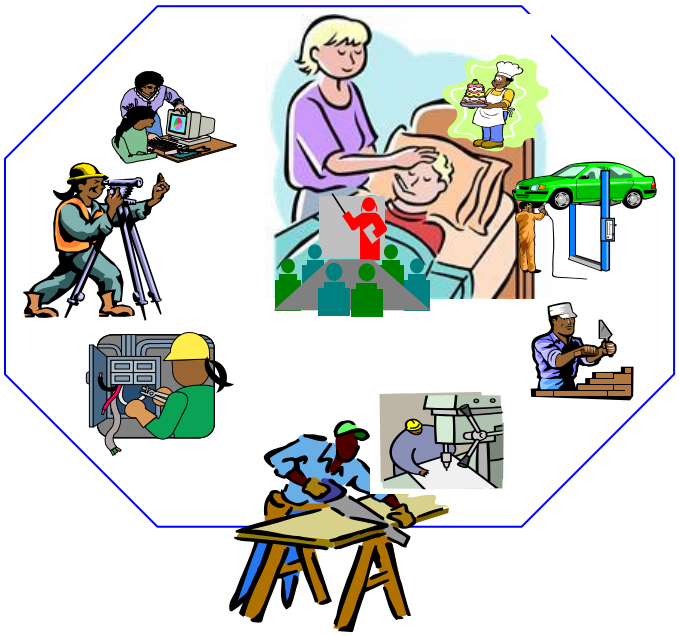
# Furniture Making Level III

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



**Module Title:** **Preparing Bill of Quantity**

**LG Code:** **IND-FMK3 M04 LO (1-4)-LG-(14-17)**

**TTLM Code:** **IND-FMK3 M04-TTLM 2020v1**

December 2020

Bishoftu, Ethiopia

## Contents

| LG #14 | LO #1- Identify nature/ scope of work |
|---|---|

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

- Determining the nature and scope of work to be undertaken Effective communication skills
- Determining and documented in line with standard operating procedures

extent of service to be rendered

- Confirming from appropriate personnel Nature and extent of work.
- Determining and confirmed Materials and design

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:

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- Determine and documented in line with standard operating procedures

  Extent of service to be rendered

  - Confirm from appropriate personnel Nature and extent of work.
  - Determine and confirmed Materials and design

**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 the nature and scope of work to be undertaken Effective communication skills**

1.1 Determining the nature and scope of work to be undertaken Effective communication skills

**Introduction**

This makes sense when you think about it. If you can communicate well, you can get your message across to others in an effective way and they then have accurate instructions to complete their assigned tasks. If you are not able to communicate well, the messages you send get lost in translation. Communication breakdowns result in barriers against your ability to develop both professionally and personally. Even though communications skills are so important to success in the workplace, there are many individuals who find these skills to be a stumbling block to their progress. They struggle to convey their thoughts and ideas in an accurate manner, making it difficult to progress and nearly impossible to lead well. However, there is hope for anyone who finds communicating to be difficult. These skills can be practiced and learned. It takes learning about how communication works, how to communicate exactly what it is you want to say, what mode of communication is best, and what factors are influencing the ability for you to send and receive messages with acumen.

**Definition of Communication** skills imagine you are on one side of a wall and the person you want to communicate with is on the other side of the wall. But there's more than the wall in the way. The wall is surrounded by a moat that is filled with crocodiles and edged by quicksand. These barriers could be things like different cultures, different expectations, different experiences, different perspectives, or different communication styles, to name just a few. Communication skills are the tools that we use to remove the barriers to effective communication.

The communication process involves multiple parts and stages. These are:

**Source**: The source of the communication is the sender, or for our purposes, you. In order to be a good source, you need to be clear about the message that you are sending. You'll also want to be sure you know why it is that you are communicating. What result is it that you expect? If you cannot answer these questions, you will be starting the communication process with a high chance of failure.

**Message**: The message is simply the information that you want to communicate. Without a message, there is no cause for communicating. If you cannot summarize the information that you need to share, you aren't ready to begin the process of communication.

**Encoding**: is the process of taking your message and transferring it into a format that can be shared with another party. It's sort of like how messages are sent via a fax. The information on the paper has to be encoded, or prepared, before it can be sent to the other party. It has to be sent in a format that the other party has the ability to decode or the message will not be delivered. In order to encode a message properly, you have to think about what the other person will need in order to understand, or decode, the message. Are there cultural, environmental, or language differences between you and the other party that could cause miscommunication

**Channel**: the method or methods that you use to convey your message. The type of message you have will help to determine the channel that you should use. Channelsinclude face-to-face conversations, telephone calls or videoconferences, and written communication like emails and memos.

**Decoding**: happens when you receive the message that has been sent. The communication skills required to decode a message successfully include the ability to read and comprehend, listen actively, or ask clarifying questions when needed.

If the person you are attempting to communicate with seems to be lacking the skills to decode your message, you will need to either resend it in a different way or assist them in understanding it by supplying clarifying information

**Receiver**: Since you have thought out your message, you've certainly also thought about what you want the desired result to be on the part of your listener. But it's important to

realize that each person that receives your message will be listening to it through their own individual expectations, opinions, and perspectives. Their individual experiences will influence how your message is received.

While you can't always address each person's individual concerns in a message, part of planning for your communication is to think ahead of time about what some of their thoughts or experiences might be. For example, if you are releasing a new product and want to convince customers to try it, you would want to be certain to address the specific benefits to the customer, or what improvements have been made since the last version was released.

**Feedback**: No matter what channel you have used to convey your message, you can use feedback to help determine how successful your communication was. If you are face-to-face with your audience, you can read body language and ask questions to ensure understanding. If you have communicated via writing, you can gauge the success of your communication by the response that you get or by seeing if the result you wanted is delivered.

In any case, feedback is invaluable for helping you to improve your communication skills. You can learn what worked well and what didn't so that you can be even more efficient the next time you communicate with that person or the next time you need to communicate a similar message.

**Context**: The context is the situation in which you are communicating. It involves the environment that you are in and that in which your audience is in, the culture of your organization(s), and elements such as the relationship between you and your audience. You communication process will not look the same when you are communicating with your boss as it will when you are communicating with a friend. The context helps determine the tone and style of your communication.

At each of these stages, there is the potential for barriers to be formed or problems to arise. As we look at ways to limit the barriers to communicating effectively, remember

that you may have to apply them at more than one occasion during your communications process. The steps in the process are represented in and explained further in the following information

**Information Sheet 2. Determining and documented in line with standard operating procedures Extent of service to be rendered**

## 2.1 Determine the nature and scope of work

**Definition of Scope:** refers to the combined objectives and requirements needed to complete a project. The term is often used in project management. Properly defining the scope of a project allows managers to estimate costs and the time required to finish the project.

Scope refers to the detailed set of deliverables or features of a project. These deliverables are derived from a project's requirements. Project Scope as the "The work that needs to be

accomplished to deliver a product, service, or result with the specified features and functions.

Some common synonyms of scope are compass, gamut, orbit, range, and sweep.

**Key Steps to Developing a Project Scope Statement**

1. Understand why the project was initiated.
2. Define the key objectives of the project.
3. Outline the project statement of work.
4. Identify major deliverables.
5. Select key milestones.
6. Identify major constraints.
7. List scope exclusions.
8. Obtain sign-off.

| Self-Check1 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. _____ happens when you receive the message that has been sent.
2. _____The context is the situation in which you are communicating.
3. _____ Since you have thought out your message, you've certainly.

**Answer Sheet**

Score = _____

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

**Information sheet 2.Determining and documented in line with standard operating procedures Extent of service to be rendered.**

2.1 Determining and documented in line with standard operating procedures Extent of service to be rendered.

**Definition of rendering:** Rendering is the process of generating an image from a model, by means of a software program. The term may be by analogy with an "artist's rendering" of a scene. 'Rendering' is also used to describe the process of calculating effects in a video editing file to produce final video output.

Rendering is the term used to describe the translation and transport of (usually) web-based pages into format directly on-screen and (usually) for onward use as a saved file, for dispatch to a mobile device or for printing.

Rendering is the process involved in the generation of a two-dimensional or three-dimensional image from a model by means of application programs. Rendering is mostly used in architectural designs, video games, and animated movies, simulators, TV stand special effects and design visualization.

Document Rendering. In order to be sent as a fax, a document, email, or submit file must be converted into image compatible with one of the group faxing standards.

Definition of standard operating procedure  What is a Standard Operating Procedure (SOP) An SOP is a procedure specific to your operation that describes the activities necessary to complete tasks in accordance with industry regulations, provincial laws or even just your own standards for running your business.

SOP is therefore an important document in terms of quality measures and evaluation. Definition of SOP • An SOP is a set of written instructions that document a routine or repetitive activity. It is a set of detailed written instructions to achieve uniformity of the performance of a specific function.

Standard operating procedures get down to specifics of how a task is to be accomplished. SOPs work to fulfill policy and procedures. In general, policies and procedures come first while standard operating procedures are drawn up after a company determines its policies and procedures.

A Standard Operating Procedure, or SOP, is a document that provides step-by-step instructions on how to perform a particular business activity, such as manufacturing or record keeping. Although most SOPs are presented as text documents, they can also contain images or videos to help clarify their instructions.

Imagine a product rendering of a bed so realistic that you are tempted to brush your hand over its soft texture.

Thanks to 3D rendering technology, marketers are able to digitally assemble images from photographs and prototypes that contain the most minute details, such as a surface

Irregularity or a specific lighting angle. Together, these details can create an image so realistic that it rivals that of one taken from a camera.

Due to its inexpensive pricing and fast turnaround, an increasing number of furniture companies are turning to digital product rendering to produce product images for their catalogs and websites.

## Benefits and Features

3D rendering gives artists complete control over the end result of an image. Everything from lighting to the exact angle through which the image is viewed can be adjusted. Companies no longer have to invest in travel, props, photographers, and interior design services to obtain a desired look.

Below is a list of several key benefits and features that digital product rendering offers furniture companies.

- Perfect lighting and angles
- Astonishing accuracy and precise product measurements
- Streamlined branding
- Quick edits

Fig.1 Render bed

Design thinking encompasses processes such as context analysis, problem finding and framing, ideation and solution generating, creative thinking, sketching and drawing,

modeling and prototyping, testing and evaluating. Core features of design thinking include abilities to:

- Resolve ill-defined or 'wicked' problems
- Adopt solution-focused strategies
- Use adductive and productive reasoning
- Employ non-verbal, graphic/spatial modeling media, for example, sketching and prototyping.

| Self-Check2 | Written Test |
|---|---|

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

**Instruction: I write short answer**

1. List of several key benefits and features that product rendering.

**Instruction: II Fill the blank space**

2. _____technology, marketers are able to digitally assemble images from photographs and prototypes.
3. _____the term used to describe the translation and transportation

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

## Information Sheet 3. Confirming Nature and extent of work

3.1 Confirming Nature and extent of work from appropriate personnel.

Furniture refers to movable objects intended to support various human activities such as seating (e.g., chairs, stools, and sofas), eating (tables), and sleeping (e.g., beds). Furniture is also used to hold objects at a convenient height for work (as horizontal surfaces above the ground, such as tables and desks), or to store things (e.g., cup boards and shelves). Furniture can be a product of design and is considered a form of decorative art. In addition to furniture's functional role, it can serve a symbolic or religious purpose. It can be made from many materials, including metal, plastic, and wood. Furniture can be made using a variety of woodworking joints which often reflect the local culture. People have been using natural objects, such as tree stumps, rocks and moss, as furniture since the beginning of human civilization.

**N.B** Over head expenses include building and equipment depreciation cost, power consume, telephone and other expenses.

| Self-Check3 | Written Test |
|---|---|

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

**Instruction:1 Explain appropriate and readable words**

1. Write examples of furniture refers to movable objects intended to support various human activities.

   _____

   _____

   _____

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

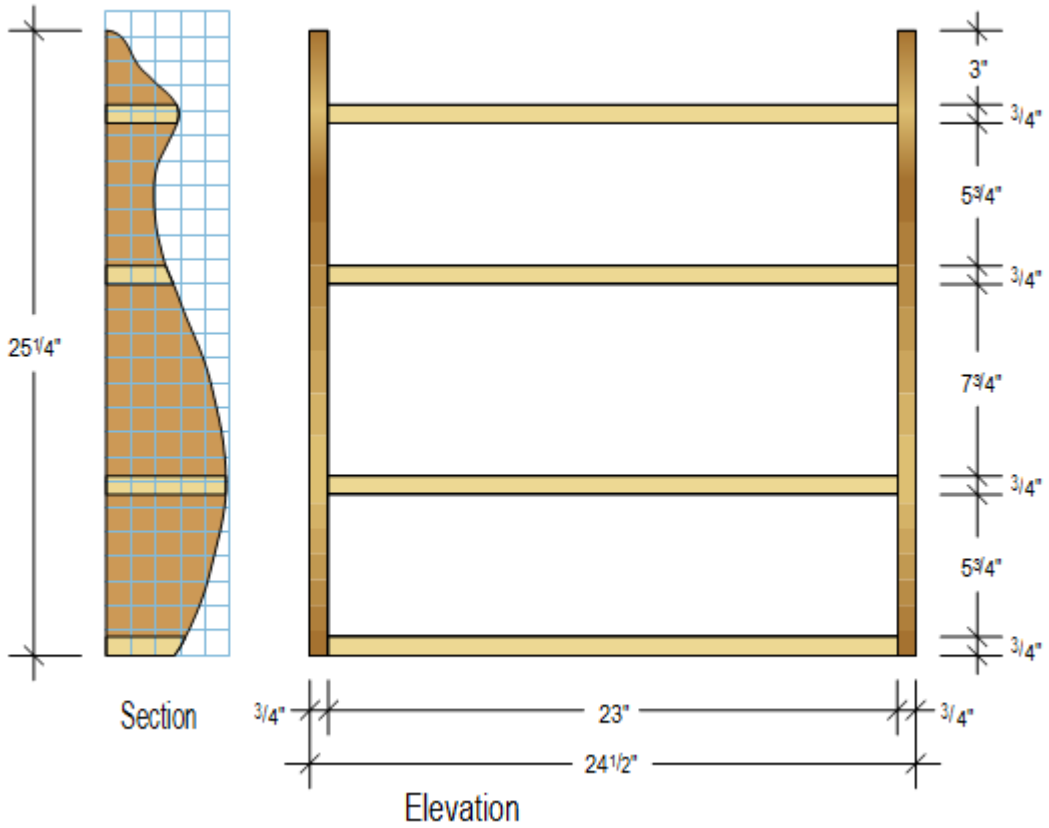
## Information Sheet 4. Determining and confirmed Materials and design

4.1 Determining and confirmed Materials and design

**Design**: used designs are mainly of the essential parts project, with which the have established business relations. However, a new generation of designers is emerging in the separate of the object, as well.

**General rules for designing**

- Compare the cost of production of work with present tools with the expected cost of production, using the tool to be made and see that the cost of buildings is not in excess of expected gain.
- Decide upon locating points and outline clamping arrangement
- Make all clamping and binding devices as quick acting as possible
- Make the jig fool proof
- Make some locating points adjustable Avoid complicated clamping arrangements
- Round all corners
- Provide handles wherever these will make handling easy
- Provide holes on escapes for chips
- provide abundant clearance
- Locate clamps so that they will be in best position to resist the pressure of the cutting tool when at work


25 1/4"
Section
3"
3/4"
5 3/4"
3/4"
7 3/4"
3/4"
5 3/4"
3/4"
3/4"
23"
3/4"
24 1/2"
Elevation

**Bill of quantity:** the prime purpose of the Bill of Quantities (BQ) is to enable all contractors tendering for a contract to price on exactly the same information. Subsequent to this, it is widely used for post-tender work such as: material scheduling; construction planning; cost analysis; and cost planning.

The main sections included in the bill of quantities are Form of Tender, Information, Requirements, Pricing schedule, Provisional sums, and Day works. For the preparation of BOQ, 5 main components are to be considered which are as follows

Assume that the material list cost which required for the specific component parts mentioned the given design**.**

**What Does a BOQ Include?**

1. The quantity of work for each list item and the measurement unit. ...
2. The unit price of each item, which is calculated by each of the bidding contractors.
3. The total price of each list item, which is calculated by multiplying the amount of work and the unit price.

While BOM is related to the list of inventory, including raw materials, parts, components, etc., BOQ lists the total number of materials required to complete a project. BOQs help project developers in getting detailed quotes for project requirements and BOM give a clarity on what all is needed for completion

| | | Qt | Unit | Unit price | Total price |
|---|---|---|---|---|---|
| No | Kind of materials | | | | |
| 1 | Wood | 4 | $M^3$ | | |
| 2 | Manufactured boards | 2 | $M^2$ | | |
| 3 | Finishing materials and glue | | Kg/lit | | |
| 4 | Nail | 5 | Kg | | |
| 5 | Screw | 3 | Peckt | | |
| 6 | Sand paper | 1 | Roll | | |
| 7 | Round & square pipe, flat &angle iron | 1 | M | | |
| 8 | Other materials | | Etc | | |
| | | | Total material cost + Wastage 5% & 25& | | |
| | | | Labor cost20% | | |
| | | | Over head cost15 – 20% | | |
| | | | Profit 20% - 25% | | |
| | | | **Selling price** | | |

It needs to be written **Length** X **Width** X **Height**. That is standard for measurements. It makes no difference in the order you have them listed

**Wood**-based raw materials important to the state's furniture industry are furniture frames, plywood, and lumber.

| Self-Check4 | Written Test |
|---|---|

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

**Instruction: I Fill the blank space**

**1.**_____ used designs are mainly of the essential parts project

**Instruction: II** Mentioned general rules of design**.**

1. Write at least three General rules for designing**.(each 5%point)**

   _____

   _____

**Answer Sheet**

Name: _____ Date: _____ Score = _____

**Note:** Satisfactory rating above 100%

| LG #15 | LO #2- Organize list of specification |
|---|---|

**Instruction sheet**

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

- Identifying type of project based on design
- Listing required materials according to type of project
- Using specific unit of measurement
- Determining types & quantity of assembling and fixing materials
- Determining finishing materials following work /job requirement

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:

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## Information Sheet 1. Identifying type of project based on design

1.Identifying type of project based on design

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- Make the jig fool proof
- Make some locating points adjustable Avoid complicated clamping arrangements
- Round all corners
- Provide handles wherever these will make handling easy
- Provide holes on escapes for chips
- provide abundant clearance
- Locate clamps so that they will be in best position to resist the pressure of the cutting tool when at work

Place all clamps as nearly as possible opposite some bearing point of the work to avoid springing action

- Before using in the shop, test all jigs as soon as made

**Objectives Design** of Cutting Tools and Holding Devices After studying this unit, you should be able to

- know different types of locating elements,
- know different types of clamping elements,
- know different guiding elements, Design various types of jigs, and differentiate various types of jigs.

The principal aim of this paper is to give designers of cladding fixing systems a systematic framework which will help them assess the difficulty of using different joining systems for automated cladding. To this end, the underlying principles of "Design for Automation" will be discussed in the context of cladding fixing systems. After this, the stages which are common to all joining methods will be, reviewed before the guidelines for assessing the utility of particular methods are presented.

**Principles of design for automation**

Previous research into high volume manufacturing has already defined the basic principles of "Design for Automation. These principles will be discussed in the following sections with a particular emphasis on cladding.

**Combine Functionality of Components**

Fewer assembly operations are needed if the functionality of several items are combined into one or two components. However, problems may arise with fabricating the new components as some materials may be less ductile or malleable than others.

**Modular Design Philosophies:** the use of a modular design philosophy such as group technology can widen the applicability of automated fixings to many different cladding types. This will increase the

Attractiveness of automated solutions since the range of cladding types that can be erected is extended.

**Reduce the Number of Fasteners:** a distinction can be made between site fixings and factory fastenings as the latter are simpler and more reliable. As outlined in Section parts can be designed to incorporate ninny of the functions of fasteners so that they can be pushed together without the need for special joining devices and operations.

| Self-Check1 | Written Test |
|---|---|

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

1.The following is (are) the about general rules of design **(each 2% point)**

(A) Holds the work piece

(B) Locate the work piece

(C) Guide the tool

(D) Round all corners

**2.** The following holds the work piece securely in a jig or fixture against the cutting forces **(each 2% point)**

(A) Locating device (B) Clamping device

(C) Guiding device (D) Indexing device

**Answer Sheet**

Name: _____ Date: _____ Score = _____

**Note** Satisfactory rating above 100%

## Information Sheet 2. Listing required materials according to type of project.

2.1 Listing required materials according to type of project

Common materials include steel, concrete, masonry, and wood. These materials have different strengths, weight, cost, and durability. The material used will all depend upon the structure that is being constructed

This is a list *of* building materials. Many types of *building materials* are used in the construction industry to *create* buildings and structures.

Your materials list should be a very clear description of exactly what you need for your project or experiment. It should be so exact, that someone who wanted to do your same experiment could go to the store with your list and buy exactly the same things and exactly the same amount of everything that you used.

Architects consult with structural engineers on the load-bearing capabilities of the materials with which they design, and the most common materials are concrete, steel, wood, masonry, and stone.

In this section, ethical approval, study dates, number of subjects, groups, evaluation criteria, exclusion criteria and statistical methods should be described sequentially. It should be noted that a well-written materials and methods section markedly enhances the chances of an article being published.

| Self-Check2 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. Explain common materials according to the project**.(each 5%point)**

   _____

_____

**Answer Sheet**

Score = _____

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

## Information Sheet 3. Using specific unit of measurement

3.1 Using specific unit of measurement.

**Measurement**: of any physical quantity involves comparison with a certain basic, arbitrarily chosen, internationally accepted reference standard called unit. The result of a measurement of a physical quantity is expressed by a number (or numerical measure) accompanied by a unit.

Although the number of physical quantities appears to be very large, we need only a limited number of units for expressing all the physical quantities, since they are interrelated with one another. The units for the fundamental or base quantities are called fundamental or base units. The units of all other physical quantities can be expressed as combinations of the base units. Such units obtained for the derived quantities are called derived units. A complete set of these units, both the base units and derived units, is known as the system of units.

For items such as sofas and chairs, measure the overall depth, length, back height and diagonal measurement. Diagonal measurements are helpful when determining if the piece can be brought in on its end. To determine the diagonal measurement, measure from the top of the back to the front of the arm.

First up, the dimensions for each of our products are shown in the following order: width (W) x depth (D) x height (H)

**Width (W):** The measurement of the product from left to right. Height (H): The measurement from the top of the product to the floor (if it is free-standing) or to the

bottom of the product. Depth (D): The measurement of the product from front to back.

For example, a dimension of a rectangular room on a blueprint, 14' 11" X 13' 10" equates to a room size of 14 feet, 11-inches wide by 13 feet, 10-inches long. Dimensions are expressed as width by length by height or depth in three-dimensional space.

The Graphics' industry standard is width by height (width x height). Meaning that when you write your measurements, you write them from your point of view, beginning with the width. That's important. When you give us instructions to create an 8×4 foot banner, we'll design a banner for you that is wide, not tall.

**Level of water is measured:** by a vented strain gauge. A differential strain gauge transducer measures pressure with one side of the transducer exposed to the water and the other side vented to the atmosphere

**Measure the depth:** or height, of the object. In this example the depth will be 10 inches. Insert the measurements into the formula. Multiply the length (L) times the width (W) times the height (H).

**Depth** = Volume / ( Pi * radius^2 )

**Product dimensions:** are characteristics that serve to identify a product variant. You can use combinations of product dimensions to define product variants. You must define at least one product dimension for a product master in order to create a product variant.

It needs to be written **Length** X **Width** X **Height**. That is standard for measurements. It makes no difference in the order you have them listed

**Wood**-based raw materials important to the state's furniture industry are furniture frames, plywood, and lumber.
Furniture in Fashion Blog

- **Wood**. **Wood** is definitely one of the most popular furniture materials and it has been the leading material in manufacture for ages. ...
- Cane. Cane is another material type that has been used for centuries. ...
- **MDF** is a budget friendly solution for modern homes. ...
- Glossy MDF.
- Glass.
- Acryl.
- Steel.

- Plastic.

**Types of Furniture for Your Living Room**

**Living room Sofa**. Of course, no list of furniture types for your living room would be complete without the trusty old sofa.

Coffee Table. Accent Cabinet. Accent Chair

Bookcase. Storage Bench

| Self-Check3 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

**1.**_____ of any physical quantity involves comparison with a certain basic, arbitrarily chosen, internationally accepted reference standard called unit**(each 5%point)**

2. The units for the fundamental or base quantities are called _____**(each5%point)**

**Answer Sheet**

Score = _____

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

**Information Sheet 4. Determining types & quantity of assembling and fixing materials**

4.1 Determining types & quantity of assembling and fixing materials.

Furniture Wood Basics. Today, most furniture is made with ash, pine, gum, fir, and other inexpensive woods that are mostly used for hidden parts. The rare woods like walnut, oak, mahogany, rosewood are used only for very good furniture, and they're often used in combination with the less expensive woods.

**Best Furniture** really does deliver high-quality furniture, and when it comes to their sofa selection, there really isn't anything you should stay away from! No matter your style, you can find something that works for you that are going to last for years to come.

What does quantity mean amount or number a determinate or estimated amount. total amount or number a considerable amount or number often used in plural generous quantities.

The value of a quantity is expressed as the product of a number and a unit, and the number multiplying the unit is the numerical value of the quantity expressed in that unit. The numerical value of a quantity depends on the choice of unit.

**Quantity**: amount should be used when you're talking about a singular noun that can't be measured. Number should be used when you're referring to a singular or plural noun that can be counted.

Quantity should be used for an inanimate, single or plural noun that can be counted or measured

Is that quantity is a fundamental, generic term used when referring to the measurement (count, amount) of a scalar, vector, number of items or to some other way of denominating the value of a collection or group of items while value is the quality (positive or negative) that renders something desirable or valuable.

**Required Quantity:** in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.

| Self-Check4 | Written Test |
|---|---|

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

**Instruction: I Fill the blank space**

1. _____amount should be used when you're talking about a singular noun that can't be measured**(each 5%point)**
2. _____really does deliver high-quality furniture, and when it comes**(each 5%point)**

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

**Information sheet 5.Determining finishing materials following work /job requirement.**

5.1 Determining finishing materials following work /job requirement.

**Finishing:** or the application of a protective or refining coating to wood, is the final step in the making of fine wood furniture. The finish on wood furniture can help bring out the grain and elicit a beautiful luster, while also providing protection to moisture, oils and other elements and making it easier to clean

It is most commonly used to protect color or provide texture to objects. Paint finishing materials are intended mainly for painting operations. It makes possible a substantial reduction in the labor-intensiveness of finishing operations and an improvement in the protective and decorative properties of structures.

It usually consists of several coats of wax, shellac, drying oil, lacquer, varnish, or paint, and each coat is typically followed by sanding. Finally, the surface may be polished or buffed using steel wool, pumice, rotten stone or other materials, depending on the shine desired.

It usually consists of several coats of wax, shellac, drying oil, lacquer, varnish, or paint, and each coat is typically followed by sanding. Finally, the surface may be polished or buffed using steel wool, pumice, rotten stone or other materials, depending on the shine desired.

Wood Finishes: Several Natural Solutions

Tung oil comes from the seed or nut of the tong tree.

- Beeswax. Beeswax has been used as a wood protector for years as well.
- Soy wax. Soy wax can be used in the same manner as beeswax.
- Linseed oil.
- Shellac.

The processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. However, the production process for furniture is not solely bending metal, cutting and shaping wood, or extruding and molding plastics.

he processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. However, the production process for furniture is not solely bending metal, cutting and shaping wood, or extruding and molding plastics.

| Self-Check5 | Written Test |
|---|---|

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

**Instruction: I Fill the blank space**

1. _____ or the application of a protective or refining coating to wood, is the final step in the making of fine wood furniture.(**each5%point)**
2. It usually consists of several coats of _____**(each5%point)**

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

| LG #16 | LO #3- Calculate resource requirements |
|---|---|

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

- Basic calculating and measurement
- Obtaining cost of supplies, materials from suppliers
- Calculating material quantities correctly using appropriate factors/formula
- Confirming and recording results

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:

- Basic calculation and measurement
- Obtain cost of supplies, materials from suppliers
- Calculate material quantities correctly using appropriate factors/formula
- Confirm and recording results

**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. 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.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. 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).
6. If you earned a satisfactory evaluation proceed to “Operation sheets

## Information Sheet 1. Basic calculating and measurement

1. Basic calculating and measurement

Most furniture factories begin the production of a piece of furniture with pictorial sketches showing several variations of proposed pieces to be manufactured. These sketches are isometric, cabinet/oblique and orthographic projection drawings.

The proposed designs that should be produced must be discussed by management, which must have the final approval. Among things that affect this decision are what the production cost are, what the sale price will be and how much profit can be made.

For any product, management must know the exact cost involved. **Four** main factors must be considered. These are :

**Material cost:** can be quite easily established, provided there is not an excessive amount of waste.

**Labor cost**: are also carefully analyzed.

**Over head cost**: refers to the fixed cost of running the factory.

**Profit**

To calculate the cost of furniture follow the following procedures:

Know the quantities of materials used to construct the project by types.

Know unit price for each material

Then calculate the cost of material used to construct the project. Add 25% wastage for wood and 5% for ply wood, chip wood, hard board, and soft board Formica.

Add cost of labor 20% of total material cost or have a recorded hour that is spent to construct the project. If the payment of labor cost is on hourly based, then the total hours spent should be multiplied by hourly payment.

Add material cost of over head expenses 15% - 20% of the total material cost.

Add material cost + over head expense + labor cost. This will be cost price of the project. By adding profit 20% – 25% of the cost price to the cost, we will get the selling price.

**N.B** Over head expenses include building and equipment depreciation cost, power consume, telephone and other expenses.

The topics in this free course, *Ratio, proportion and percentages*, are concerned with dividing something into parts. For example, if there are 200 people living in a small village, and 50 of these are children, this could be expressed as a percentage:

25% of the village population is children or as a ratio:

One in every four people is a child *or* there is 1 child for every three adults or a proportion:

The proportion of children in the village population is a quarter.

This Open Learn course provides a sample of level 1 study in Mathematics.

Ratios crop up often in official statistics. The government wants the teacher–pupil ratio in schools to be increased to one teacher to thirty pupils or less. The birth rate has fallen: the ratio of children to women of child bearing age has gone down. It used to be 2.4 to 1, and now it is 1.9 to 1. Predictions for the ratio of working adults to retired adults is disturbing. Predictions are, that by 2030 the ratio will be two working adults to every retired person, instead of three to one now, and four to one ten years ago.

Often ratios are implicit in the language rather than explicitly referred to: one teacher for 30 pupils; 2.4 children per woman of child bearing age; one retired person per two working adults. The word ‘per’ often indicates that the concept of ratio is being used.

**Expressing ratios**: to make short crust pastry, one recipe book says ‘use one part of fat to two parts of flour’; another recipe says ‘use fat and flour in the ratio of one to two’; and yet another says ‘use half as much fat as flour’. These are different ways of expressing the same ratio. Ratios are often expressed as fractions. So in this case:

Since you can multiply top and bottom of a fraction by the same number and get an equivalent fraction, you can use the ratio in a number of ways. If you have 100 grams of fat then

So you need 200 grams of flour to 100 grams of fat. There are many ways to arrive at this answer. The important point is that a ratio of 100 to 200 is equivalent to 1 to 2.

To make concrete, the instructions are ‘use sand and cement in the ratio three to one’.

This means

If you have 30 kg of cement, then you need 90 kg of sand.

The conversion rates between currencies or different units are often easier to remember as ratios. Many people remember that the ratio of distance in miles to the same distance in kilometers is five to eight.

**Bill of quantity**

| No | Kind of materials | Qty | Unit | Unit price | Total price |
|---|---|---|---|---|---|
| 1 | Wood | 00 | $M^3$ | | |
| 2 | Manufactured boards | 00 | $M^2$ | | |
| 3 | Finishing martial’s and glue | 00 | Kg/lit | | |
| 4 | Nail | 00 | Kg | | |
| 5 | Screw | 00 | Kg | | |
| 6 | Sand paper | 00 | Sheet | | |
| 7 | Round & square pipe, flat &angle iron | 00 | M | | |
| 8 | Other materials | 00 | Etc | | |
| |  | | Total material cost + Wastage 5% & 25& | | |
| | | | Labor cost20% | | |
| | | | Over head cost15 – 20% | | |
| | | | Profit 20% - 25% | | |
| | | | **Selling price** | | |

**Rationale:** This activity covers the competence required to showing information about the materials required for the job. It shows 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.

Condition/situations

Make sure that the necessary materials needed for this task should be on hand before starting this operation.

Prepare such jig to eliminate unwonted dalliance when working this operation.

Select a working place that is free from such obstacles and comfortable for work

Materials of the following basic calculation do

Pencil with pencil sharpener:

- Try square
- Colored chalk
- Marker
- Engineering scale
- Ruler

Consumable materials: Paper , lead

What are the basic requirements of measurement?

**Measurement Requirements**

- Sensitivity and sources of noises.
- Precision and photometric stability.
- Sky coverage and observation strategies.
- Temporal resolution.
- Mission Duration.

Measure any two sides (length, width or height) of an object or surface in order to get a two-dimensional measurement. For example, a rectangle that has a width of 3 feet and height of 4 feet is a two-dimensional measurement. (width) x 4 ft. (height). We know that 1 **inch** = 2.54 cm. Therefore, 1 cm = 1 / 2.54 = 0.393701 **inch**

| Self-Check1 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

**1.** _____can be quite easily established, provided there is not an excessive amount of waste.

**2.**_____ are also carefully analyzed.

**3.**_____ refers to the fixed cost of running the factory

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

## Information Sheet 2. Obtaining cost of supplies, materials from suppliers

### 2.1 Obtaining cost of supplies, materials from suppliers

**Material cost** is the **cost** of materials used to manufacture a product or provide a service. Excluded from the material cost is all indirect materials, such as cleaning supplies used in the production process. Add the standard amount of scrap associated with manufacturing one unit.

**Job costing**: method of costing can be used in furniture manufacture industry. A job card is made for each work or job. This method of costing is used in the factories which produce the machine tool and other engineering products, furniture projects, hardware and interior decoration.

Following this summary of the different types of costs are some examples of how costs are used in different business applications.

- Fixed and Variable Costs.
- Direct and Indirect Costs.
- Product and Period Costs.
- Other Types of Cost.
- Controllable and Uncontrollable Costs
- Out-of-pocket and Sunk Costs.

Start with the Beginning Raw Materials Inventory value and add all raw materials purchased during the selected accounting period. Then, subtract the ending inventory value. This is the valuation of the direct materials used in production. Next, add the value of the direct labor and factory overhead.

**The types are**: 1. Fixed Costs 2. Variable Costs 3. Semi-Variable Costs.

A unit of production for which the management of an organization wishes to collect the costs incurred. In some cases the cost unit may be the final item produced, for example a chair or a light bulb, but in other more complex products the cost unit may be a sub-assembly, for example an aircraft wing or a gear box.

**Cost Classification:** refers to a complete and transparent idea of separation of expenses in the different sector as like manufacturing cost, product cost, sunk cost, variable cost, direct cost, and indirect cost.

**Price**: the amount of money that has to be paid to acquire a given product. Insofar as the amount people are prepared to pay for a product represents its value, price is also a measure of value.

| Self-Check2 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. _____refers to a complete and transparent idea of separation of expenses cost**.(each 5%point)**
2. _____the amount of money that has to be paid to acquire a given product**.(each 5%point)**

3. _____method of costing can be used in furniture manufacture industry**.(each 5%point)**

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

**Information sheet 3.Calculating material quantities correctly using appropriate factors/formula.**

3.1Calculating material quantities correctly using appropriate factors/formula.

**Job costing**: method of costing can be used in furniture manufacture industry. A job card is made for each work or job. This method of costing is used in the factories which produce the machine tool and other engineering products, furniture projects, hardware and interior decoration.

**Steps to estimate the direct material costs**:

1. Find the total amount to be produced. ...
2. Calculate the total amount of raw materials required to produce the order size.
3. Multiply that amount by the cost associated with the raw materials.
4. If there is a waste or scrap, its cost should be added to the costs

Determine how many items were produced within the same time period. Divide the total manufacturing costs by the number of items produced to arrive at the production cost per unit.

For purposes of inventory calculation, the direct materials account includes the cost of materials used rather than materials purchased. To calculate direct materials, add beginning direct materials to direct materials purchases and subtract ending direct materials.

The formula for conversion costs is as follows: Conversion costs= Direct Labor + Manufacturing Overheads.

The labor cost per unit is obtained by multiplying the direct labor hourly rate by the time required to complete one unit of a product. For example, if the hourly rate is $16.75, and

it takes 0.1 hours to manufacture one unit of a product, the direct labor cost per unit equals:

| Inches---------- | Centimeters |
|---|---|
| 1 in---------- | 2.54 cm |
| 2 in---------- | 5.08 cm |
| 3 in---------- | 7.62 cm |
| 4 in---------- | 10.16 cm |

**Direct manufacturing labor costs** are associated with the laborers in your factory who work on the goods you're manufacturing directly. It's important to measure this cost for a small business, because this is pretty much a direct measure of how much of your manufacturing **costs** are for paying your laborers.

**Total Indirect Cost = Total Indirect Manufacturing Overhead + Total Indirect Administrative Overhead**

1. Total Indirect Cost = Total Indirect Manufacturing Overhead + Total Indirect Administrative Overhead.
2. Total Indirect Cost.
3. Total Indirect Cost.

**Quantity:** is a property that can exist as a multitude or magnitude, which illustrate discontinuity and continuity. Quantities can be compared in terms of "more", "less", or "equal", or by assigning a numerical value in terms of a unit of measurement.

Quantity is defined as an amount, measure or number. An example of quantity is how many apples are in a barrel. An amount; portion. A number or symbol expressing a mathematical quantity.

| Self-Check3 | Written Test |
|---|---|

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

**Instruction: I Fill the blank space**

1. _____method of costing can be used in furniture manufacture industry **(each 5%point)**
2. _____is a property that can exist as a multitude or magnitude, which discontinuity and continuity. **(each 5%point)**
3. **Define** 1inch how money centimeter(CM)

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

**Information sheet 4. Confirming and recording results**

4.1 Confirming and recording results

**Definition Confirming**: to give approval to ratify confirm a treaty to make firm or firmer strengthen confirm one's resolve to administer the rite of confirmation to give new assurance of the validity of remove doubt about by authoritative act or indisputable fact confirm a rumor confirm an order.

It is intended to show a person taking responsibility for what they believe in and professing it to the friends and family. The main reason for the importance of Confirmation in the modern has to do with the practice of infant baptism.

Here's what happens at the actual ritual of Confirmation: You stand or kneel before the bishop. The bishop anoints you by using oil of Chrism consecrated oil) to make the Sign of the Cross on your forehead while saying your Confirmation name and “Be sealed with the gift.

Bad quality furniture will wobble, twist, or creak. Wood on a good quality furniture piece should be reasonably scratch resistant; if it dents easily the furniture will not stand up to much use. To test this you can try drawing a line on an unexposed area with your fingernail to see if it leaves a visible dent

**Recording:** music, sounds, or images that have been stored on a record, CD, computer, etc. so that they can be heard or seen again the act or process of storing sounds or images on tape or a disk. See the full definition for recording in the English language learner’s dictionary.

The purpose of recording a document is to provide a traceable chain of title to the property (chain of title is evidence that a piece of property has validly passed down through the years from one owner.

**Types of records**

- Correspondence records. Correspondence records may be created inside the office or may be received from outside the office.
- Accounting records. The records relating to financial transactions are known as financial records.
- Legal records.
- Personnel records.
- Progress records.
- Miscellaneous records.

Essential characteristics authenticity record must be what it purports to be reliability record must be a full and accurate representation of the transactions, activities, or facts to which it attests. Integrity a record must be complete and unaltered.

Ratios crop up often in official statistics. The government wants the teacher–pupil ratio in schools to be increased to one teacher to thirty pupils or less. The birth rate has fallen: the ratio of children to women of child bearing age has gone down. It used to be 2.4 to 1, and now it is 1.9 to 1. Predictions for the ratio of working adults to retired adults is disturbing. Predictions are, that by 2030 the ratio will be two working adults to every retired person, instead of three to one now, and four to one ten years ago.

The conversion rates between currencies or different units are often easier to remember as ratios. Many people remember that the ratio of distance in miles to the same distance in kilometers is five to eight.

| Self-Check4 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. _____in the modern has to do with the practice of infant baptism**.(each 5%point)**
2. _____music, sounds, or images that have been stored on a record, CD, computer, etc.**( each 5%point)**

**Answer Sheet**

Score = _____

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

| LG #17 | LO #4- Estimate approximate quantities and cost |
|---|---|

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

- Determining & calculating  resource requirements
- Matering cost
- Calculating & recording  resource quantities within organization tolerance
- Finalizing  and presenting bill of quantity to appropriate personnel

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:

- Determine & calculating  resource requirements
- Material cost
- Calculate & recording  resource quantities within organization tolerance
- Finalize  and presenting bill of quantity to appropriate personnel

**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. 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.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. 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).
6. If you earned a satisfactory evaluation proceed to “Operation sheets

## Information Sheet 1. Determining & calculating resource requirements

1. Determining & calculating resource requirements

**Project management**, resources are required to carry out the project tasks. They can be people, equipment, facilities, funding, or anything else capable of definition (usually other than labor) required for the completion of a project activity. The lack of a resource will therefore be a constraint on the completion of the project activity. Resources may be storable or non storable. Storable resources remain available unless depleted by usage, and may be replenished by project tasks which produce them. Non-storable resources must be renewed for each time period, even if not used in previous time periods. Resource scheduling, availability and optimization are considered key to successful project management. Allocation of limited resources is based on the priority given to each of the project activities. Their priority is calculated using the Critical path method and heuristic analysis. For a case with a constraint on the number of resources, the active is to create the most efficient schedule possible minimizing project duration and maximizing the use of the resources available.

**Estimating the Resources:** the goal of activity resource estimating is to assign resources to each activity in the activity list. There are five tools and techniques for estimating activity resources.

**Expert judgment:** means bringing in experts who have done this sort of work before and getting their opinions on what resources are needed.

**Alternative analyze:** means considering several different options for how you assign resources. This includes varying the number of resources as well as the kind of resources you use. Many times, there's more than one way to accomplish an activity and alternative analysis helps decide among the possibilities.

**Published estimating data:** is something that project managers in a lot of industries use to help them figure out how many resources they need. They rely on articles, books, journals, and periodicals that collect, analyze, and publish data from other people's projects.

**Project management software:** such as Microsoft Project will often have features designed to help project managers estimate resource needs and constraints and find the best combination of assignments for the project.

**Bottom-up estimating:** means breaking down complex activities into pieces and working out the resource assignments for each piece. It is a process of estimating individual activity resource need or cost and then adding these up together to come up

With a total estimate. Bottom-up estimating is a very accurate means of estimating, provided the estimates at the schedule activity level are accurate. However, it takes a considerable amount of time to perform bottom-up

| Self-Check1 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. _____means bringing in experts who have done this sort of work before and getting their opinions on what resources are needed**.(each5%point)**
2. _____means considering several different options for how you assign resources. **.(each5%point)**
3. _____resources are required to carry out the project tasks

**Answer Sheet**

Score =

Name: _____ Date: _____

**Note** Satisfactory rating above 100%

## Information Sheet 2. Estimating & calculating quantities

2.1 Estimating & calculating quantities

- Estimation is the scientific way of working out the approximate cost of an engineering project before implementation of the work.
- The process of forecasting or approximating the time and cost of completing project deliverables.
- It is totally different from calculation of the exact cost after completion of the project.
- Developing an approximation or estimate of the costs of the resources needed to complete a project
- Cost estimating is one of the most important steps in project management.

Estimation requires a thorough Knowledge of the product procedures and cost of materials & labor in addition to the skill, experience and good judgment

**Unit cost:** A unit cost is a total expenditure incurred by a company to produce, store, and sell one unit of a particular product or service. Unit costs are synonymous with the cost of goods sold and cost of sales.

This accounting measure includes all of the fixed and variable costs associated with the production of a good or service. Unit cost is a crucial cost measure in the operational analysis of a company. Identifying and analyzing a company's unit costs is a quick way to check if a company is producing a product efficiently.

**Variable and Fixed Unit Costs:** Successful companies seek ways to improve the overall unit cost of their products by managing the fixed and variable costs. Fixed costs are production expenses which are not dependent on the volume of units produced. Examples are rent, insurance, and equipment. Fixed costs, such as warehousing and the use of production equipment, may be managed through long-term rental agreements.

Variable costs vary depending on the level of output produced. These expenses have further division into specific categories such as direct labor costs and direct material costs. Direct labor costs are the salaries paid to those who are directly involved in production while direct material costs are the cost of materials purchased and used in production. Sourcing materials can improve variable costs from the cheapest supplier or by outsourcing the production process to a more efficient manufacturer.

**Labor cost:** The human effort required to convert the materials into finished product is called labor.

**Direct labor**: is one which can be conveniently identified or attributed wholly to a particular job, product or process.

E.g: salary paid to carpenter, salary paid to welder, fees paid to tailor, etc.

**Indirect labor:** is one which cannot be conveniently identified or attributed totally to a particular job, product or process.

**Calculating Labor Costs:** labor is one of the most difficult costs to predict in an estimate. Basically, it's determined by calculating the hours required to complete a task

Project and then charging what it costs your business to compensate its field employees. But trying to predict the time required to complete a task or a project, especially if someone other than you will do the work, requires judgment and experience.

You can get unit costs for labor from a cost estimate book, but you have to be careful. The numbers in the book are unlikely to accurately reflect your own hard costs, even if you apply the regional adjustment factors provided. Your labor charges must reflect your company's actual expenses.

Consider that, if you pay each of your employees for 2,000 hours each year, and you fail to account for a pair of dollars per employee per hour, your loss could quickly become significant. Because no other company is exactly like yours, it's important to know precisely how much it costs your company to do business.

| Self-Check2 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

**1.**_____ The human effort required to convert the materials into finished product is called labor.

**2.** _____is one which can be conveniently identified or attributed wholly to a particular job, product or process.

**3.** _____ is one which cannot be conveniently identified or attributed totally to a particular job, product or process.

**Answer Sheet**

Name: _____ Date: _____ Score = _____

**Note** Satisfactory rating above 100%

## Information Sheet 2. Material cost

2.1 Material cost

**Material cost:** is the cost of the materials used directly in the final product, such as wood, screws, machine nuts, tubing and paint in building furniture. Supplies such as sandpaper and saw blades are part of overhead, not material cost. However, the cost of picking up materials or having them shipped to you is a part of the cost of the materials rather than overhead. If it becomes part of the finished product, it is material; if not, it is overhead.

**Estimating Material Costs:** as noted earlier, your material cost is the price you paid for any materials that are used in making your woodworking project. For woodturning, it is the blank. It is also the cost of getting the blank to your shop, such as shipping or freight charges or car mileage charges to pick it up. However, material cost does not include the cost of your lathe, sandpaper or related shop costs. These are considered" overhead" and will be covered in a moment.

**Equipment cost/deprecation cost**

Depreciation is an accounting term that refers to the allocation of cost over the period in which an asset is used. In a business, the cost of equipment is generally allocated as

depreciation expense over a period of time known as the useful life of the equipment. You can calculate the depreciation of business equipment if you know the original cost

of the equipment, the expected residual or salvage value of the equipment and the expected useful life of the equipment.

In accounting terms, depreciation is defined as the reduction of recorded cost of a fixed asset in a systematic manner until the value of the asset becomes zero or negligible. An example of fixed assets are buildings, furniture, office equipment, machinery etc.

n accountancy, depreciation refers to two aspects of the same concept: first, the actual decrease in value of fair value of an asset, such as the decrease in value of factory equipment each year as it is used and wears, and second, the allocation in accounting statements of the original cost of the assets to periods in which the assets are used (depreciation with the matching principle)

Depreciation is thus the decrease in the value of assets and the method used to reallocate, or "write down" the cost of a tangible asset (such as equipment) over its useful life span. Businesses depreciate long-term assets for both accounting and tax purposes. The decrease in value of the asset affects the balance sheet of a business or entity, and the method of depreciating the asset, accounting-wise, affects the net income, and thus the income statement that they report. Generally the cost is allocated as depreciation expense among the periods in which the asset is expected to be used.

**Annuity depreciation methods**: are not based on time, but on a level of Annuity. This could be miles driven for a vehicle, or a cycle count for a machine. When the asset is acquired, its life is estimated in terms of this level of activity. Assume the vehicle above is estimated to go 50,000 miles in its lifetime. The per-mile depreciation rate is calculated as: ($17,000 cost - $2,000 salvage) / 50,000 miles = $0.30 per mile. Each

year, the depreciation expense is then calculated by multiplying the number of miles driven by the per-mile depreciation rate.

Sum-of-years-digits is a shunt depreciation method that results in a more accelerated write-off than the straight line method, and typically also more accelerated than the declining balance method. Under this method the annual depreciation is determined by multiplying the depreciable cost by a schedule of fractions.

Sum of the years' digits method of depreciation is one of the accelerated depreciation techniques which are based on the assumption that assets are generally more productive when they are new and their productivity decreases as they become old. The formula to calculate depreciation under SYD method is:

**SYD depreciation = depreciable base x (remaining useful life/sum of the years' digits) depreciable base = cost − salvage value**

**Contingency**: theory suggests that in order to be effective, HRM must be consistent with other aspects of the organization and/or external environment. Whereas

Universalistic theory suggests that HRM will have a direct impact on organizational performance, contingency theory implies interactions rather than simple linear relationships. According to contingency theory, a one-size-fits-all approach is inappropriate, as the effectiveness of HR practices is dependent on the context in which they are applied. Contingency decisions within HRM have largely been understood on the basis of external and internal fit. External fit, also termed vertical alignment, requires that the HRM practices of the organization must match the organizational strategy or

Environmental conditions faced by the organization. A failure to achieve this fit between context and HR practice will ultimately lead to suboptimal performance. The main emphasis in HRM has been on ‘best fit’ or ‘matching models’ whereby HRM practices are required to be consistent with a firm’s organizational strategy (e.g., cost, quality, and innovation). However, external fit has also been understood as matching HRM to the stage of growth in the organizational lifecycle (e.g. start-up, growth, maturity). In addition, and also reflecting the logic of contingency theory, it is important that HRM practices exhibit internal fit (also termed horizontal alignment) so that they work together to communicate the same message and deliver the same desired outcome.

**Overhead costs**: are all costs other than direct materials and direct labor. Overhead is the indirect cost of making your woodworking product. Overhead costs include rent (or a portion of the cost of your home), tools, electricity, telephone, taxes and miscellaneous expenses. Offers a way of estimating your overhead costs. You can either make entries directly on this worksheet or transfer them from other records you keep. Let’s look at each overhead cost individually.

Overhead cost includes all costs other than direct material costs and direct labor. Overhead is the indirect cost of making your woodworking product.

As noted earlier, the cost of sandpaper and cleanup time are overhead costs. Think of material and labor as direct costs expenses that can be directly tied to the making of a specific woodworking product and overhead as indirect costs or expenses that cannot be tied to a specific product.

If you have purchased this book to make a profit with your wood working which I assume you have the cost of the book is an indirect cost and can be deducted from your taxes as a leg intimate business expense. It is a part of your overhead.

**Utilities**: are next estimate the cost of electricity, telephone and other utility expenses on a monthly basis. If you use your personal telephone to take business calls, you should deduct only the cost of long-distance business calls. However, if you have installed a second phone or a second line in your workshop, you can include the cost as part of your overhead expenses.

**Profit**: is the amount of money you have left over once you've paid all the bills. Many woodworkers who have invested hundreds or thousands of birr in their shops and their skills never consider that they should receive a return on that investment. They would never think of renting money to a bank interest-free, but will to their business.

A fair profit is vital to the success of your woodworking enterprise. Without it, your woodworking business may not be here a year from now to serve new customers with great new products.

**Recording:** music, sounds, or images that have been stored on a record, CD, computer, etc. so that they can be heard or seen again the act or process of storing sounds or images on tape or a disk. See the full definition for recording in the English language learner's dictionary.

The purpose of recording a document is to provide a traceable chain of title to the property (chain of title is evidence that a piece of property has validly passed down through the years from one owner.

**Types of records**

- Correspondence records. Correspondence records may be created inside the office or may be received from outside the office.
- Accounting records. The records relating to financial transactions are known as financial records.
- Legal records.
- Personnel records.
- Progress records.
- Miscellaneous records.

Essential characteristics authenticity record must be what it purports to be reliability record must be a full and accurate representation of the transactions, activities, or facts to which it attests. Integrity a record must be complete and unaltered.

**Risk tolerance:** is defined as the level of risk or degree of uncertainty that is acceptable to organizations and is a key element of the organizational risk frame. An organization's risk tolerance level is the amount of corporate data and systems that can be risked to an acceptable level.

To quantify these risks, you must identify the financial impact of potential breaches, including estimating the cost of cleanup and the potential loss of productivity. ... It's the responsibility of your senior leadership to define the organization's risk tolerance and implement it as part of its risk management plan.

When establishing its risk tolerance, the organization must consider the following five factors:

1. Risk attitude. This relates to the willingness to take risk.
2. Organization's goals.
3. Risk management capability.
4. Risk-taking capacity.
5. Cost and benefit of managing risk

**Risk attitude:** This relates to the willingness to take risk. Are you a risk taker, risk-averse or risk neutral. Suppose there is an investment with an average monetary return and an equal probability that the return will occur or not occur, how much you are prepared to invest on the investment determines if you are a risk taker, risk averse or risk neutral. If you are willing to invest more than the average return, you are a risk taker. If you are willing to invest less than the average return, you are a risk avoider. If you are willing only to invest the average return, you are risk neutral.

**Organization's goals**: From a risk-tolerance perspective, goals set the target to which an organization directs its resources. Differing goals lead to differing risk tolerances. For example, public and private organizations have different owners, goals and performance measures. This dictates how the organization sees and reacts to its risks. Some risks exist for private sector organizations but not for public-sector organizations.

| **Self-Check3** | **Written Test** |
|---|---|

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

**Instruction: 1 Fill the blank space**

**1.**_____ is the amount of money you have left over once you've paid all the bills**(each5%point).**

**2.**_____ are all costs other than direct materials and direct labor. **(each5%point).**

**3.**_____ theory suggests that in order to be effective, HRM must be consistent with other of the organization and/or external environment. **(each5%point).**

**4.**_____is the cost of the materials used directly in the final product, such as wood, screws, machine nuts, tubing and paint in building furniture. **(each5%point).**

**Answer Sheet**

Name: _____ Date: _____

| Score = |
|---|

**Note** Satisfactory rating above 100%

**Information Sheet 4. Finalizing and presenting bill of quantity to appropriate personnel**

**4.1** Finalizing and presenting bill of quantity to appropriate personnel.

If the contract is with quantities, the BOQ as prepared by the Employer takes precedence over the drawings and specification. Any missing items from the BOQ are dealt with as a change and therefore a client risk.

The main sections included in the bill of quantities are Form of Tender, Information, Requirements, Pricing schedule, Provisional sums, and day works.
For the preparation of BOQ, 5 main components are to be considered which are as follows:

1. Item Description.
2. Unit.
3. Quantity.
4. Rate per unit.
5. Total Amount.

The prime purpose of the Bill of Quantities (BQ) is to enable all contractors tendering for a contract to price on exactly the same information. Subsequent to this, it is widely used for post-tender work such as: material scheduling; construction planning; cost analysis; and cost planning.

A bill of quantities is a document used in tendering in the construction industry in which materials, parts, and labor (and their costs) are itemized.

**Presenting cost estimation:** Detailed cost estimating is the process of predicting the cost of a facility through quantitative analysis of the work required by the design documents. Although not always required by clients, detailed cost estimates can be an important part of overall cost management and budget adherence

**They're the basics you need to master to develop a robust cost estimate for your project:**

1. Define the idea.
2. Identify the parts.
3. Do your research.
4. Ask difficult questions.
5. Prepare for the unexpected.
6. Know your estimate limits.
7. Account for hidden costs.
8. Check it.

The detailed estimates serve as a guide during the execution of the work. It helps in computing the quantities of materials required and labour to be employed for the completion of various items of construction.

Cost estimation in project management is the process of forecasting the cost and other resources needed to complete a project within a defined scope. Cost estimation accounts for each element required for the project and calculates a total amount that determines a project's budget.

| Self-Check1 | Written Test |
|---|---|

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

**Instruction: 1 Fill the blank space**

1. For the preparation of BOQ, 5 main components are to be considered which are as follows.(**each 5%point)**

   _____

   _____

**Answer Sheet**

Name: _____ Date: _____ Score = _____

**Note** Satisfactory rating above 100%

## ANSWER KEY OF SELF CHECK LEARNING OUT COME (LO1-4)

| | | |
|---|---|---|
| **Unit competence name** | **Preparing Bill of Quantity** | **LG#14** |
| **Learning out come** | **LO #1 Identify nature/ scope of work** | **LO1-4** |
| | **Answer key of self-check** | |
| **Self- check 1** | 1. **Decoding**<br>2. **Context**<br>3. **Receiver** | |
| **Self -check 2** | 1. **Perfect lightening & Stream lined**<br>2. **3d rendering, Rendering** | |
| **Self- check 3** | | |
| **Self -check 4** | **Design** | |
| **Self-check 5** | | |
| | | |
| | **LO #2- Organize list of specification** | **LO2** |
| **Self- check 1** | 1. **D, B** | |
| **Self -check 2** | **1. Cost classification**<br>**2. Price**<br>**3.Job costing** | |
| **Self- check 3** | 1. **Measurement**<br>2. **Fundamental** | |

| | | | |
|---|---|---|---|
| **Self- check 4** | **1.Quantity**<br>**2. Best Furniture** | | |
| **Self- check 5** | | | |
| | **LO #3. Calculate resource requirements** | **LO 3** | |

| | | | |
|---|---|---|---|
| **Self -check 1** | **1. Material 3. Overhead Cost**<br>**2. Labor cost** | | |
| **Self -check 2** | **1. Measurement**<br>**2. Fundamental** | | |
| **Self -check 3** | **1. Job casting**<br>**2. Quantity**<br>**3. 1inch=2.54cm** | | |
| **Self -check 4** | **1. Confirmation**<br>**2. Recording** | | |
| | **LO #4. Estimate approximate quantities and cost** | **LO4** | |
| **Self -check 1** | **1. Labor cost**<br>**2. Direct cost 3.Indirect cost** | | |
| **Self -check 2** | **1. Contingency**<br>**2. Profit**<br>**3. Overhead cost 4. Material** | | |
| **Self –check 3** | **1. Experts Judgment**<br>**2. Alternative**<br>**3. Project managment** | | |
| **Self –check 4** | **Quantity, Unit etc** | | |

**Information list and names of provider**

**Name of Trainers (TTLM) Developed**

| No | **Name** | **Profession** | **Collage** | **Region** | **Phone No** |
|---|---|---|---|---|---|
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**List of Reference Materials**

1. General wood working by CHRIS H. GRONEMAN/ Third Edition