Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-25

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08LO1-LG-25

TTLMCode: IND BAPM08 TTLM 0919v1

LO 1: Prepare workstation

Instruction Sheet	Learning Guide #25

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

- OHS practices.
- Setting up Workstation
- Cleaning, checking and servicing cutting equipment
- Preparing cutting table
- Setting up lay-up
- Preparing marking equipment's

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

- Workstation, cutting table and seating are set up according to OHS practices and specifications for work.
- Cutting equipment is cleaned, checked and servicing assessed according to manufacturer instructions.
- Cutting table is prepared to suit correct lay length.
- Lay-up and marking equipment is set up and prepared for use

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below to .
3. Read the information written in the information "Sheet Accomplish the "Self-check
4. If you earned a satisfactory evaluation from the "Self-check" proceedto "Operation Sheet -
5. Do the "LAP test"

Information Sheet-1	OHS practices.

1.1 OHS practices.

Objectives of cutting: The main purpose of cutting is to separate fabric plies as replicas of the patterns in the marker plan. In attaining this objective, certain requirements must be fulfilled.

What is cutting fabric?

Fabric Cutting Process: Cutting is the process of separating a spread into garment components as a replica of pattern pieces on a marker. It also involves transferring marks and notches from the marker to garment components to facilitate sewing. The cutting process is frequently done in two stages: rough cutting and the final accurate cutting.

Accuracy of cut: The garment components have to be cut accurately and precisely as per the shape of the pattern to facilitate assembling process and for better fitting of garments. The effortlessness in achieving this accuracy is based on the cutting method engaged and on the marker.

Personal safety.

Where personal protection is needed, specify the type of equipment that provides adequate and suitable protection:

- **for respiratory protection** specify adequate masks and the filter type
- **for eye protection** specify the type of protective equipment, such as safety glasses, safety goggles, face shield
- **For hand protection** specify the type and material of gloves to be worn when handling the substance or preparation.
- **For skin protection** specify the type and quality of equipment required, such as an apron, boots or full protective suit.

FIRST AID MEASURES

Describe the first aid measures, i.e. the actions to be taken immediately in case of overexposure to the chemical. If immediate medical attention is required, it should be specified here.

Subdivide the information according to the different routes of exposure under different subheadings:

- exposure by inhalation
- exposure by skin and eye contact
- ingestion .

EQUIPMENT AND MATERIAL SAFETY

- Consider precautions to ensure safe handling and to advise on technical measures, such as local and general ventilation, measures to prevent aerosol and dust formation, procedures or equipment which are prohibited or recommended, and, if possible, give a brief description of such procedures and/or equipment as electrical grounding of containers for flammable liquids.
- Consider also the conditions for safe storage, such as incompatible materials, storage temperature and humidity limit/range, light, inert gas and others. Pay attention to special electrical equipment and prevention of static electricity, and specific design for storage rooms or vessels.

SAFETY Procedures

Workplace safety is a category of management responsibility in places of employment.To ensure the safety and health of workers, managers establish a focus on safety that can include elements such as:

- management learship and commitment
- employee engagement
- accountability
- ensuring all task are carried out safely and efficiently
- safety programs, policies, and plans
- safety processes, procedures, and practices
- safety goals and objectives
- safety inspections for workplace hazards
- safety program audits
- safety tracking & metrics
- hazard identification and control
- safety committees to promote employee involvement
- safety education and training
- safety communications to maintain a high level of awareness on safety

Self-Check -1	Written Test

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

1. Which one of personal protective equipment (PPE) used to for respiratory protection. (2)
   A. Safety glasses
   B. Apron
   C. Mask
   D. Gloves
2. Which one of personal protective equipment (PPE) used to hand protection.(2)
   A. Gloves
   B. Apron
   C. Boots
   D. Mask

3 list safety procedures five points. (5 points)

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3 and 5 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet- 2	Setting up Workstation

1.2 Setting up Workstation

Setting-up of work station

Workstation, cutting table and seating are set up according to *OHS practices* and specifications for work.

OHS practices include:

- hazard identification and control,
- risk assessment and implementation of risk reduction measures specific to the tasks described by this unit,

And may relate to:

- standard operating procedures,
- personal protective equipment,
- safe materials handling,
- personal responsibilities for safety,
- equipment or machine safety,
- ergonomic arrangement of workplaces,
- taking of rest /breaks,
- following marked walkways,
- safe storage of equipment,
- housekeeping,
- reporting accidents and incidents,
- Environmental protection practices.

1.1 *Standard operating safety procedures*

- Protection equipment: including personal protective equipment (PPE) for nose and mouth, eyes, face and body.
- Protective clothing ex. Work wears
- Before doing work that requires the use of PPE, the trainee must be trained.

- When PPE is necessary:

  - What type PPE is necessary

  - How to properly done doff, adjust and wear PPE

  - The limitation of the PPE &

  - The proper care, maintenance, useful life and disposal of the PPE

- Way to learn and understand safety

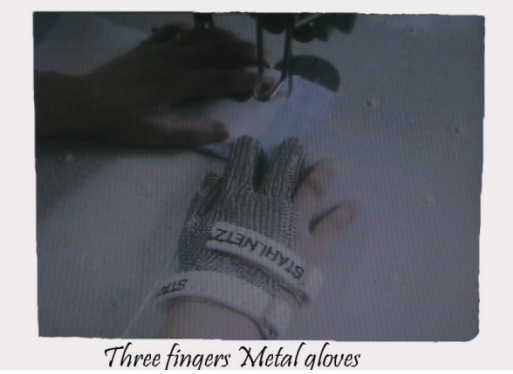
  1) *Accidental experience*: - experiences which were caused by accidents.

  2) *Safety education*: - a method which makes us aware of dangerous situations to avoid accident or injury.

1.2 *Personal safety protective equipment*

Personal safety protections include:

- Eye and face protection
- Nose and mouth,
- Wearing apparel,
- Wearing 3 or 5 finger metal gloves for cutting operator (mostly used when the operator works with straight knife and band knife machines).



Three fingers Metal gloves

1.3 *Safe materials handling*

- Keep the materials in well manner,

- Use the material as enough as required.

1.4 *Equipment/machine safety*

- Every morning the trainees wipe and clean the equipments.
- After work, they have to cover the equipments

1.5 *Personal responsibilities for safety*

- Observe all, before, safety precautions related to your work.
- Report unsafe conditions or any equipment or materials you think might be unsafe.
- Warn others about the hazards.
- Report any injury or ill
- Wear protective clothing
- Be safety consuls
- Always inspect equipment and associated attachments for damage before using.

- Safety precautions *concerning people*
  - When working, wear appropriate protective clothing properly.
  - Never remove safety device or safety covers from equipment
  - Be careful of high clothes. Never touch switches with wet hands.
  - When an accident occurs, it should be reported immediately to proper authority.
- Safety precautions *concerning facilities*
  - Facilities must be adequately illuminated, clean, neat and dry.
  - Keep the area organized so that there are no obstacles lying around the floor.
  - The equipment and floor should be free from dust and any chipping.
  - Work benches must be strong

1.6 *Ergonomic arrangement of work place*

Ergonomic is a science which is used for arrange the work place.

Ergonomics on the hand:

- Combine all of the issues to improve workers efficiency and well being
- Maintain industrial production through the design of improved work places.

OHS & Ergonomics *applications*:

- to satisfy the needs of changing local people's attitudes.
- to change local work methods
- to change the traditional ways of doing things.

Therefore, OHS & Ergonomic applications are a major source of work place improvement.

1.7 Taking of rest /breaks

Adequate rest pauses must be provided for the workers at proper intervals. This helps to reduce the harmful effect of strain and fatigue and improve their efficiency

1.8 Following marked walkways

Every worker should have a practice of passing within the marked walkways. The marked walkways are prepared in such a way that one worker pass freely through it.

- The walkway can be marked by yellow paints, arrows are in red color.
- Nothing (tools, equipment or machines) should be put inside the marked walkway.

1.9 Safe storage of equipment

Working on the principle of "a place for everything, and everything in its place", you can adapt this idea to suit the equipment you already have or can easily obtain.

1.10 Housekeeping

Housekeeping plays a very important role in industrial safety management. Good housekeeping is one of the most important factors in preventing injury and accidents. Housekeeping should consider materials handling, illumination, temporary storage, passages way etc.

- Everything must be orderly placed in its suitable position.
- The buildings, work and rest areas, machinery, equipment and tools should be kept free from dirt, dust, stain etc.
- The floors should be regularly cleaned.
- A regular and systematic program of plant housekeeping can take care of many major causes of accidents.
- Have a waste basket handy, so that the floor is kept tidy and the working surface uncluttered with unwanted bits and pieces.

1.11 Reporting accidents and incidents

The objective of investigation is to determine the basic cause of the accident in order to take remedial action to prevent reoccurrence and thus reinforce the safety program activities. In the investigation of the accidents care is taken that:

a) The investigation should be honest and should have the aim of exploring facts and not merely to put the blame or fix up responsibility on somebody.
b) In order to obtain true picture, the investigation should be carried out without any delay, as the true basic cause may not be detected due to possibility of change in situation.
c) The investigation should be carried out by the supervisor who is well conversant with the situation. The committee investigation may be better as all the sides can be thoroughly considered by the members of the committee, which may not be possible by single mind.

The supervisor who is assigned the work of investigation of accident will prepare the report of the investigations and the recommendations in an appropriate form and submit to the concerned higher authority.

The investigation report is further analyzed in details by proper data compilation to know the areas of a attack for accident prevention. The accident report form may vary with specific cases, still the report form should include:

I. The facts of identification,
II. A narrative description of the accident,
III. The major cause of accident, namely,
    - The unguarded machine or other mechanical and physical hazard,
    - The unsafe act of person and a probable reason for its commission.
IV. Facts of prevention, namely,

- What was done and what should be done to prevent the reoccurrence of other similar accidents

A typical simple form is shown in Annex 1.

1.12 Environmental protection practices

All the environmental causes have something to do with machinery and equipment, with the things one can see and feel.

- A good lay out and working conditions play a major role in preventing many accidents.

- Improper physical and mechanical environment such as space, light, heat, arrangement, ventilation, materials, tools, equipment, procedures, company policy, routing, etc. make it awkward, difficult, inconvenient or impossible to follow safety practice rules.

a) The layout should be such that:

  - Every worker has enough space to move and operate;

  - Passageways between working places, roads, tracks etc must never be obstructed.

b) The working area should prevent the inrush of cold air, hot air and droughts to the working place.

c) For adequate lighting, ventilation etc. the heights of working room should be about 3 meters.

d) Floors must be nonskid type satisfactorily plane and should have capacity to absorb sounds, vibration etc.

Self-Check -2	Written Test

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

1 writes ***Personalsafetyprotectiveequipment? (5ponit)***

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Cleaning, checking and servicing cutting equipment

1.3 Cleaning, checking and servicing cutting equipment

3.1 Cutting Equipment's

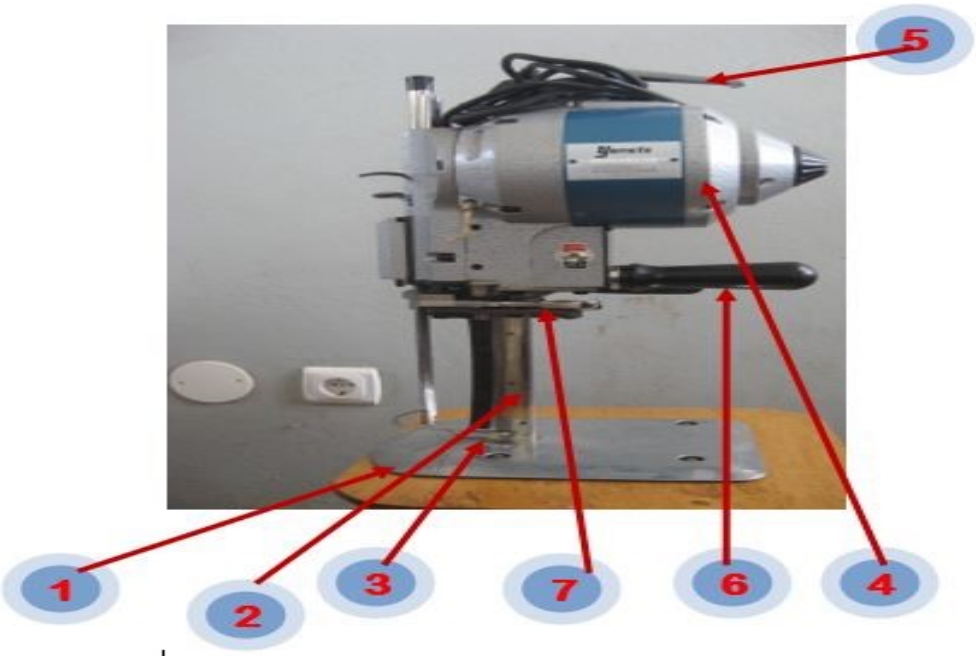
Method of cutting

The method of cutting can be divided in to:-

1. **Hand shear/ Dressmaker's shear**

- Use this, only for cutting out fabric! Particularly when you want to cut garment parts individually from the marked fabric.
- Method is flexible, Time consuming, and High labor cost per garment.

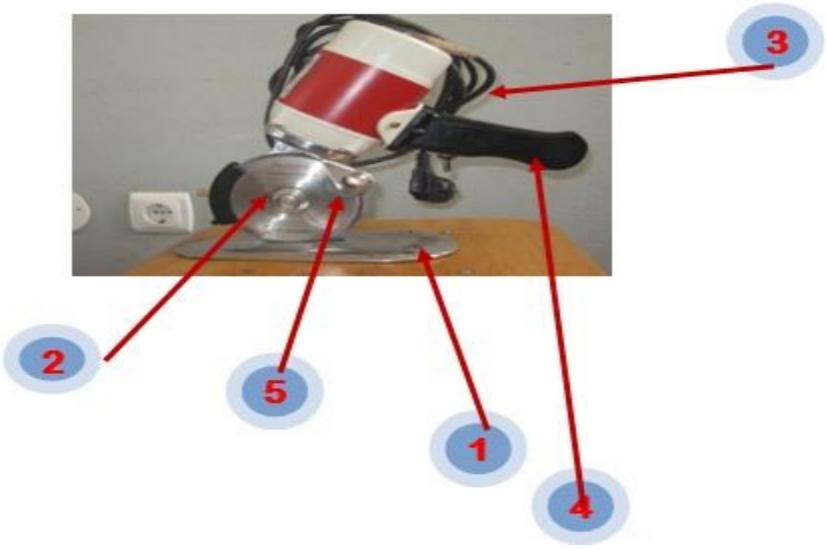
2. **Straight knife cutting machine**
   - Most popular, versatile and economic
   - It is used for cutting a number of layers of fabric
   - It's parts are:
     1) A base plate: usually on rollers for ease of movement,
     2) Un upright or standard carrying straight,
     3) Vertical blade: with varying edge characteristics,
     4) An electric motor,
     5) Machine holder,
     6) A handle for the cutter to direct the blade; &
     7) A sharpening device



- Normally vary 10 cm to 33 cm and the stroke vary from 2.5c.m to 4.5 cm
- The greater the blade movement, the faster the blade cuts the fabric and more rapidly and easily the operator can push the machine.

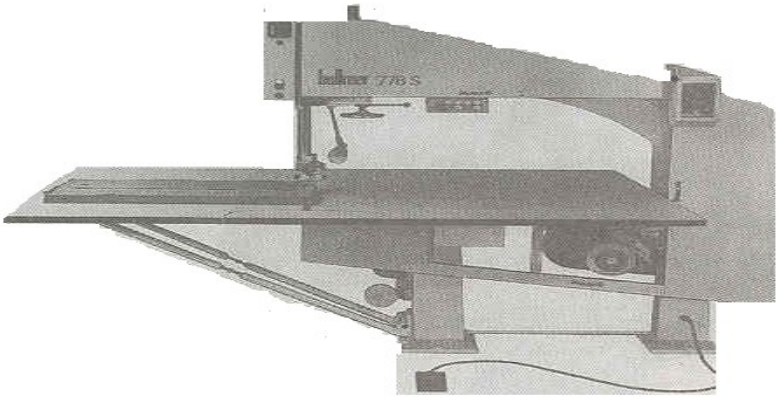
3. Round knife cutting machine

- It is very simple with a round blade of about 10 cm diameter with a direct motor connection and a handle to manipulate the tool.
- Is a cheap and moderate in efficiency
- Used normally by very small entrepreneurs
- It's parts are:
    1) A base plate: usually on rollers for ease of movement,
    2) Round blade of 10 cm diameter
    3) An electric motor,
    4) A handle for the cutter to direct the blade; &
    5) A sharpening/ grinding stone



4. Band knife cutting machine

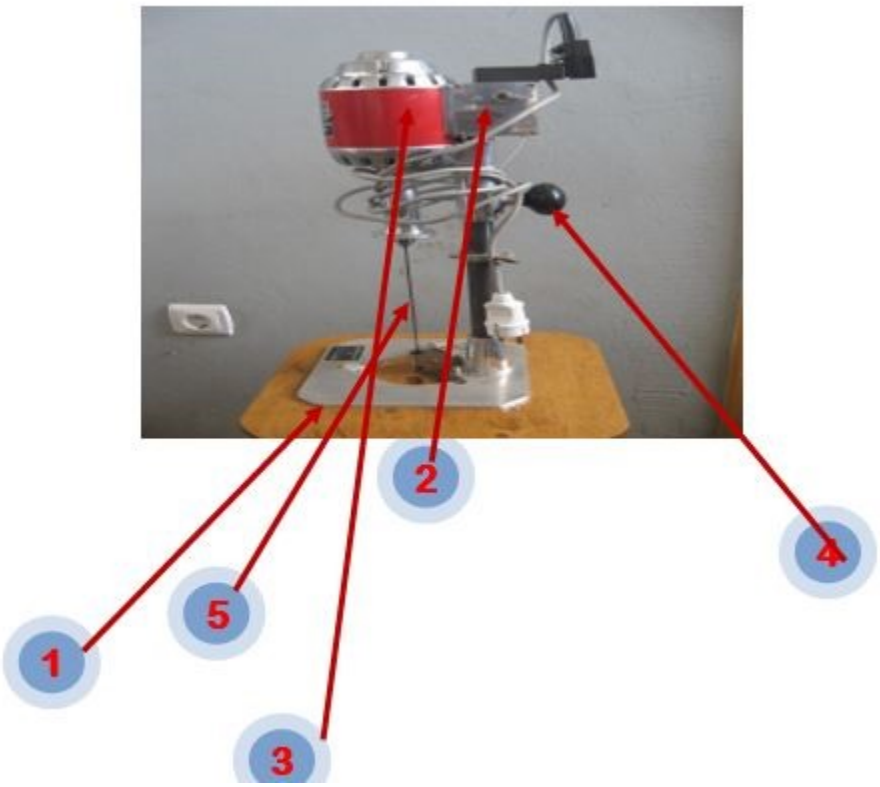
- This machine comprises a long saw teeth blade passing around the head of the machine and table of the machine.
- It has a table for keeping the fabric lays.
- The table has a base with air floatation for ease movement of the fabric lays.
- It is more efficient than the straight knife cutting machine if the bulk of the lay is larger and also cutting parts are small and need accuracy of cutting.
- In using this machine, the material moves and the machine is stationary.



- One edge of the blade is sharpened,
- The blade is usually narrower than a straight knife which assists in the cutting of tight curves.
- Used more in men's wear than in women's wear,
- Used to cut small garment parts such as flaps, pockets, collar, band etc with greater precision.

5. Fabric drill

- Used to make a hole through all the plies of the fabric lays.
- We use drill where reference marks are needed away from edges of a garment, such as:
    1) For position of pocket,
    2) End point of dart,
    3) Button hole and button setting position
- It has the following parts:
    1) A base plate that has NO roller under it.
    2) Water level on the front side of base plate
    3) An electric motor,
    4) A handle for the machine to direct the spindle; &
    5) A spindle/ pin



6. Notcher (pattern paper notcher and fabric notcher)

6.1 pattern paper notcher

- Many of garment parts need notches (a small V/ U cut) as guiding marks
- It is a small cutting tool and used to make a notch ***onpattern paper***.
- Generally, used to make a notch, on the pattern, that shows:
    1) the seam and hem allowance
    2) legs of darts and tucks
    3) fitting of long seams or alignment of garment parts like sleeve & bodice
    4) centre mark
    5) front & back side of sleeve (i.e. 1- notch shows front side & 2- notches show back side)

6) starting point of collar
7) Vent width
8) End point of zipper during placement etc.

Fig. Pattern paper/ card board notcher

6.2 Fabric notcher

- Provides greater accuracy
- Give consistent depth of notch at a right angle to the edge.
- Both Straight notches and V notches are available.
- Hot Notchers, prevents fraying of the fibers. This cannot be used with thermoplastic fibers.

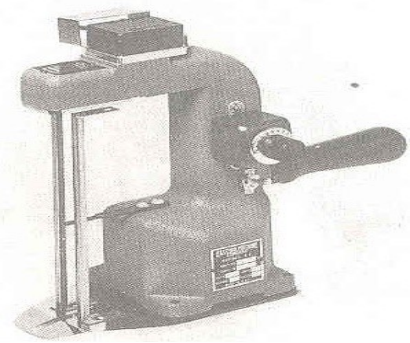


Fig. Fabric Notcher

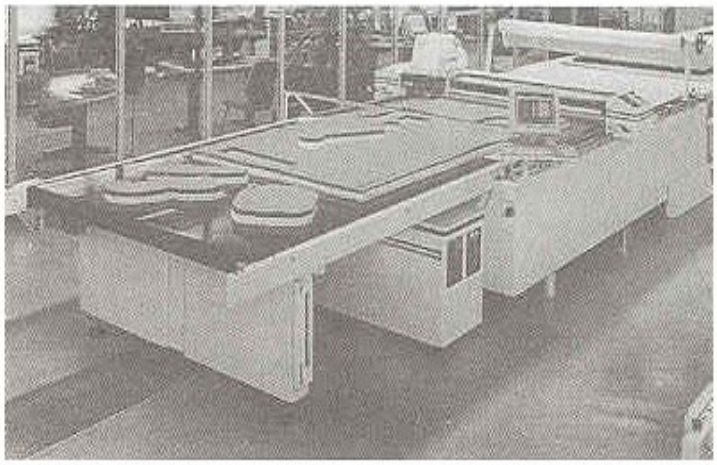
1. Die cutting

- The die is a knife in the shape of a pattern periphery, including notches.
- It operates use of the metallic blade die in the form of patterns, welded on to a board.
- This die is mounted on the computerized cutting head of the machine which punches on the fabric lays that are fed to it and delivers the cut parts.

- Most of the operations are computer controlled and does NOT need interference.
- Small parts of larger garments such as pockets or the parts of smaller garments such as bras can also cut.
- High accuracy in cutting
- only appropriate for large quantities of the same pattern
- Disadvantage of die cutting is its greater use of fabric.

6. Computer controlled cutting machine

- Use the computer pattern making software&the system connected to cutting device.
- This method provides the most accurate possible cutting, at high speed & to keep the large systems fully occupied.
- They are frequently used in a central cutting facility that supply a number of separate sewing factories.



7. Laser cutting machine

- It uses the principle of laser that produces a beam of light which can be focused in to a very small spot (0.25 mm) producing a very energy density.

8. Plasma cutting machine

- It was originally developed to satisfy a demand for high quality cutting on stainless steel and aluminum but it can cut also be used to cut textile materials.

9. Water jet cutting machine

- The principle here is a very high velocity small diameter stream of water is created by applying high pressure water to a nozzle.

10. Ultrasound cutting machine

- The principle here is the use of an ultrasonically driven knife blade.
- It is a mist recently developed.

Self-check –3	Write

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

1)From the following parameter which one to help choose and use the most appropriate cutting tools

A. Uniform width & angle of the cutting tools
B. Tempered or stainless-steel blades
C. Adjustable screw securing the blades
D. All

2)Which of tool used to produce a notched cutting line (zigzag) gives a neat appearance to the inside of garments.

A. Scissors
B. Straight knife
C. Round knife
D. Notchers

3)Which of a straight, vertical blade with varying edge an electric motor, & a sharpening device.

A. Scissors
B. Straight knife
C. Round knife
D. Notchers

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

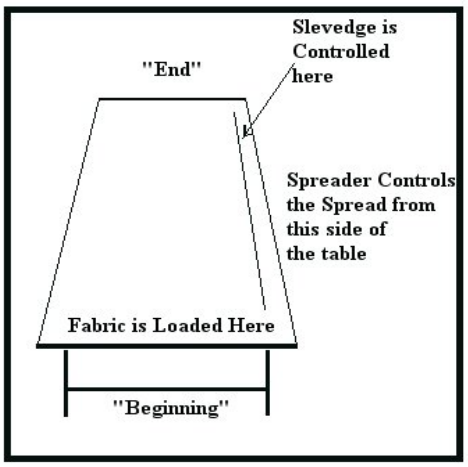
Information Sheet- 4	Preparing cutting table

1.4 Preparation of cutting table

Cutting table is prepared to suit correct lay length. If your table is too short relative to the marked length, the fabric will hang at one end so that it affects your cutting.

Your cutting table should have the following specifications:

- ✓ Min. width =180cm
- ✓ Length =300cm
- ✓ Height= 75-95 cm
- ✓ Metal legs and Smooth surface



Self-Check -4	Written Test

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

1 hot to prepare cutting table?(5point)

1

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet- 5	Setting lay-up

1.5 Setting lay-up

Lay is a stack of fabric plies that have been prepared for cutting. **Lay planning** is the basis of managing cutting room labor and table space

Lay-up instruction

The objective of spreading is to place the number of plies of fabric that the production planning process has dictated, to the length of the marker plan, in the colours required, correctly aligned as to length and width and without tension. Most of the industry is able to cut garments in bulk and by doing so achieves the saving in fabric that are available through the use of multi garment marker plans and the saving in cutting time per garment that result from cutting many plies at the same time. This procedure saves time, cost of cutting and the cost of materials.

LAY-UP OF FABRIC

Laying out of fabric means to place the number of layers of fabric that the production planning process has dictated, to the length of the marker plan, in the colors required, correctly aligned as to length and width and; without tension.

The following points should be exercised before laying out the fabric:

- ✓ Lay-up instructions should be interpreted.
- ✓ Fabric is collected and checked.
- ✓ Fabric width and quality are checked with lay-up instructions.
- ✓ Fabric is laid up and fabric tension adjusted to match fabric performance.
- ✓ Fabric is checked for faults and required action taken to cut out faults or other appropriate techniques.

Self-Check -5	Written Test

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

1 what is Lay-up instruction? (5point)

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-6	Preparing marking equipment's

1.6 Preparing marking equipment's

II. marking equipments

Lay-up and marking equipment is set up and prepared for use. The following are lay-up and marking equipments that should be set-up and prepare before lay-up and marking is commenced.

The following are tools and equipments used during lay-up and marking activities:

- ✓ computers and required software,
- ✓ patterns,
- ✓ fabric,
- ✓ marker card or paper,
- ✓ Fabric weight (For mass production),

Fabric weight

- ✓ Fabric clip (For mass production).

Fabric Clip

- ✓ Tailor's chalk

Self-Check -6	Written Test

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

1 write equipment **usingduring lay-up and marking activities? (5point)**

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet- 1	Straight Knife Cutting Machine

Working principle of straight knife cutter machine

Step1at first fabric spread on the cutting table

Step2 Then marker in placed on the fabric

Step 3 After that cutting machine is placed at any corner point of fabric

Step 4 Then, switch on the machine and continue cutting as per marker dimension

Step 5 Finely the cutting is continue unity finish the marker

-

Operation Sheet-2	Fabric drill machine

Working principle Fabric drill machine

Step 1- the Eastman cloth drill marker

Step2 can drill holes thought numerous layer of fabric indicating button holes, darts pocket

Step3 other attachment point this is perfects for use on loosely knit bulky or quitted

step4spreads where mark in needed but where a burn mark would be un necessary

Operation Sheet-2	Preparation of cutting table

Working principle Preparation of cutting table

Step 1 Cutting table is prepared to suit correct lay length.

Step 2If your table is too short relative to the marked length,

Step 3the fabric will hang at one end so that it affects your cutting.

Step4 your cutting table should have the following specifications:

- ✓ Min. width =180cm
- ✓ Length =300cm
- ✓ Height= 75-95 cm
- ✓ Metal legs and Smooth surface

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1. Working principle of straight knife cutter machine

Task 2. Working principle Fabric drill machine

Task 3. **Preparation of cutting table**

List of Reference Materials

Cutting%20Department%20in%20Garment%20Industry%20-%20Clothing%20Industry.pdf

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-26

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08 LO2-LG-26

TTLM Code: IND BAPM08 TTLM 0919v1

LO2 Lay-up fabric

Instruction Sheet 1	Learning Guide # 26

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

- Interpreting lay-up instructions
- Collecting and checking fabric
- Checking fabric width and quality
- Laying up fabric
- Checking fabric faults

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Lay-up instructions are interpreted.
- Fabric is collected and checked.
- Fabric width and quality are checked with lay-up instructions.
- Fabric is laid up and fabric tension adjusted to match fabric performance.
- Fabric is checked for faults and required action taken to cut out faults or other appropriate techniques.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet .
4. Accomplish the “Self-check
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	2.1 Interpreting lay-up instruction

2.1 Interpreting lay-up instruction

Lay-up fabric

Lay is a stack of fabric plies that have been prepared for cutting.**Lay planning**is the basis of managing cutting room labor and table space

Lay-up instruction

The objective of spreading is to place the number of plies of fabric that the production planning process has dictated, to the length of the marker plan, in the colours required, correctly aligned as to length and width and without tension. Most of the industry is able to cut garments in bulk and by doing so achieves the saving in fabric that are available through the use of multi garment marker plans and the saving in cutting time per garment that result from cutting many plies at the same time. This procedure saves time, cost of cutting and the cost of materials.

PATTERN LAYOUT

PATTERN LAY OUT

Manner in which the patterns are laid out on the fabric for cutting process is called as "Pattern Layout"

DIFFERENT TYPES OF LAYS

The following are the different types of lays:

1. Single pick lay
2. Double pick lay
3. Deficient lay
4. Multiple lay
5. Stepped lay

1. SINGLE PICK LAY :

When each and every component are picked up individually from the cut blocks. Single picks are carried out when the fabrics have right and wrong side and when left and right side components are different.

2. DOUBLEPICK LAY:

This system is normally followed in mass manufacturing. In this system, the fabric is laid in folded condition and the cut components are picked up in double. In case of shirt, of checked design, we are using fold for laying and form the cut pieces, two pieces each of front, back and yoke are picked up in pairs. Since the fabric is laid in folded condition, there will be no disturbance in the left or right side, when pick up.

3. DEFICIENT LAY

In order to make the optimum use of end pieces of the fabric in mass cutting lays are prepared with a few components deficient. For instance, in case of shirt the main lay is prepared with, leaving few components such as cuff, collar, etc. Such a lay set with deficient components is called as deficient lays. A separate lay is made for the deficient parts using end pieces or lay balances of the fabric. Normally the inside parts of the garment are cut using deficient lay.

4. MULTIPLE LAY

Lays are called as multiple lays when the same are set for more than one unit. In order to effect economy, lays of two garments or three garments are set to effect optimum utilization. When we increase the unit of garments per lay length the fabric consumption per garments is gradually reduced.

5. STEPPED LAY

According to the size quantities we can lay different length lays one by one for quick cutting. These types of lays are called as “stepped lay” because they form in a stepped manner. But when using, stepped lays, we have to consider the size quantities, because we cut all lays at the same time.

RULES TO CONSIDER IN PATTERN LAYOUT:

1. Find the suitable cutting diagram for ourstyle according to the design of the garments, fabricwidth, types of the fabric and size of thepattern.
2. Whenusing personal patterns, we have to make our own layout. We have to choose the correct method which should be suitable for our style, size of the pattern and fabric width.

3. The fabric which will be used for cutting should be pressed neatly and free from wrinkles.

4. We have to determine the right and wrong side of the fabric. If there is no difference betweenthe two side of the fabric, layout and marking can also be done on the wrong side of thefabric. For the fabric like one side and one way design, the pattern layout and marking shouldbe done on right side of the material.

1. We have to make a trial layout first before starting the pattern layout. All the pattern Should be placed on the material tentatively using weights to hold them in place, to make sure that we have enough material.
2. Then the fabric should be placed on a large table or a commercial cutting board. The cloth should be spread in a way that the selvedges and ends parallel with edges of the cutting table.

3. While placing the patterns on the fabric, the grain line marked on the pattern should be kept parallel to the selvedge of the fabric by measuring from each end of the grain line to theselvedge.

Types of fold

1. **PARTIAL LENGTH WISE FOLD:**
   This type of fold is made on lengthwise direction with one selvedge placed from a needed measured distance from fold, and balance of fabric is single layer. Width of the fold is determined by the width of the half pattern including seam allowance. This type of fold is used when narrow pieces have to be cut on fold.
2. **CROSSWISE FOLD:**
   This type is made on crosswise direction with selvedges matching along two edges. Thistype is generally used when the crosswise fold would be wasteful of fabric, or toaccommodate any types of wide pattern pieces. But this type of fold should not be used napped or other one way fabric.

3. PARTIAL CROSE WISE FOLD :

This type of fold is made on cross wise direction with one end placed from a measured direction from fold. This type of fold layout is used when only a part of the material is required to cut pattern pieces that are too wide for lengthwise fold lay out.

4. DOUBLE LEGTHWISE FOLD :

This type of fold is made by two fold, both length wise, with selvedge usually meeting at center. It used when many pattern pieces that are not too wide must be cut on fold. And also for garments with no opening for front and back sections, this type can be used provided the cloth is wide enough to accommodate the patterns when folded this way.

5. COMBINED FOLD :

For this type the fabric can be folded in two different ways for the layout. Normally one lengthwise fold and cross with fold are combined though, any combination is possible. For some layouts, double lengthwise folds or double crosswise folds may be combined.

6. OPEN LAYOUT:

Here the fabric is not folded and the pattern is laid on the open width of the fabric. This type of layout is used for designs which require right and left halves have to be cut separately. And in mass production, open layout method is followed.

SPREADING:

- is the processes of superimposing lengths of fabric on a spreading table cutting table or specially designed surface in preparation for the cutting process
- A **spread** or **lay-up** is the total amount of fabric prepared for a single marker.
- The process of rolling out layer after layer of cloth, smoothly without wrinkles, in such a manner that the selvedge on one side of the cloth is straight, and parallel to that edge of the cutting table.

FACTORS DECIDING THE SPREADING QUALITY

1. Ply alignment: length and width
2. Ply tension: stretch, slack, tight edges
3. Grain alignment: bowing
4. Splicing: waste and precision
5. Damage placement: economy of placement
6. Surface direction
7. Static electricity

Process of spreading must include the following considerations:

1) The requirement of spreading process
2) Method of spreading

The requirement of the spreading process

1) Shade sorting of cloth:

Deliveries of a number of rolls of cloth of the same colour are received. These should be sorted into batches. This is normally done by a trained colourist but can more easily be done by a computer. When rolls of cloth of the same colour but different shades have to be spread adjacent to each other in the lay, they are separated by a layer of interleaving paper or by a bright colour paper which can be seen easily after cutting process.

2) Correct ply direction and adequate lay stability:

Methods of spreading which lay alternate plies in different directions can only be used for either way fabrics. In this case the pattern pieces can face in either direction in the marker and the following opportunities are available:

(a) For symmetrical pattern pieces, and the fabric which is stable spread face to face, the fabric can be spread along face up and immediately back again face down.

(b) For asymmetrical as well as symmetrical pattern pieces, and fabric which is stable spread all the same way up, the fabric can be spread along and immediately back again.

3) Alignment of plies:

Every ply should comprise of at least the length and width of the marker plan but should have the minimum possible extra outside those measurements. Inaccuracy in this alignment could mean that plies do not cover the whole area of the marker plan and parts of some pattern pieces would be missing when cut. In addition the ends of the plies must be cut of squarely, allowing the smallest possible loss at both ends and having regard to the weft grain.

4) Correct ply tension:

If the plies are spread with too slack a tension they will lie in ridges with irregular fullness. If the plies are spread in a stretched state, they will maintain their tension while held in a lay, but will contract after cutting thus shrinking the garment parts to a smaller size than the pattern pieces after sewing.

5) Elimination of fabric faults:

Fabric faults (flaws, holes, stains etc.) may be identified by the fabric supplies, and additional faults may be detected during examination of the fabric by garment manufacturer prior to spreading. The spreading operator is responsible for ensuring that faults do not occur in cut garment parts.

6) Elimination of static electricity:

In spreading plies of fabric containing manmade fibres, friction may increase the charge of static electricity in the fabric. The spreading operator will experience difficulty in laying a ply neatly on top of the others owing to either the attraction or repulsion of those plies according to how they are charged. He cannot align the plies accurately nor create a compact spread. Humidity in the atmosphere of the cutting room may be increased thus allowing the static electricity to discharge continuously through the atmosphere. In some cases it may be necessary to earth the lay.

7) Avoidance of fusion of plies during cutting:

Cut edges the thermoplastic fabrics may fuse together during cutting if the cutting knife becomes hot as a result of friction with the fabric. In this case anti-fusion paper may be used in the same way as interleaving paper. It contains a lubricant which lubricates the knife blade as it passes through the layers, thus reducing the increase in temperature of the blade arising from friction.

SPREADING STRIPS AND PLAIDS

Stripes and Plaids require special marking, spreading and cutting and bundling. In fashion, vertical stripes are often expected to match at several points depending on the price point.

Across the center front, from the pocket to the body, at the shoulder, at the yoke, and, sometimes from the collar to the body.

Horizontal stripes will match at the side seam, across the center front, from the sleeve to the body, across a pocket, and across a center back seam.

SPREADING EQUIPMENTS AND TOOLS:

- Spreading tables
- Shears
- Pins and weight bars.

Method of Spreading

The method of spreading which the industry uses can be divided into:-

(i) Spreading by hand
(ii) Spreading using a travelling machine.

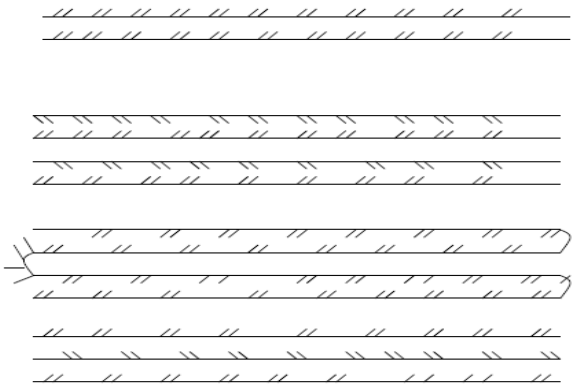
Spreading by hand

Under this process fabric is drawn from cloth roll and carried along the table where the end is secured by weights or a clamp. The operators work back from the end, aligning the edges and ensuring that there is no tension and that there were no wrinkles. The ply is normally cut with hand shears or with a powered circular knife mounted on a frame.Checks, crosswise stripes and other regular repeating patterns is spreaded by hand.

Spreading using a Travelling Machine

Spreading machines carry the pieces of fabric from end to end of the spread. Their basic elements consist of a frame or carriage, wheels travelling in guide rails at the edge of the table, a fabric support, and the guide collars to aid the correct unrolling of the fabric. In the simpler versions, the operator clamps the tree end of fabric in line with the end of the spread, pushes the spreader to the other end, cuts of the ply in line with that end, clamps the beginning the next ply, pushes the spreader to the other end and so on. More advanced spreading machines may include a motor to drive the carriage and other ultra modern facilities to minimize the operator function.

SPREADING MODES



F/O/W
N/O/W

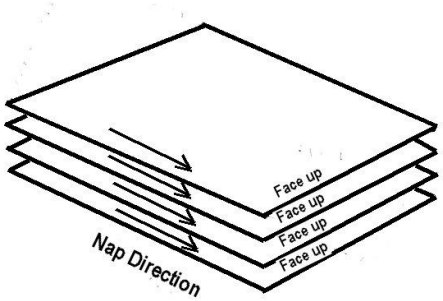
F/F
N/O/W

F/F
N/U/D

F/O/W
N/U/D

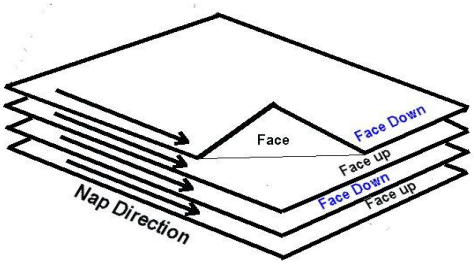
SPREADING MODES

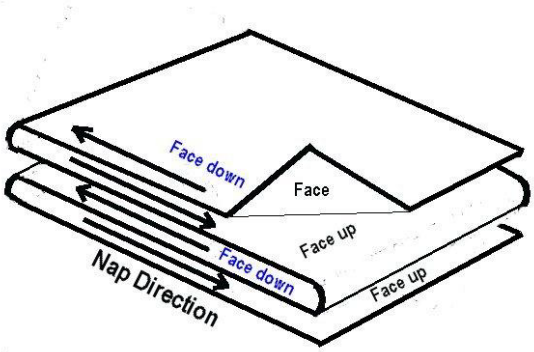
Spreading Mode; Open Fabric, Face One Way, Nap One Way (F/O/W, N/O/W)



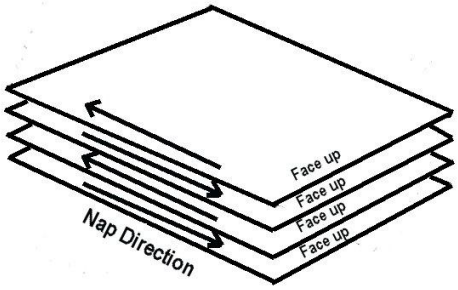
Spreading starts at one end of the table on each ply

FF, NOW





FF, NEW



FOW, NEW

Classification of spreading machines:

- Stationary spreader: portable and fixed
- Traveling spreade

semiautomatic spreading machine

Lectra Automatic spreader

Self-Check -2	Written Test

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

1. A type of fold made on crosswise direction with selvedges matching along two edge
   A. Crosswise fold
   B. Double lengthwise fold
   C. Partial length wise
   D. Combined fold

Short Answer Questions

Short answer

1. What are the three types of woven design fabrics ?
2. Write at list three requirement of the spreading process
3. Write at list four factors deciding the spreading quality
4. What are equipments and tools that used for spreading fabric

Note: **Satisfactory rating - 10 points** **Unsatisfactory - below 10 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Information Sheet-2	2.2 Collecting and checking fabric

2.2 Collecting and checking fabric

Fabrics Relaxation Procedure:

- Spandex fabrics will be relaxed minimum 24 hour making unroll in cutting section.
- Relaxation date and time must be recorded. After spreading, will relax 2 hours before cut.

Before cutting fabric

- Receive marker and quality check by cutting QC.
- Fabric Spreading will be done based on Shade chart/Shade grouping provided by fabrics warehouse.
- Spreading report will be made after spreading with related all necessary data.
- Spreading Quality check point: -Table marking -Ends -Leaning –Tension -Narrow Goods -Remnants -Counts -Ply High -Marker Placing -Fabric Flaws
- Highest lay for woven fabrics is length 14 meter and height 3 inch.
- Lay chart should be maintaining roll wise.
- Quality inspector will control quality inspection during fabrics lay.
- Cutting spreader man will spread marker after finishing lay.
- For stripe and check fabrics, alignment to be correct by using hook, thread.
- Before cutting cutter man will attach clamp, Gum tap on the layer.
- Shade chart will be hanged during lay.
- Cutting Quality check points: -Miss cut –Rugged Cutting –Notches-Matching Plies and pattern check.

After Cutting fabric

- Quality will check every bundle using hard pattern three different position of the bundle.
- Numbering and bundling separation done by following spreading report and identify each bundle by style, Cutting number, Bundle number, size, Serial number, Shade number and Parts name.
- 100% cut panel will be inspected

- If any defective panel found, will be replaced from lay chart wise remnants by following shade and pattern grain line.
- Light color bundle will bind with light color string; deep color bundle will bind with deep color string
- Light color Fabrics will be covered by poly in rack or pallet.
- Then all cut panels will be ready to delivery in sewing.

2.2.1 Fabric Types

DIFFERENT TYPES OF WOVEN FABRICS

The garments production process is affected by the fabric design very much. This is because that the design of the fabric may be uni-directional or bi-directional. During laying the fabric on the cutting table all the subsequent layers should be laid on the same manner according to the direction of design. Also the type of pattern layout should be selected according to the design.
The following are the different types of fabric used in the mass production.

PLIAN FABRIC:

This type of fabrics contains solid or only one color i.e., white or other color, and there is not any design in this fabric.

WOVEN DESIGN FABRIC:

Generally woven design fabrics may be classified in to three types.

a) Stripe
b) Checks and
c) Other design

If the fabric contains horizontal and vertical lines design , it may be called as checked or plaid design fabric. The stripes fabrics are classified in to two types.

a) Even stripes b) Uneven stripes

In the Even stripes fabrics, the lines of the design are completely balanced in one or two repeats, and in the uneven stripes, there is no balance in the design. Plaid fabrics are also divided in to two types. They are:

a) Even checks or plaids b) Uneven checks or plaids

PRINTED DESIGN FABRIC:

In printed fabrics, the printed design may be classified in to two types.

a) Stripes
b) Other design. And also according to printing types, the two types are:

1) Single side printed
2) Double side printed

ONE SIDE FABRIC :

The fabric type that contains right side and wrong side are called as one side fabric. But, in some fabric types there is no difference between the both sides, and the two sides are having similar appearance.

ONE WAY FABRIC:

This type of fabric has a definite up and down direction. The design is not balanced, and the design repeat is in one way direction, e.g. uneven plaid and one way print. In a flower printed design, the flower heads all are pointing the same direction.

When using this fabric, first we have to determine the direction to take in the garment. To place all the patterns in one direction length wise and we have to work fabric unfolded if the pattern design has a definite right and left.

BRUSHED FABRICS:

In some fabrics, short fibers are brushed and raised to the surface of the fabric, and the fibers are brushed in one direction. This type of fabric is called "Raised Fabrics or NappedFabrics". According to rushing effect, the brushed fabrics can be classified in to two types.

1. Single side brushed and
2. Double side brushed.

In Single side brushed fabrics, only one side of the fabric is brushed, and in double side Brushed, both side of the fabric are brushed.

PILE FABRICS:

These types of fabrics are woven with a third set of threads that form a looped or tufted surface of the fabric. Common pile fabrics are velvets, velveteen, corduroy, fur fabric, and terry clothes. For richer color and great light reflection, cut velvets, velveteen and corduroy with the pile should be cut with the pile surface running down.

Self-Check -2	Written Test

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

1. A type of fabrics contains solid or only one color i.e., white or other color, and there is not any design.

A. Woven design fabric

B. Plain fabric

C. One side fabric

D. One way fabric

2. The fabric type that contains right side and wrong side are called

A. Woven design fabric

B. Plain fabric

C. One side fabric

D. One way fabric

3. In some fabrics, short fibers are brushed and raised to the surface of the fabric, and the fibers are brushed in one direction. This type of fabric is called

A. Raised Fabrics or Napped Fabrics

B. Woven design fabric

C. One side fabric

D. One-way fabric

4. _____ are carried out when the fabrics have right and wrong side and when left and right side components are different.

A. Double pick lay:

B. Single pick lay

C. Deficient lay

D. Multiple lay

Give Short Answer

1. What are the three types of woven design fabrics

Note: **Satisfactory rating - 14 points Unsatisfactory - below 14 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

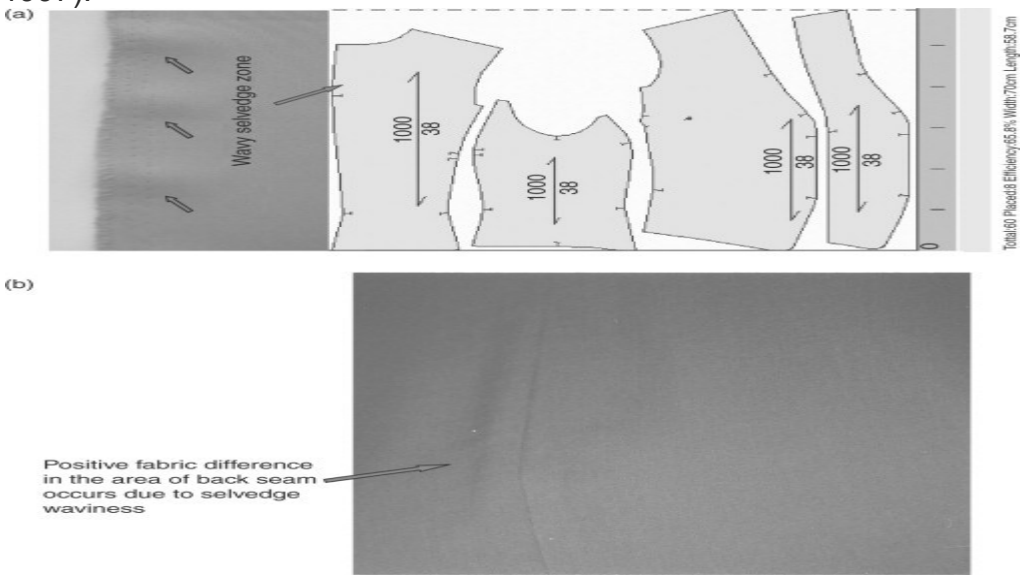
Short Answer Questions

Information Sheet-3	Checking fabric width and quality

2.3 Checking fabric width and quality

Defining fabric width

Fabric width (i.e. the usable width for which the cutting-marker is planned) should be determined in detail prior to planning the cutting-marker. The maximum width of the cutting-marker is constrained by the usable width of the fabric. The usable width is the width of the narrowest place minus the width of any unusable selvedge (i.e. considered to be the fabric's width with selvedge excluded – the net fabric width). Usable width can be equal to the net width of the smaller, for example, where a technological process causes fabric deformations parallel to the selvedge (i.e. resulting from tensile and thermal stresses in the process of heat-setting), producing unsmooth edges or a slightly wavy selvedge. Where the waves are dissipated towards the centre of the fabric width, usable width is smaller than net width, generally by the width of the deformation, which could seriously harm the clothing's appearance if included in the cutting-marker (Geršak, 1997). When, for example, a jacket's pattern-pieces are cut near the fabric's selvedge, a wavy selvedge causes a significant difference in the fabric, which is reflected as visible transversal stripes on the back part of the jacket – in the seam of the finished article of clothing (see Fig. 5.16, Geršak, 1997).



- ✓ **Irregularities in fabric width**

One of the problems which seriously affects the cutting process is irregular width within the same fabric roll or in different rolls of a particular fabric or colour. The admissible irregularity of width is always shown on the marking at the point of sale. Manufacturers usually allow irregularities of ± 2–5 cm width. However, it is not unusual to find that the fabric width in one or more rolls is narrower than the acceptable irregularity. In this kind of situation, a fabric buyer has the problem of not being able to produce the planned number of garments. The cutting process is also impeded if the markers prepared in advance are wider than the narrowest part of the fabric. The difference in width may be very slight but even a difference as little as a couple of centimeters cannot be ignored.

It may be possible to move the pattern pieces in the marker closer and this is done by direct manual correction of the marker on the spreading table. Additional time has to be spent to perform these corrections. If the pattern pieces in the marker cannot be moved closer, the whole marker must be re-done. The time taken by this process will depend on the location of a marker-making office and the manner in which the markers may be delivered (e.g. by mail, courier or e-mail). Correction of the problem could therefore take between a few hours and several days.

Mistakes of this kind which halt the production process are unacceptable. Markers should therefore only be made after all the delivered fabric rolls have been inspected. However, this process takes longer as additional time is spent in measuring the width of each roll in addition to sending these data to a marker-making office and waiting for the markers to be made after the fabric has been delivered. For greater efficiency and a reduction in the production time, the marker making process is often performed before the fabric is delivered to the producer.

- ✓ **Control of fabric quality**

The quality of any given fabric is usually measured by both its defects and its general properties. These include fabric specifications such as fabric width, ends and picks per unit length, weight per unit area, as well as the required functional properties of the fabric. The process of yarn preparation should minimize yarn faults, which could otherwise result in unacceptable fabric appearance or defects. Defects incurred during the weaving process itself must also be kept to a minimum, as the cost of fabric defects can be very high, with potentially substantial reductions in the value of the product. The tolerance limit of non-repairable faults per 100 m of fabric has been considerably reduced (from 15 to 5) in recent years, and is forecast to reach as low as 3 in the future.[4]

Self-Check -3	Written Test

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

1 Hot to Checking fabric width and quality(5ponit)
2 Defining fabric width(5ponit)
3 Defining Irregularities in fabric width(5ponit)

Note: **Satisfactory rating - 14 points Unsatisfactory - below 14 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	Checking fabric faults

2.4 Checking fabric faults

2.5.1 Fabric faults

Following are the additional fabric defects and their related theory.

Broken Ends: This is a void in the warp direction due to yarn breakage.• This defect is caused by bunch of broken ends woven in the fabric.

Broken pick: This defect is due to discontinuity in the filling direction• caused by a break or cut in the filling yarn. It causes sharp discontinuity in the weave pattern over the part of the pick length. Also it is due to the failure of the weaver to detect it and replace it in time. Controlling the weft breaks by improving the quality of yarn, looking into the factors responsible for weft breaks due to pirn and shuttle accessories and training the weaver are the remedies to reduce defects of this kind.

Broken Pattern: It is the discontinuity of weave or design pattern.

- **Double end**: When two or more fiber ends unintentionally get woven as one, a double end type of defect is formed. This defect is characterized by the thick bar running parallel to the warp.

Double end in the fabric are mostly caused due to sticky ends coming from sizing or miss drawing of ends. This can be reduced by training the weaver to correctly draw the ends.

Float (Jala): It is formed due to improper interlacement of the warp and weft yarn over certain area and is caused by an entanglement of adjoining ends. This kind of fault is most objectionable as the cloth has to be cut near this defect. This defect is caused due to warp breakages on loom arising out of incorrect shedding or bad sizing.

Gout: It is the foreign matter usually lint or accidentally waste into the fabric. Hardened fluff as well as foreign matter such as pieces of feather accessories or wood chips, woven into the texture of the fabric is known as gout.

Hole: Hole is formed due to accidental cutting or tear. Rough Mechanical parts of the looms can cause this.

Lashing in: It is the length of the yarn i.e. pulled inadvertently into the shed during weaving and this yarn is found touched in selvedge(widthwise edges) of the fabric. This defect is common in auto-looms. When the weft yarn is caught due to damaged picker or any rough surface in the box, this extra length of the weft gets loosely caught in the selvedge. Alternately improper functioning of shutter eye cutter on auto looms can cause this kind of defect.

Local Distortion: It occurs when there is displacement of warp and /or• weft threads from their normal position which occurs due to variation in tension of both yarns. Missing end: Absence of warp end at its proper place in a fabric is termed• as a

Missing end. This defect appears in a fabric as a fine warp way crack till it is rectified by the weaver. This is most frequently occurring defect in Indian fabrics and constitutes 40 to 50 percent of the total defects in loom shed cloth. Number of missing ends may be more than one. Negligence of the weaver to draw the broken ends in place or improper functioning of the warp stop motion are the causes for this defect

Stain: It is caused by lubricants and rust and oil, which is major problem in• textile mills.

Oily or soiled ends: It is oily or soiled warp threads.•

Oily weft: It is a dirty or oily weft appearing across the width of the fabric.• Reed Mark: It is a pronounced mark caused due to damaged or defective•

Reed. This produces grouping of warp ends in fabrics producing fine cracks. Higher warp tension resorting to late shedding and the use of coarser reed are the causes for this defect.

Bad selvedge: The defect is characterized by the appearance of curls and• folds in the fabric selvedge which become very prominent after wet processing. Slough off: This defect is due to a bunch of weft woven into the fabric.• The removal of slough off during grey mending will form a hole in the

Self-Check -	Written Test

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

1) Write fabric fault. (**10 points**)

Note: **Satisfactory rating - 5points** **Unsatisfactory - below 5 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

List of Reference Materials

[1] Ruth E. Glock and Grace I. Kunz, “Apparel Manufacturing Sewn Product Analysis”, Fourth Edition, Pearson Prentice Hall, 2005.

[2] P. Lakshmanakanth, “Spreading and Cutting of Apparel Products”, 2012.

[3] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[4] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015.

[5] Mausmi A., “8 Fabric Losses Your Factory Faces Today”, February 2015.

[6] Harold Carr nd Barbara Latham, “The Technology of Clothing Manufacture”, Wiley Publications.

[7] Md. Nazmul Haque, “Impact of Different Sort of Marker Efficiency in Fabric Consumption”, International Journal of Textile Science, pg. 96 – 109, Vol. 5, Issue 5, 2016.

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-27

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08 LO2-LG-27

TTLM Code: IND BAPM08 TTLM 0919v1

LO3Draft lay marker

Instruction Sheet	Learning Guide # 27

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

- Interpreting cutting order
- Collecting and checking required pattern pieces
- Manipulating and positioning pattern pieces
- Drawing lay-up marker
- Preparing layup instructions

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Cutting order is interpreted for marking requirements such as fabric type, width, and quantity and garment sizes.
- Required pattern pieces are collected and checked manually or by computer.
- Pattern pieces are manipulated and positioned manually on paper or by computer for most efficient fabric use.
- Lay marker is drawn up manually or by computer.
- Lay-up instructions are prepared according to requirement

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish the “Self-check
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation
6. Do the “LAP test”

Information Sheet-1	Interpreting cutting order

3.1 Interpreting cutting order

Before marking, the following points should be done:

- ✓ Cutting order is interpreted for marking requirements such as fabric type, width, and quantity and garment sizes.
- ✓ Required pattern pieces are collected and checked manually or by computer.
- ✓ Pattern pieces are manipulated and positioned manually on paper or by computer for most efficient fabric use.
- ✓

Then,

- ✓ Lay marker is drawn up manually or by computer.
- ✓ Lay-up instructions are prepared according to requirements.

Lay-up instructions are set of instructions that consist:

- Type of fabric that will be laid,
- number of layers that should be laid,
- the color of the fabric that should be laid,
- the length and minimum width of fabric that should be laid,

See Annex 2 as an example of lay-up instructions.

Marker modes:

- Marker mode is the manner the pattern pieces are placed. The marker mode is determined by the form of the fabric whether it is symmetrical (side-to-side) and/or directional (end-to-end).
- Symmetric fabrics are the same side-to side, while asymmetric fabrics, such as border prints, are different from side to side.
- Non-directional fabrics are the same end-to-end, while directional fabrics are different from end to end.

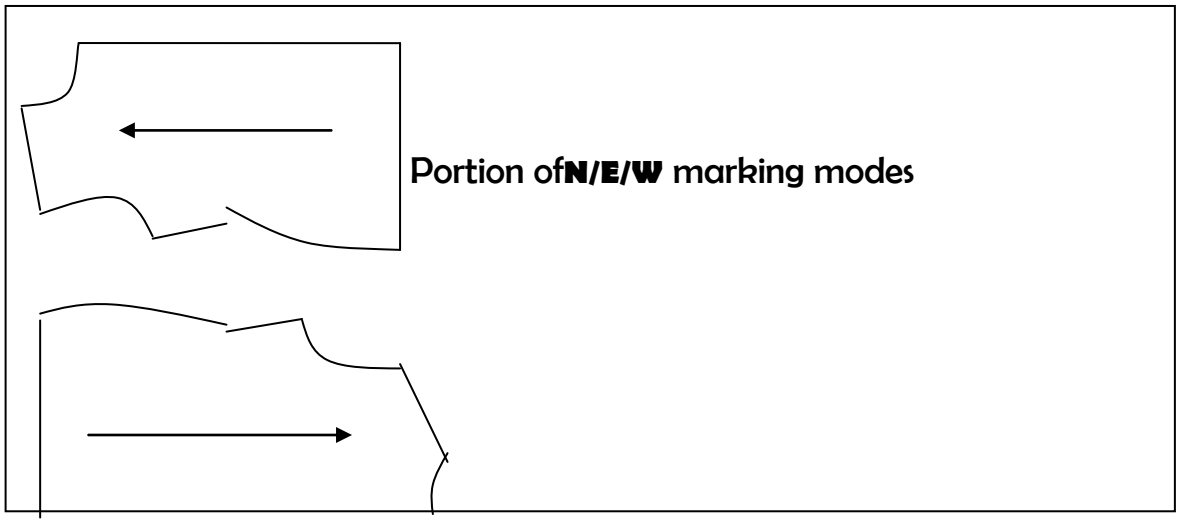
There are 3 types of marker modes:

- ✓ Nap-either-way (N/E/W)
- ✓ Nap-one-way (N/O/W)

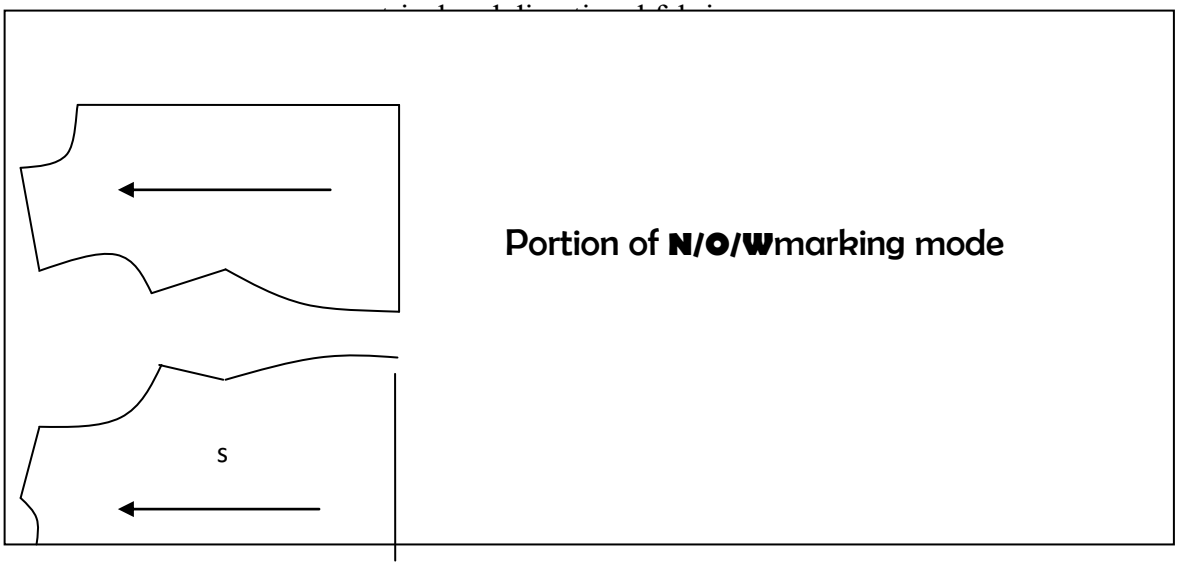
✓ Nap-up-and-down (N/U/D)

- Nap is used to indicate if the fabric is directional.
- N/O/W is used for asymmetric and directional fabrics.
- YY is the abbreviation for yardage yield which means marker length
  Marker efficiency means total area of patterns divided by total area of marker.

a) **N/E/W** marker has its pattern pieces in any direction as long as it is according to the grain line. Pieces are placed for best fabric utilization. This is only suitable for symmetric, non directional fabrics.



b) **N/O/W** marker has its pattern pieces in only one direction, and is suitable for



c) **N/U/D** marker has pattern pieces of one size in one direction and another size placed in the opposite direction. Generally N/U/D will yield a better utilization of fabric

Self-Check -1	Written Test

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

Multiple choices(10%)

Select the best answer for each question. Do this by circling the identifying letter next to your answer.

1) Which one of the following is NOT categorized under lay-up and marking tools and equipments?

A. 3 fingers metal gloves
C. Fabric weight
B. Fabric clip
D. T-square

2) What mode of marking should you use if the fabric is directional?

A. N/E/W
C. N/O/W
B. N/U/D
D. As we like

3) Which activity is NOT necessarily done before or during laying-up (spreading) of fabric?

A. Fabric is checked for faults
C. Marking length is determined
B. Fabric width and quality is checked
D. Pattern pieces are collected & checked

Note: **Satisfactory rating - 5points** **Unsatisfactory - below 5points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Collecting and checking required pattern pieces

3.2 Collecting and checking required pattern pieces

One interesting part of pattern drafting is developing its final pattern. Final pattern will be indicated with the needed symbols that will guide the dressmaker/tailor during the lay outing of the pattern on the material. Some of the symbols that can be seen on a finished pattern are the following:

All pattern pieces are labeled, including **grain lines, notches, pattern information and cutting instructions.**

Grain line is a line drawn from end to end on each Pattern piece to indicate how the pattern should align with the lengthwise grain of the fabric

Notches/ Balance marks: Marks made on edges of pattern pieces that show

Pattern information: all information on each pattern pieces including name of the pattern components, the final measurement which indicate the distance with arrow, the number of pattern cut ,grain line, cutting line seam allowance ,notches ,functional openings.

Pattern is finalized and checked to ensure accuracy, completeness and compliance to design specifications.

Final patterns are directed to next production process.

Checking of pattern pieces

Pattern pieces are checked for accuracy, including: -

4. seam allowances
5. ease allowances
6. seam match
7. hems and functional openings

A seam allowance is the area between the fabric edges and the line of stitches. Seam allowances can range from 0.5cm. Most patterns call for a specific seam allowance.

- In general, our patterns call for a 1/4” or 1/2" seam allowance. Commercial patterns for home sewers have seam allowances ranging from ¼ to ⅝ inch (6.4 to 15.9 mm).

Labeling the Patterns

Label the following items in the pattern.

- **Center front (CF)** is a line placed in a fold of fabric indicating that the pattern edge has been placed exactly on the fold of the fabric that is on grain.
- **Fold line** ( ) refers to where the pattern is to be folded.
- **Notches** ( ) are V-shaped symbols along the cutting line.
- **Grain line** (↔) are arrowhead symbols with instructions for placing the pattern on grain.
- **Darts**( are indicated by two broken lines for stitching and a solid line at center for folding.
- **Buttonholes** ( ) are indicated by a solid line having a short line at right angles to one and when horizontal or at both ends when vertical.
- **Solid lines** ( ) are used also to indicate center fold lines, some hemlines, placement for pocket and trimmings that go on the outside of the garment.
- **Name of pattern piece** refers to the parts of pattern
- **Name of person** refers to the customer/client

Self-Check -2	Written Test

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

Choose from option in Column B to column A(15%)

A	B
1. Notches **2.** Name of patter Piece **3.** Grain line **4.** Darts **5.** Buttonholes **6.** Fold line **7.** Name of person	a. refers to where the pattern is to be folded b. V-shaped symbols along the cutting line c. arrowhead symbols with instructions for placing the pattern on grain d. indicated by two broken lines for stitching and a solid line at center for folding e. Are indicated by a solid line having a short line at right angles to one and when horizontal or at both ends when vertical. f. refers to the parts of pattern g. refers to the customer/client

I. **Short answer**

1. What are the ways to Checking pattern pieces?(10%)

Note: **Satisfactory rating - 25 points** **Unsatisfactory - below 25 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Manipulating and positioning pattern pieces

3.3 Manipulating and positioning pattern pieces

Pattern Manipulation is when you either slash and spread/close or pivot a **pattern** piece to alter it from its original shape. Often times, a well-fitting simple slope are used when applying either of these techniques.

Dart manipulation is one of the most **important** techniques when it comes to pattern drafting. The shape and fit of garments depend on **darts** and while they are needed to help garments stay in shape, they can also be used as a design element so knowing how to move **darts** will be beneficial

Flat Patterning: A method of pattern making in which a pattern is derived from a template (blocks) and created “flat” on paper.

Pattern Manipulation: The process in which you change and reshape pattern blocks to adjust the fit or incorporate a new design.

Basic Pattern Set: A 5-piece set of flat patterning blocks consisting of a front and back bodice, a long sleeve, and a front and back skirt block.

Bust point: A designated place on the bust and pattern. Sometimes used as an apex- this is the pivotal point in flat pattern making.

Dart: A wedge shape cutout made in a pattern, which is used as a means of controlling the fit of a garment or manipulating shape.

Dart point: The end of a dart.

Dart legs: The two lines of the dart that meet the edge of the pattern block meeting at a point in the center.

Dart intake: The amount of excess (or space) restricted between dart legs. Its purpose is to take up excess where it is not needed- so as to shape the fabric to the body.

Trueing: The blending and straightening of pencil lines, cross marks and dot marks for establishing correct seam lines.

Blending: A process of smoothing, shaping, and rounding angular lines along the pattern.

Ease: The even distribution of fullness without forming gathers.

Self-Check -3	Written Test

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

1)what is Manipulating and positioning pattern pieces (10point)

Note: **Satisfactory rating –5 points** **Unsatisfactory - below 5points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	Drawing lay-up marker

3.4 Drawing lay-up marker

4.4.1 Set up manual or computer drafting equipment

Manual marker planning: It is the conventional marker planning method and is still used by the garment industries where they make single garment markers. The marker planner works easily by moving around the full-size patterns until an acceptable marker plan is obtained. Multiple copies of the marker are usually required, which can be done by reproducing the master marker with a range of duplicating methods.

1. **Carbon duplicating** – This method is utilized when very few numbers of copies are needed. Double-sided carbon paper or special NCR-type (no carbon required) paper can be used for duplicating the master marker. In this method, only six to eight copies of master marker can be made without much deterioration in the line.

2. Spirit duplicating – In this system of duplicating, a special hectograph sheet is placed underneath the marker. The hectograph paper transfers a blue line on the back side of the master marker as it is drawn. A master marker is then utilized to produce multiple copies one at a time in a duplicating machine where the master marker along with the white paper wetted in alcohol is moved through the rollers which transfer the line onto the copy.

3. Diazo photographic method – This technique can be used to make copies as required, one at a time. Here, both the light- sensitive paper and a marker are passed through a UV light source, where the light-sensitive paper can be developed by ammonia vapour, which produces a copy.

Computerized marker planning: This method is generally a part of an integrated system that comprises digitizing of full-size patterns into the computer, conveniences for pattern alteration, and by inputting suitable grading rules to create all the required sizes. The various components involved are visual display unit with keyboard, tablet, data pen and mouse

The marker planner indicates the precise make-up of the marker plan such as fabric width, the pattern pieces to be utilized, and product sizes to be included in the marker and the constraints to be considered including any matching of checks. Then the system generates a marker plan automatically or interactively. The automatic marker planning needs data defining the placement of pattern pieces in markers previously planned, and selection of a suitable marker which gives the highest marker efficiency. In the interactive method, the marker planning was done by interaction of the marker planner with the system. All the available patterns will be exhibited in miniature form at the top right of the screen. For maneuvering the patterns data pen, the mouse and the keyboard can be utilized.

The system finally positions the pattern pieces accurately based on marking rules specified. Subsequent to selection of an economical marker plan, the computer will also give a pattern count, marker efficiency and total marker length at the bottom of the screen. The computerized planning provides a pattern grading facility as well and allows the reproduction of as many copies of a marker as are necessary.

Marker Efficiency: Marker efficiency refers to fabric utilization and is defined as the percentage of the total fabric that is actually utilized in garment components. It depends on how closely the patterns are arranged in the marker; that is, length of marker. The marker efficiency is defined by the formula as given below:

$$\text{Marker Efficiency (\%)} = \frac{\text{Area of patterns in the marker plan}}{\text{Total area of the marker}}$$

The influencing factors for the marker efficiency are characteristics of fabric, profile/shape of the pattern pieces and grain requirements

Self-Check -4	Written Test

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

1 calculate marker Efficiency(10ponit)

Given required

1.Area of patterns in the marker plan=120

2.Total area of the marker=350

Note: **Satisfactory rating –12 points** **Unsatisfactory - below 12 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-5	Preparing layup instructions

3.5 Preparing layup instructions

Lay-up instruction

The objective of spreading is to place the number of plies of fabric that the production planning process has dictated, to the length of the marker plan, in the colours required, correctly aligned as to length and width and without tension. Most of the industry is able to cut garments in bulk and by doing so achieves the saving in fabric that are available through the use of multi garment marker plans and the saving in cutting time per garment that result from cutting many plies at the same time. This procedure saves time, cost of cutting and the cost of materials.

LAY-UP OF FABRIC

Laying out of fabric means to place the number of layers of fabric that the production planning process has dictated, to the length of the marker plan, in the colors required, correctly aligned as to length and width and; without tension.

The following points should be exercised before laying out the fabric:

- ✓ Lay-up instructions should be interpreted.
- ✓ Fabric is collected and checked.
- ✓ Fabric width and quality are checked with lay-up instructions.
- ✓ Fabric is laid up and fabric tension adjusted to match fabric performance.
- ✓ Fabric is checked for faults and required action taken to cut out faults or other appropriate techniques.

Operation Sheet-1	exercised before laying out the fabric:

Techniques to determine types of referral best fits the client's in oral and written referrals

Step1-Lay-up instructions should be interpreted.

Step 2-Fabric is collected and checked.

Step 3-Fabric width and quality are checked with lay-up instructions.

Step 4-Fabric is laid up and fabric tension adjusted to match fabric performance.

Step5-Fabric is checked for faults and required action taken to cut out faults or other appropriate techniques

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1- exercised before laying out the fabric:

List of Reference Materials

[1] Ruth E. Glock and Grace I. Kunz, “Apparel Manufacturing Sewn Product Analysis”, Fourth Edition, Pearson Prentice Hall, 2005.

[2] P. Lakshmanakanth, “Spreading and Cutting of Apparel Products”, 2012.

[3] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[4] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015.

[5] Mausmi A., “8 Fabric Losses Your Factory Faces Today”, February 2015.

[6] Harold Carr nd Barbara Latham, “The Technology of Clothing Manufacture”, Wiley Publications.

[7] Md. Nazmul Haque, “Impact of Different Sort of Marker Efficiency in Fabric Consumption”, International Journal of Textile Science, pg. 96 – 109, Vol. 5, Issue 5, 2016.

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-28

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08 LO4-LG-28

TTLM Code: IND BAPM08 TTLM 0919v1

LO4.Copy marker

Instruction Sheet	Learning Guide # 4

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

- Checking marker
- Copying marker

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Marker is checked against requirements.
- Marker is copied either manually or by computer.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions describe
3. Read the information written in the information “Sheet
4. Accomplish the “Self-check
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation.
6. Do the “LAP test”

Information Sheet-1	Checking marker

4.1 Checking marker

Points to be considered before Marker Planning Following points should be considered before marker making.

La = End allowances, i.e. allowances at the beginning and end of a layer;

Lv = Lay length, i.e. marker length + end allowances;

Ar = Edge allowance, i.e. allowance at the fabric edge;

Va = Cutting loss, i.e. waste from within the lay plan;

Bn = Usable width, i.e. cloth width – edge allowance; and

Ls = Marker length

V. Marker Efficiency

Success of marker planner is measured from the efficiency of marker plan. Marker efficiency is defined as “a ratio of area of marker used in a garment and area of total marker.” If the marker efficiency is high the fabric wastage will be less and vice versa.

VI. Calculation of marker efficiency

Calculation of marker efficiency can be done either by using the area of pattern pieces and the fabric spread or by using the weight of the cut pattern pieces and the total weight of a single layer of fabric spread.

$$\text{Marker Efficiency (\%)} = \frac{\text{Area of patterns in the marker plan}}{\text{Total area of the marker}} \times 100\%$$

A CAD system automatically calculates the total area of garment pattern pieces placed in a marker, i.e. the fabric consumed by the garment pattern pieces. Total marker area can be calculated by multiplying marker length with the marker width. In manual marker, it is difficult to measure the surface area of garment patterns in a marker. Mechanical devices like planimeter can be used to calculate surface area of pattern pieces, but it is a very time consuming process.

To calculate weight of garment parts cut one layer of fabric according to markers and weigh all garment parts that are included in a marker. Total weight of the fabric under the marker area can be measured by simply weighing one layer of fabric spread over

1. During marker making it should be followed that fabric width must be higher than marker width (Bn) (At least ½ inch).
2. Fabric length must be higher than marker length (Ls) (At least one inch).
3. Marker width should be taken according to the fabric width and fabric spreading must be done by taking the guideline from the marker length.
4. When garment pattern pieces are laid down on the layer of fabric, in that time the grain line must be parallel to the line of warp in a woven fabric and wales in knitted fabric. It should be noted here that, when pattern pieces are laid down across the layers, then the line is kept parallel to the weft for woven fabric and course in knit fabric.
5. All the pattern pieces of a garment should be along the same direction when laid down on an asymmetric fabric.
6. During marker making, length of fabric cutting table should be considered.
7. Plan for garment production should also be considered during marker making.
8. During marker making, marker should be started with the large pattern pieces. Then fits the smaller pieces in the gap of larger pieces. In this way, fabric wastage is minimized and marker efficiency is also increased

Information Sheet-2	Copying marker

4.2 COPY MARKER

After making a marker, the quality personnel should check the marker against the requirements. Here, the quality personnel should have the marking check list that consist the following points:

- The type of items that should be marked, ex. Is it blouse or trouser or both, etc.
- The size (s),
- Are all parts of the garment marked?
- Number of marking of each pattern pieces,
- Are all pattern pieces marked according to the given grain line,
- Is marking done resulting minimum fabric consumption
- Are marked pattern pieces correctly labeled?
- Is the marking gives freedom of knife movement for the cutter?
- Is the marking done considering design characteristics of the finished garment? For example, some fabrics have one sided motifs or are directional.

After the marking is checked and all necessary amendments are taken, Marker is copied either manually or by computer either as master or documentation purpose or to use another time whenever a demand of the same order.

Self-Check -2	Written Test

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

Multiple choices

Select the best answer for each question. Do this by circling the identifying letter next to your answer.

1) Which of the flowing is the quality personnel should have the marking check list that consist?

   a) The size (s)

   b) Number of marking of each pattern pieces,

   c) Are all pattern pieces marked according to the given grain line,

   d) Are marked pattern pieces correctly labeled

   e) Is the marking gives freedom of knife movement for the cutter

   f) All

2) Marker is copied by

   a) manually b)computer e) all

1. **points**)

Note: **Satisfactory rating - 15 points** **Unsatisfactory - below 15 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet-1	**exercised before laying out the fabric:**

Techniques to determine types of referral best fits the client's in oral and written referrals

Step 1 The type of items that should be marked, ex. Is it blouse or trouser or both, etc.

Step 2 The size (s),

Step 3 Are all parts of the garment marked?

Step 4 Number of marking of each pattern pieces,

Step 5 Are all pattern pieces marked according to the given grain line,

Step 6 Is marking done resulting minimum fabric consumption

Step7 Are marked pattern pieces correctly labeled?

Step 8 Is the marking gives freedom of knife movement for the cutter?

Step 9 Is the marking done considering design characteristics of the finished garment

LAP Test	Practical Demonstration

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Name: _____ Date: _____

Time started: _____ Time finished: _____

- **Task 1- COPY MARKER**

List of Reference Materials

[1] P. Lakshmanakanth, “Spreading and Cutting of Apparel Products”, 2012.

[2] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[3] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015. .

[4] Md. Nazmul Haque, “Impact of Different Sort of Marker Efficiency in Fabric Consumption”, International Journal of Textile Science, pg. 96 – 109, Vol. 5, Issue 5, 2016.

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-29

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: **Cutting Simple Fabrics and Lays**

LG Code: **IND BAP1 M08 LO5-LG-29**

TTLM Code: **IND BAPM08 TTLM 0919v1**

LO5. Position marker

Instruction Sheet	Learning Guide # 29

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

- Placing marker
- Checking marker and lay alignment

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Marker is placed on lay.
- Marker and lay alignment are checked and appropriate action taken according to job specification.

Learning Instructions:

7. Read the specific objectives of this Learning Guide.
8. Follow the instructions described
9. Read the information written in the information “Sheet
10. Accomplish the “Self-check
11. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet
12. Do the “LAP test”

Information Sheet-1	Placing marker

5.1 Placing marker

1. POSITION MARKER

Once your marking is inspected and approved for correctness, the next step is making spreading/ placing layers of fabric one over the other considering the marking length and width; and the production plan.

After doing the spreading, marker is placed on lay. Marker and lay alignment are checked and appropriate action taken according to job specification.

Position marking Quality

When the nature of fabric in the garment styles, prohibit one form using drills for position marking, the position marking must be accomplished with chalk, powder, wax crayon, graphite. The marking medium must be such that: (1) It retains its visual qualities until the marks are used (2) It can be removed quickly if necessary (3) It will not permanently discolor sewing thread or fabric. (4) It is not injurious to the operators.

Drill holes or notches should not be used in knitted areas which may create runs in the exposed finished garment. Runs, unsightly notches, holes and heavy crayon marks are acceptable provided they are not visible to the wearer or the public. If the garment is to be pressed it is preferable that a chalk or crayon be used which can be removed by the pressing action without additional pressing or cleaning effort.

Position marking method analysis

The positioning marking work cycle has the following basic elements for applying powder, chalk, crayon, or graphite: (1) pick up, position the pattern sections (2) Position temple on the pattern section. (3) Apply marking medium (4) Remove temple and discard pattern section.

In many instances element 1 can be eliminated for every pattern piece. This can be done for stacks of superposed plies of the cut pattern section. One edge of the stack is secured with a weight or clamp. The templet is placed on the top ply. After the mark is applied, the marked ply is flapped over the clamp or weight. The secured end of the ply prevents the ply from losing its sequence and basic alignment in the stack.

After the entire stack is marked, the batch is flipped back to the original superposed position. This stack of superposed pieces can be marked reversely. This sis superior for certain items. The whole batch of superposed plies is flipped over the weighted or clamped edge before the first item is marked. The first item marked in this manner is the bottom ply, whereas the first item marked in the first method is the top ply. The work place for any position marking operation should always fix the area for positioning, marking, and discard in order to provide a definite motion pattern to be followed in the work cycle.

Self-Check -1	Written Test

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

1.What ismethodanalysisPositionmarking?(5point)

2 how toanalysis Position marking Quality?(5point)

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Checking marker and lay alignment

5.2 Checking marker and lay alignment

Lay out pattern pieces – focus on 5 areas:

1. Pressing

Press your tissue pattern pieces before you lay them on your fabric. Your pattern pieces will have creases in them from being folded in an envelope. If you put your iron on a low setting, you can safely press the creases out without damaging your pattern pieces.

A wrinkled pattern piece is not going to lay as flat as it should on your fabric. It tends to draw up, which can definitely have an effect on the fit of your garment, making it tighter shorter than you'd like. Avoid unnecessary problems by taking the time to press out those wrinkles and creases.

2. Pattern Layout Guide

Follow the layout guide that comes with your pattern. Pattern companies have created the best layout possibilities according to the yardage amount they recommend on the back of your pattern. This is to ensure you get the best results with the most efficient use of your fabric.Following the layout guide also includes choosing the right layout for your fabric. Pattern companies try to anticipate the most common layout possibilities needed, according to different fabric types and widths.

3. Grain lines

The grain line on your pattern piece is very important. The grain line is there to:Tell you what direction your pattern piece should be placed on your fabric. Your grain line is always parallel to the selvage. If your pattern piece should be lay lengthwise, crosswise or on the bias, the grain line will tell you (as well as the layout guide).Aid you in laying your pattern pieces on your fabric as straight as possible. If you cut your fabric and the pattern pieces are not straight, your garment will not hang on your body straight. You may also get diagonal wrinkles across your body and the garment may feel very uncomfortable.

The grainline is the straight line on your pattern piece that's parallel to your center front or center back.

Once your garment is cut out and the pieces aren't straight, there is no fixing it. Not even with alterations. Even if you fix, say a crooked hem, your print may still be crooked. If you're making a skirt, skirt side seams may be pulling to the front or back. If you're making

pants, your pant legs will be twisted around your leg and the garment may still feel uncomfortable.

Making sure your pattern pieces are on your fabric straight before you cut takes a little extra time. But the extra will benefit you by saving you a lot of headaches in your fitting and sewing.

To make sure your pattern pieces are placed on your fabric correctly, follow the guidelines on your pattern pieces themselves.

4. Cutting

Cutting your fabric with one hand on your pattern piece at all times ensures that it stays in place while you cut. This means that left-handed people will cut their pieces out in clockwise direction and right handed people will cut their pieces out in a counterclockwise direction

Place one hand on your pattern piece while cutting to prevent shifting or any kind of movement.

It's especially important to hold your pattern piece in place with one hand while you cut when you use pattern weights instead of pins. Depending on how heavy your weights are, your pattern piece could shift while you cut.

Cutting your pattern piece by lifting it a little or not holding it in place can cause slight movement, which can affect the sewing or fit of your piece.

5. Marking

After checking your grain lines and carefully cutting out your pieces, the last and also an important step is marking them. Every symbol has a purpose and is there to aid you while you sew. They're used for things like matching seams and dart or pocket placement. It's also important to mark these symbols BEFORE you remove your pattern pieces.

Go to to learn more about marking tools. Look at numbers 4, 5, and 6. You can also watch this video on , by Professor Pincushion.

If you want your sewing projects to look professionally made, don't ignore any of these 5 areas when you lay out your pattern pieces:

1. Pressing
2. Pattern Layout Guide
3. Grainlines
4. Cutting
5. Marking

Self-Check -2	Written Test

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

1.wreti Lay out pattern pieces – focus on 5 areas(10point)

Note: **Satisfactory rating -5 points** **Unsatisfactory - below 5points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

List of Reference Materials

.

[1] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[2] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015.

.

[3] Harold Carr nd Barbara Latham, “The Technology of Clothing Manufacture”, Wiley Publications.

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-30

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08 LO6-LG-30

TTLM Code: IND BAPM08 TTLM 0919v1

LO6. Cut work

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

- Following OHS practices
- Cutting lay
- Inspecting cut work
- Identifying faults
- Taking preventive action
- Checking performance of cutting equipment
- Taking action

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

- Lay is cut using cutting equipment according to requirements for operation.
- Cut work is inspected, any faults identified and appropriate action taken to ensure cut pieces meet required quality standards.
- Preventative action is taken to avoid any recurrence of defective pieces, and is recorded.
- Performance of cutting equipment is regularly checked for signs of faulty operation, including evidence from inspection of cut pieces, and any required action is taken.
- OHS practices are followed throughout the performance of this unit.
- Action is taken according to OHS practices to prevent accidents and to eliminate risks to personal safety.

Learning Instructions:

13. Read the specific objectives of this Learning Guide.
14. Follow the instructions described
15. Read the information written in the information “Sheet
16. Accomplish the “Self-check 1,Self-check t 2, Self-check 3 and Self-check 4” **in page -55, 57, 60 and 62**respectively.
17. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet
18. Do the “LAP test”

Information Sheet-1	Following OHS practices

6.1 Following OHS practices

SAFETY Procedures

Workplace safety is a category of management responsibility in places of employment. To ensure the safety and health of workers, managers establish a focus on safety that can include elements such as:

- management learship and commitment
- employee engagement
- accountability
- ensuring all task are carried out safely and efficiently
- safety programs, policies, and plans
- safety processes, procedures, and practices
- safety goals and objectives
- safety inspections for workplace hazards
- safety program audits
- safety tracking & metrics
- hazard identification and control
- safety committees to promote employee involvement
- safety education and training
- safety communications to maintain a high level of aware6ness on safety

Information Sheet-2	Cutting lay

6.2 Cutting lay

6.2.1 Use cutting techniques

Fabric Cutting Techniques

There are 2 techniques of cutting fabric like portable cutting, stationary cutting. With the advancement in technology there have been improvements in fabric techniques also like Automated, Numerically Controlled cutting systems, which has Automatic blade cutting, Laser cutting, Water jet cutting, Die cutting etc.

What are the various Cutting techniques?

The marker is put on the layers of fabric with the conventional method, a skilled cutter follows the pattern outlined on the marker, using a strait–knife machine with a long, thin blade that vibrates vertically as it is pushed through many layers of fabric. A vertical knife can cut to a depth of 9 inches. For only a few layers, a cutting machine with a rotating circular knife may be used. The cutter must select the correct speed and blade for each type of fabric. For example, a coarse blade edge is used for tightly woven fabrics and a smooth edge for softer fabrics. The cutting tools (cutters) can be classified in to

1. Portable cutters
    - Powered scissors- these are used for cutting one or two piles and are often used in the sample room.
    - Round knife- this is a very fast machine, excellent for cutting straight lines or gradual curves. Blade sizes range from 4cm to 20cm in diameter and the effective cutting height is about 40 per cent of the blade diameter.
    - Straight knife-the workhouse of most cutting rooms, the straight knives, if correctly used, is versatile and accurate enough for most purposes.

2. Stationary cutters
    - Band knife – the narrow blade of this machine allows the finest of shapes to be cut very accurately.
    - Press cutting- this process involves the use of a hydraulic press which forces a shaped metal cutting die through a pile of material and is mostly used when large quantities of small components have to be cut very accurately. Press cutting is also often used for cutting many of the components for leather and suede garments.

Automated, Numerically Controlled cutting systems

There are four types of automated cutting systems, they are blade cutting, water jet cutting, and plasma jet cutting. Electronic microchips control the cutting device, travel pattern, and

speed. Computer-generated markers are stored and used to guide the operation of the cutting head. The input for this operation comes from the markers generated by computerized marker planning systems. The marker data is transferred to the cutting unit by means of tapes, floppy disks, streamers or directly from the marker planning system itself. Computerized cutting is six to eight times faster than any manual method and products cut components with a consistent level of accuracy although a computerized cutting system requires a substantial initial investment, it is considered to be the most effective investment for large-scale cutting production.

Automatic blade cutting

- Automated blade cutting machine is the most highly developed and widely used computerized cutting system. Numerically controlled knives cut multiple plies with great accuracy and speed. Paper markers are not needed for numerically controlled cutters. Operators communicate directly with the main control unit through a command console microprocessing unit with a keyboard.

Laser cutting

Laser cutting focuses a powerful beam of light projected on to a minute area to cut fabric by vaporization. Lasers cut with incredible speed (twice that of automatic knives cutting), accuracy and multidirectional ability, but with some heat emission.

Lesser-beam cutting

Lesser-beam cutting machine is sometimes used for men's suits, which are cut a single layer at a time. The laser, a concentrated light beam is also directed by a computer.

Water jet cutting

Water jet cutting machine is another computer-operated, multi-directional method that has limited usage at this time. Water jet cutting is performed by propelling a tiny jet of water (0.001-0.0015 inch) through the fabric at very high pressure (70,000 psi). Water-jet cutting is being used for some fabrics and leathers, especially in the shoe industry.

Die to cut

Die cutting machine may be used for garments or parts of garments that do not change from season to seasons, such as a jeans pocket and leather belts. A die, a device that operates much like a cookie cutter, is made for each piece to be cut. The sharp edges of the die are pressed against the layers of fabric to cut them. A gang die can be made by connected several dies together.

Self-Check -2	Written Test

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

1.What are the various Cutting techniques? (10point)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	Inspecting cut work

6.3 Inspecting cut work

The most commonly used is **the Four point system**. Within this **system**, **fabric** rolls are graded for defects. Each defect receives a certain number of **points**, and after **inspection**, of course you hope for the lowest number of **points** possible

Points System

For production of high quality garments, need high quality piece goods. It is an universal truth. When a sewing factory receives fabric from the mill, it is difficult to conduct a full 100% inspection of the fabric. So then minimum 10% inspection of all piece goods prior to spreading the fabric. There are several methods of fabric inspection in garments industry. Ten Points system is one of them.

The 10 point method is a point per fault system, which gives a measurable guide to quality grading per roll. In 1955s "Ten Points" piece goods evaluation was adapted by the Textile Distributors and National Federation of Textiles. The system assigns penalty points to each defect as per following guideline.

Cutting and spreading defect found in quality inspection

1. Miss cut
2. ruing shade
3. number and bundling
4. bowing
5. notch mark
6. Narrow goods
7. rugger cut
8. fabric way
9. measurement
10. leaning
11. tension loose
12. bias
13. alignment
14. skew
15. matching plie

Self-Check -3	Written Test

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

1.write Cutting and spreading defect?(10point)

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	Identifying faults

6.4 Identifying faults

Fabric faults

Major Defects Found in Woven Fabric:

- Bad selvedge,
- Broken ends or warp,
- Broken picks or weft,
- Loose warp,
- Loose weft or snarl,
- Double end,
- Tight end,
- Float of warp,

Information Sheet-5	6.1 Taking preventive action

6.5 Taking preventive action

Shade variation

Causes

- ✓ It arises due to improper cutting ,bundling and numbering
- ✓ Uneven to batch missing shade
- ✓ Different batch mixing for same garment

Solution

- ✓ After cutting the garment arts must be kept in proper bundle with number
- ✓ one batch fabric shade is used for same garment in ever part
- ✓ shade in making each parts due to fabric cutting

Hole

Causes

- ✓ Hole can come from fabric or in could be caused by the production side either by improper
- ✓ Trimming or broken needle puncturing and the fabric
- ✓ Very stiff and dry yarn

Solution

- ✓ Better inspection of fabric and cut piece
- ✓ Use fabric fault detector

Distorted knitting

Causes

- ✓ These defect can be identifying by looking at the surface area ,hey usually appear as irregular on the fabric

Solution

- ✓ Better inspection of fabric and cut piece. ensure the fabric and cut piece tha are not up to standard are not put in to line and production is waste . replace noe standard cut pieces with useble ones before input

Loos thread

Causes

- ✓ It appears due to improper trimming of finning Solution
- ✓ Thread trimming should be used
- ✓ Operates trimming
- ✓ Garment finishing should be checked properly

Self-Check -4	Written Test

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

1.wreti Major Defects Found in Woven Fabric? (10point)

Note: **Satisfactory rating 5 points** **Unsatisfactory - below 5points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

List of Reference Materials

] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[2] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015.

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[3] Harold Carr nd Barbara Latham, “The Technology of Clothing Manufacture”, Wiley Publications.

Basic Apparel Production

Level-I

Basic Apparel Production

Learning Guide-31

Unit of Competence: Cut Simple Fabrics and Lays

Module Title: Cutting Simple Fabrics and Lays

LG Code: IND BAP1 M08 LO7-LG-31

TTLM Code: IND BAPM08 TTLM 0919v1

LO7.Complete work.

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

- Directing cut work
- Cleaning and preparing work area
- Storing master copy of lay marker

Taking actionThis guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Cut work is directed to next operation and work area is cleaned and prepared for next job.
- Master copy of lay marker is stored in filing drawer or computer as appropriate.

Learning Instructions:

19. Read the specific objectives of this Learning Guide.
20. Follow the instructions described
21. Read the information written in the information “Sheet
22. Accomplish the “Self-check
23. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet
24. Do the “LAP test”

Information Sheet-1	Directing cut work

7.1 Directing cut work

Now, we finished our main work, the remaining is:

- Cut work is directed to next operation and work area is cleaned and prepared for next job.

Master copy of lay marker is stored in filing drawer or computer as appropriate

Ticketing and Bundling

Ticketing: Its a process in which each cut piece of fabric is given a unique number so that the cut pieces of different sorts/shades do not get mixed and sewn together resulting in a defective/rejected garment.

Ticketing machines are available to carry out this process. After ticketing is done, pieces of each type like collar, band, cuff, back, front etc. are bundled together and taken to subsequent operations.

Bundling: This process is desizing the number of layers of the cut panel in to small for the purpose of better handling and WIP controlling in the line. The bundling size can be decided based on the requirement of the line, type of cut fabrics, number of work stations and total number of components in a garment to be sewn.

Self-Check -1	Written Test

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

16. Defining Ticketing? (5point)
17. Defining Bundling? (5point)

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Cleaning and preparing work area

7.2 Cleaning and preparing work area

- ✓ Clean the whole house, not one room at time. ..
- ✓ .Gather all you're cleaning tools in a caddy. ..
- ✓ Clear the clutter. .
- ✓ Dust and vacuum. ...
- ✓ Wipe mirrors and glass. ...
- ✓ Disinfect countertops and surface areas. ...

Information Sheet-3	Storing master copy of lay marker

7.3 Storing master copy of lay marker

Marker planning is one of the most important cost saving stages in the process of garment manufacture. Hence it is important that all the factors affecting marker efficiency which in turn is related to the fabric utilization should be considered. Computer Aided Marker Planning, though has high initial cost, should be preferred because of time saving and as it gives accurate and fault free marker plans. Efforts should be made to minimize the avoidable waste by selecting appropriate method of marker planning. Highly efficient CAD systems are now available in the market. The more the fabric saved, the more will be the profit margin of the industry.

Self-Check -3	Written Test

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

1. for what reasons Storing master copy of lay marker? (10point)

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

List of Reference Materials

] Mausmi A., “Fabric Utilization, Cut Order Planning”, Stitch World, June 2013.

[2] Elmira Dumishllari and Genti Guxho, “Impact of Marker on Cut Plan in Garment Production”, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 8, August 2015.

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[3] Harold Carr nd Barbara Latham, “The Technology of Clothing Manufacture”, Wiley Publications.