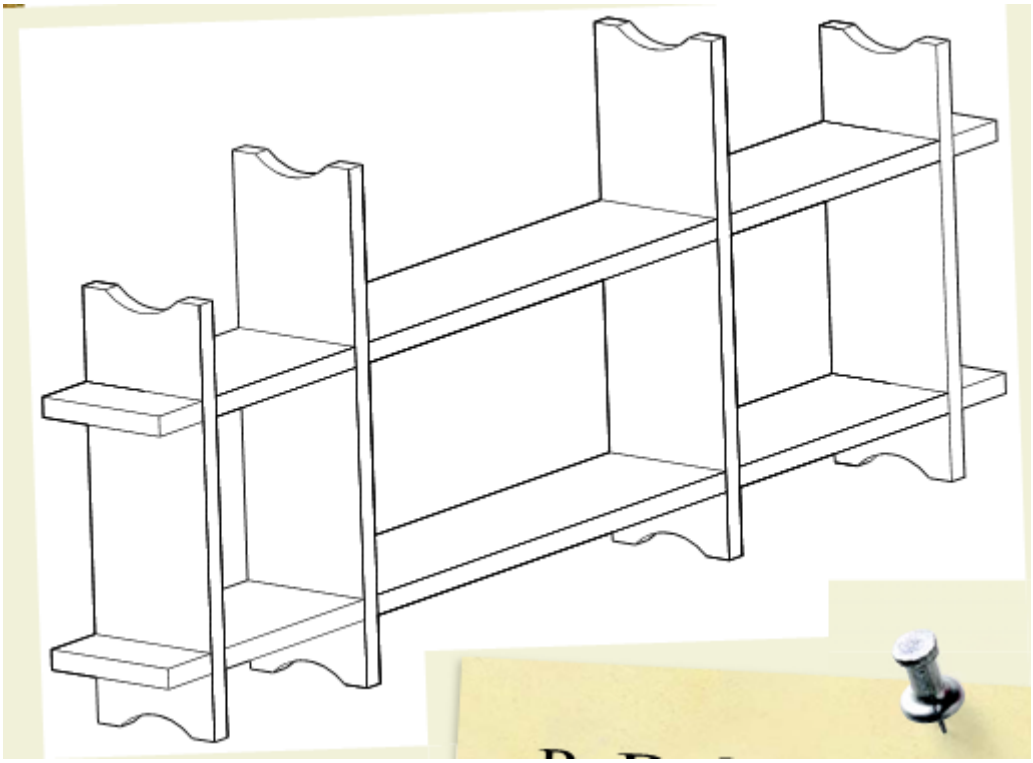
Here's part of a cutting list for you to view. Roll your mouse over each column to read an explanation.

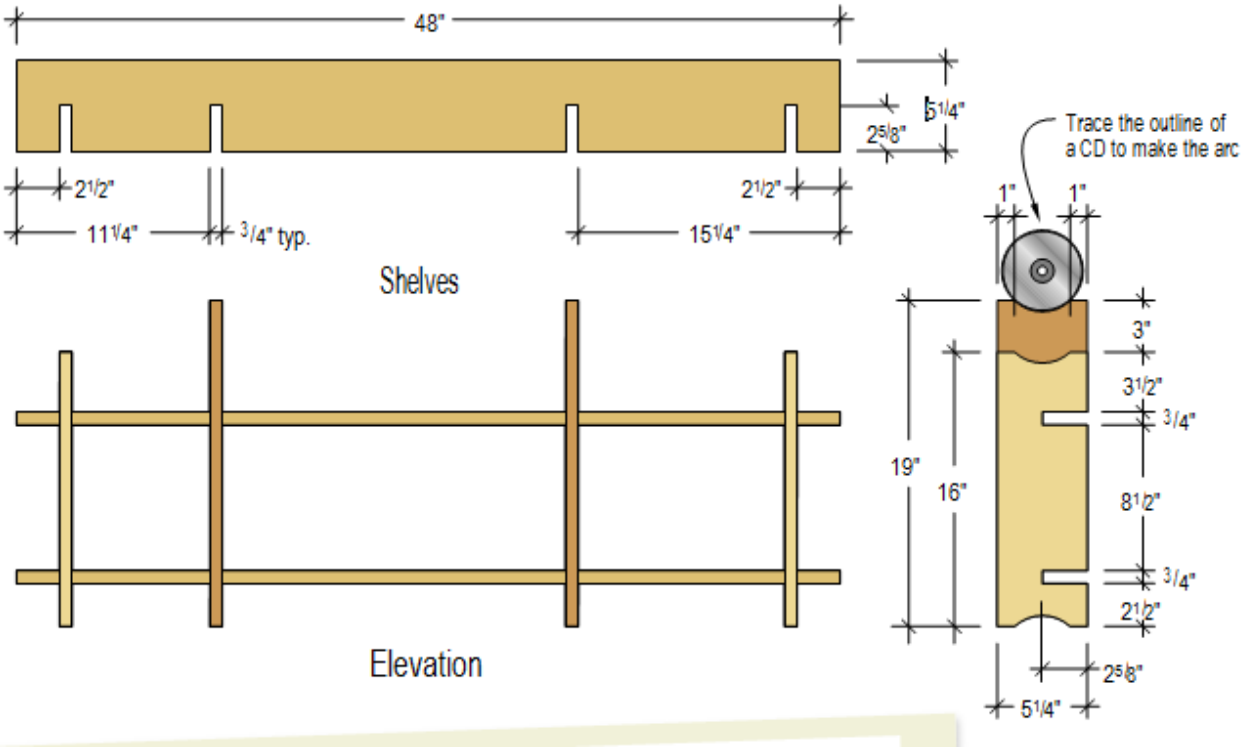
How to read cutting List ?

Each part gets a code (which I write on the boards to identify the parts there), on the cut list noting the quantity of each piece. Then list the finished thickness, width, and length of each piece, based on your drawing. Make sure to include tone or other integral part extension

Cut list and drawings work together

In the journey of building something, a drawing is the map that will get you there, and it works hand-in-hand with a cut list. A drawing doesn't have to be fancy, but it needs to show the parts and provide the key dimensions that determine the overall size of the project. Whether you make the drawing yourself or use a published plan, it's important to double-check the measurements as you feed them into a cut list.





No	Part Name	Stock	Size in Inch			Size in cm		
	Short Shelf	Sw	3.1/4	5 .1/4	48	19	133	1219
	Short Upper right	Sw	3.1/4	5 .1/4	16	19	133	406
	Tall upper right	Sw	3.1/4	5 .1/4	19	19	133	480

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are cutting list you need

_____

_____

_____

_____

_____

Score = _____

Rating: _____

Note :**Satisfactory –100%**

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

Name: _____ Date: _____

Short Answer Questions

Information Sheet 2 Interpreting quantities and dimensions based on specification

2.1 Interpreting quantities and dimensions based on specification

- **Quantities**

✓ The manufacturing organization should produce the products in right number.

✓ If they are produced in excess of demand the capital will block up in the form of inventory and if the quantity is produced in short of demand, leads to shortage of products

Interpretation is a communication process, designed to reveal meanings and relationships of our. cultural and natural heritage, through involvement with objects, artifacts, landscapes and sites." -

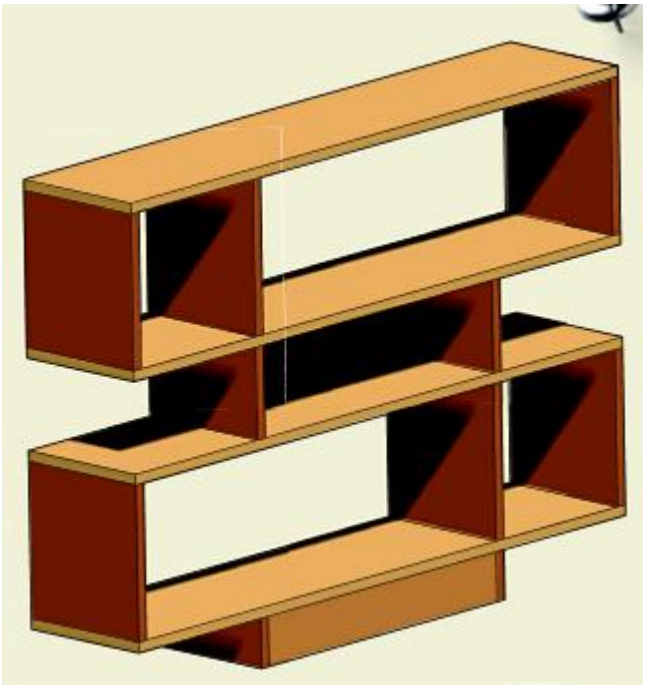
What are the 3 types of interpretation?

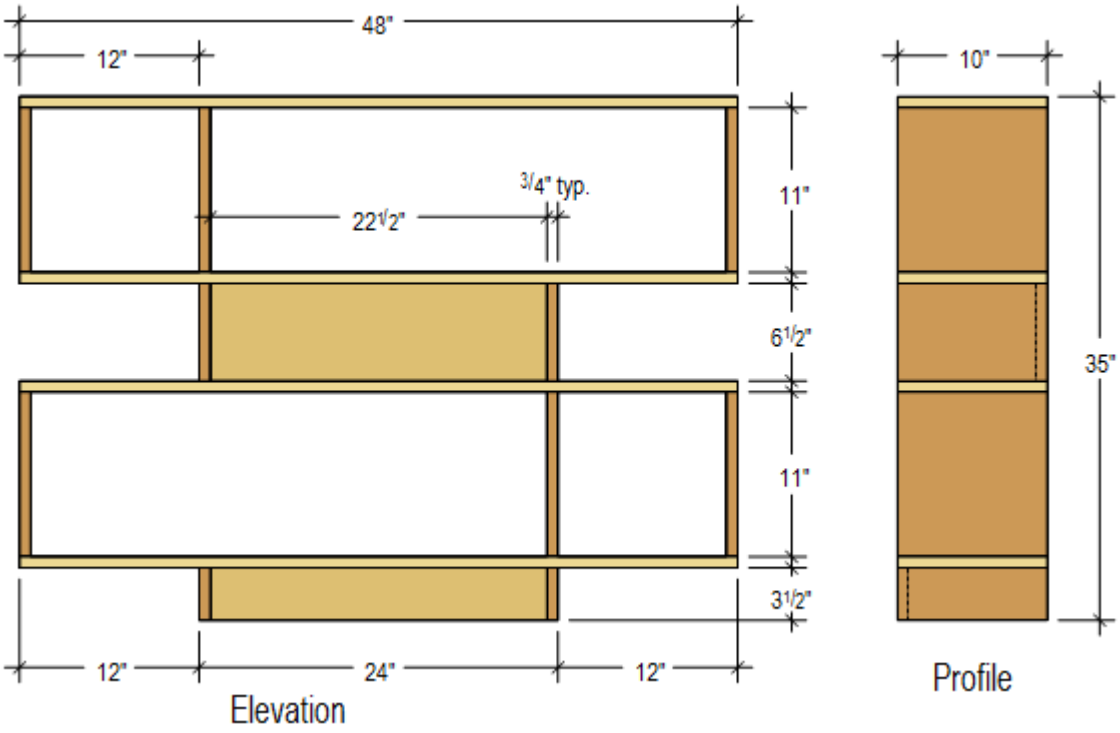
- The three modes of interpretation are:

✓ Simultaneous interpretation,

✓ Consecutive interpretation,

sight translation





No	Part Nam	Stock	Q/t	Final size in mm

				T	W	L
1	Shelves	MDF	4	19	254	1219
2	Main vertical	MDF	6	19	254	259
3	Base front	MDF	1	19	89	572
4	Base side	MDF	2	19	89	254
5	Divider back	MDF	1	19	165	572
6	Divider side	MDF	2	19	165	254

Self-Check2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1.- What is What are the 3 types of interpretation?

_____

_____

_____

Score = _____

Rating: _____

***Note :*Satisfactory –100%**

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

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 3. Considering quality standards and waste factors with work place guideline

3.1 Considering quality standards and waste factors with work place guideline

What is Quality?

- ✓ The ongoing process of building and sustaining relationships by assessing, anticipating, and fulfilling stated and implied needs.
- ✓ Quality is the customers' perception of the value of the suppliers' work output.
- ✓ A product or process that is Reliable, and that performs its intended function is said to be a quality product.
- ✓ Quality is nothing more or less than the perception the customer has of you, your products, and your services!

Quality is nothing more or less than the perception the customer has of you, your products, and your services

Quality planning

Develop quality plans that show how you intend to fulfill quality system requirements. You are expected to develop quality plans for products, processes, projects, and customer contracts.

- ✓ Your quality plans should list the quality objectives you intend to achieve, and the steps you intend to take to achieve these objectives.
- ✓ When you construct your quality plan, consider the following questions:

- ✓ Do you need to purchase any new equipment or instruments, or any new inspection and test tools?
- ✓ Do you need to carry out any special training in order to fulfill all quality system requirements?

- ✓ Do you need to improve design, production, testing, inspection, installation, or servicing procedures?
- ✓ Do you need to improve your quality measurement and verification procedures?
- ✓ Do you need to develop any new measurement methods or instruments?
- ✓ Do you need to clarify your organization's standards of acceptability?
- ✓ Do you need to develop any new documents, forms, reports, records, or manuals?
- ✓ Do you need to allocate more resources in order to achieve the required levels of quality?

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is Quality Planning ?

_____

_____

_____

Score = _____

Rating: _____

Note :**Satisfactory –100%**

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

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 4. Establishing processing methods in accordance with work procedure

1.1 Establishing processing methods in accordance with work procedure

Here are some good rules to follow:

What Is a Procedure?

Procedures are the workhorses of a company. While policies guide the way people make decisions, procedures show the "how to's" for completing a task or process.

Procedures are action oriented. They outline steps to take, and the order in which they need to be taken. They're often instructional, and they may be used in training and orientation. Well-written procedures are typically solid, precise, factual, short, and to the point.

Tip:

Many procedures seem "black and white," with clear steps and only one way of doing things: "Complete A, then B, then C." But sometimes you need to be less exact and allow room for personal judgment. When a procedure is too tight, it can cause confusion. Since life isn't always simple and clear-cut, some procedures need to allow subjectivity and individual choices.

When Do You Need a Procedure?

Not everything needs a procedure, so don't create procedures for basic tasks – otherwise they'll be ignored. The number-one rule of procedure writing is to make sure there's a reason to create them: Perhaps people forget to take certain actions, perhaps they keep on getting things wrong, or perhaps tasks are so long and complex that people need a checklist if they're going to get things right.

A written procedure is necessary only if the issue is important or if there will be a significant benefit from clarifying a process. Before you begin, ask yourself if people really need or want to know about something.

You need a procedure when a process.

- ✓ Is lengthy (example: year-end inventory).
- ✓ Is complex (example: benefits administration).
- ✓ Is routine, but it's essential that everyone strictly follows rules (example: payroll).
- ✓ Demands consistency (example: handling a refund request).
- ✓ Involves documentation (example: disciplining a staff member).
- ✓ Involves significant change (example: installing a new computer system).
- ✓ Has serious consequences if done wrong (example: safety guidelines).

In a company, it's typical for many things to get done without written procedures. There are "unwritten rules" and informal procedures. But sometimes these unwritten rules need to be set in procedure. This may need to happen when.

- ✓ Similar questions are asked repeatedly.
- ✓ People seem confused.
- ✓ There are too many ways that people interpret the procedure.

How Do You Write a Procedure?

Procedures should communicate what readers need to know, not just what they want to know. They might need to know how to do the process correctly, faster, or with less waste.

They also might like to know why they have to do something a certain way, where they can go for help, and what happens if something goes wrong. Where necessary, make sure your procedures deal with technical issues as well as subjective elements.

It's also important that your procedures have the right level of detail. Here are some questions to consider:

- ✓ Do users have enough information to complete the action?
- ✓ Is there enough information to guide users in using good professional judgment?

- ✓ Is the level of detail appropriate for the subject?
- ✓ Is the level of detail appropriate for readers?
- ✓ How comfortable are readers with the subject?

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What Is a Procedure?

_____
_____
_____

Score = _____

Rating: _____

Note :**Satisfactory –100%**

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

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 5 Identifying processing time following working manual

- 5.1 Identifying processing time following working manual

A product timeline is a critical communication tool that product managers use to let the rest of the company know what their product will be able to do and when it will be able to do it. They are not the right way to communicate with your customer what new features are planned for your product.

- Important Time and Work Formula

✓ Work Done = Time Taken × Rate of Work.

✓ Rate of Work = 1 / Time Taken.

✓ Time Taken = 1 / Rate of Work.

✓ If a piece of work is done in x number of days, then the work done in one day = 1/x.

✓ Total Wok Done = Number of Days × Efficiency.

Efficiency and Time are inversely proportional to each other

Important Time and Work Formula

Knowing the formulas can completely link you to a solution as soon as you read the question. Thus knowing the formula for any numerical ability topic make the solution and the related calculations simpler.

Given below are a few such important time and work formulas for your reference:

Work Done = Time Taken × Rate of Work

Rate of Work = 1 / Time Taken

Time Taken = 1 / Rate of Work

If a piece of work is done in x number of days, then the work done in one day = 1/x

Total Wok Done = Number of Days × Efficiency

Efficiency and Time are inversely proportional to each other

X:y is the ratio of the number of men which are required to complete a piece of work, then the ratio of the time taken by them to complete the work will be y:x

If x number of people can do W1 work, in D1 days, working T1 hours each day and the number of people can do W2 work, in D2 days, working T2 hours each day, then the relation between them will be

$$\frac{M1 \times D1 \times T1}{W1} = \frac{M2 \times D2 \times T2}{W2}$$

Aspirants for the various Government exams must start their preparation now to ensure they give their 100 per cent and proper hard work and dedication in their preparation.

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. How to calculate A product timeline
   - Given

   If x number of people can do W1 work, in D1 days, working T1 hours each day and the number of people can do W2 work, in D2 days, working T2 hours each day,

   _____

   _____

   _____

   _____

   _____

Score = _____

Rating: _____

***Note :*Satisfactory –100%**

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

Answer Sheet

Score = _____

Name: _____ Date: _____

LG #13	LO #5- : Clean up

Instruction sheet

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

- Recording & reporting methodology results with workplace procedures
- Using regulations/codes of practice & job specification
- Performing clean-up activities
- Notifying finished work by relevant personnel
- Carrying out all operations with hazard control 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:

- Record & reporting methodology results with workplace procedures
- Use regulations/codes of practice & job specification
- Perform clean-up activities
- Notify finished work by relevant personnel
- Carry out all operations with hazard control procedures

Learning Instructions:

Read the specific objectives of this Learning Guide.

6. Follow the instructions described below.
7. 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.
8. Accomplish the “Self-checks” which are placed following all information sheets.
9. 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).
10. If you earned a satisfactory evaluation proceed to “Operation sheets

Information Sheet .1 Recording & reporting methodology results with workplace procedures

- Recording & reporting methodology results with workplace procedures

1.1 Record and quantify all items in the work area

The following sample formats can be used to record all necessary and unnecessary items.

A sample format for recording all items at the workplace.

A sample format for recording necessary items at the workplace.

A sample format for recording unnecessary items in the workplace

Record tangible/quantitative results and changes that are achieved by applying Sort activity using the following indicators.

No	Improvement Indicators	Before Kaizen	Target	After Kaizen	Improvement (%)	Remark
1	Free floor space					
2	Searching time for tools, materials, etc					
3	Transaction made/income generated					
4	Labor saving					
5	Parts saving					
6	Tools& Equipment found					
7	Raw Material saving					
8	Transportation/travel					

9	Inventory					
10	Lead time					
11	Machine down time					
12	Frequency of Machine failure					
13	Production volume per day					
14	Labour productivity					
15	Delivery Time					
16	Defect rate					
17	Number of Customer complaints					
18	Minimized Cost of Production					

Self-Check1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are formats can be used to record all necessary and unnecessary items?

_____

_____

_____

_____

_____

_

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 2. Using regulations/codes of practice & job specification

- Using regulations/codes of practice & job specification

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the WHS Act and the Work Health and Safety Regulations 2011 (the WHS Regulations). A code of practice applies to anyone who has a duty of care in the circumstances described in the code.

WHAT IS INVOLVED IN MANAGING RISKS?

Management commitment

Effective risk management starts with a commitment to health and safety from those who operate and manage the business or undertaking. You also need the involvement and cooperation of your workers, and if you show your workers that you are serious about health and safety they are more likely to follow your lead.

To demonstrate your commitment, you should:

- get involved in health and safety issues
- invest time and money in health and safety
- ensure health and safety responsibilities are clearly understood.

A step-by-step process

A safe and healthy workplace does not happen by chance or guesswork. You have to think about what could go wrong at your workplace and what the consequences could be. Then you must do whatever you can (in other words, whatever is 'reasonably practicable') to eliminate or minimise health and safety risks arising from your business or undertaking.

This process is known as *risk management* and involves the four steps set out in this Code (see **Figure 1** below):

- **identify hazards** – find out what could cause harm
- **assess risks** if necessary – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening
- **control risks** – implement the most effective control measure that is reasonably practicable in the circumstances

- **review control measures** to ensure they are working as planned.

Self-Check2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What Is What Is Involved In Managing Risks?

_____
_____
_____
_____

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 3. Performing clean-up activities

- Performing clean-up activities

1.1. Cleaning the work area

Safe work practices should be followed at all times. A clean work area is an important part of having a safe work environment. On completion of each job the assembly area should be cleaned, this includes the removal of all waste material, the floor cleaned (swept/vacuumed) if necessary and all tools and equipment returned to their allocated storage area.

- **Cleaning all surfaces**
  - ✓ All surfaces includes vertical surfaces such as walls and windows and horizontal surfaces such as floors,
  - ✓ Door tops, window troughs, and window sills. Cleaning should proceed from Wall to floor.
- **Checking your work**
  - ✓ Always conduct a visual inspection after any job.
  - ✓ Look for any visible paint chips, dust or debris.
- **Clean Up Toolkit**
  - ✓ The tools listed on the slide above are for cleaning interior and exterior jobs. Some tools, such as the pump
  - ✓ Sprayer, shovel, and rake are used primarily for exterior clean up. Other tools, such as the buckets.
  - ✓ Mops are used primarily for interior clean up.
- **Pick up**

• Always begin a clean-up by picking up all paint chips and any visible debris with a wet disposable cloth.

Self-Check3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the proper cleaning techniques in work site?5pt

_____

_____

_____

_____

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 4. Notifying finished work by relevant personnel

- Notifying finished work by relevant personnel

  A clean work area is an important part of having a safe work environment. On completion of each job the assembly area should be cleaned, this includes the removal of all waste material, the floor cleaned (swept/vacuumed) if necessary and all tools and equipment returned to their allocated storage area

What are notifications?

Messages are generated by Service Manager events, such as opening or closing a change or task. Administrators can edit these messages, add new messages, change the conditions that trigger the messages, and select who will receive the messages.

The Notification Engine normalizes notification across the applications, removing the need for each module to define its own notification process (like cm messages).

The notification engine can be called by PD rule type "Send Notifications", which can be attached to PD workflows at both the phase and workflow levels. Alternatively, you can use Process Designer Send HTML Mail rules to call HTML notifications from the Process Designer workflow.





CLEAR
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Self-Check4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is What are notifications?

_____
_____
_____

Answer Sheet

Score = _____

Name: _____ Date: _____

Information Sheet 5. Carry out all operations with hazard control procedures

- Carry out all operations with hazard control procedures

Hazard control

Hazard Control

Step 1: Identify the hazard.

This job can, and should, be done by anyone at a workplace. If you think you see something that is potentially dangerous, then report it to your supervisor or the OH&S representative.

Don't be discouraged by anyone who says 'it has always been like that'. It could just be an accident waiting to happen! Remember that an unsafe work practice is also a hazard.

Step 2: Assess the risk.

The next job is to see how much of a risk the hazard poses. This is usually done by an occupational health and safety representative.

The job is to assess how likely it is that an accident will occur and, if it happens, how serious the accident will be.

3. Make the change

Step 3: Make the change.

The best thing that can be done with a hazard is to eliminate it. For example, if a piece of broken equipment is a risk then it should be replaced.

If this is not possible (or reasonable) the next thing to do is to control the hazard. This can be done with barriers, signage, and staff training in procedures and safe practices.

Remember: ALWAYS check with your supervisor if you are unsure about a job you have been asked to do.

Self-Check 5	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Wright the types of hazard control

_____

_____

_____

_____

Answer Sheet

Score =

Name: _____ Date: _____

Participant Name

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