MODULE 1

QUALIFICATION TITLE : DRESSMAKING/TAILORING NC II

UNIT OF COMPETENCY : SET UP AND OPERATE SEWING MACHINES

MODULE TITLE : SETTING UP AND OPERATING SEWING MACHINES

NOMINAL DURATION : 200 HOURS

GARMENTS
(DRESSMAKING/TAILORING NC II)
MODULE INTRODUCTION

This module covers the knowledge, skills and attitudes required in setting and operating sewing machines.

EXPECTED OUTCOMES

At the end of this module, you should be able to:
   a. set sewing machines;
   b. conduct a sample run;
   c. test sewing machine output and re-adjust sewing machine setting; and
   d. maintain records of a sewing machine in good running condition.
PRETEST

Directions: Let us determine how much you already know about setting and operating sewing machines. Complete the following sentences below. Write the letter of your answer on a sheet of paper.

1. A detailed description of requirements, dimensions, etc., as of proposed machine is called ________.
   a. product abilities  c. product knowledge
   b. operation manual  d. product specification

2. The size of sewing machine needle used for general sewing is ________.
   a. 10  b. 12  c. 14  d. 16

3. A machine that is run by foot which may also be converted to electric power machine is known as ________.
   a. hemmer machine  c. lockstitch machine
   b. high speed over edging  d. over edging machine

4. A machine with an oiler tank where oil is restored under its bed is ____________.
   a. embroidery machine  c. high speed lockstitch machine
   b. hemmer machine  d. over edging machine

5. A machine used in making fancy stitches on fabrics is ____________.
   a. buttonholer machine  c. embroidery machine
   b. double needle machine  d. lockstitch sewing machine

6. The flat portion of the sewing machine is called ____________.
   a. arm  b. bed  c. cabinet  d. head

7. The mechanism that sets the sewing machine in motion is ____________.
   a. balance wheel  c. feed dog
   b. belt  d. stitch regulator

8. The part of the sewing machine that controls the looseness and tightness of stitches is ____________.
   a. bobbin  c. thread guide
   b. presser foot  d. upper tension

9. The part of the sewing machine that checks the length of stitches is ____________.
   a. balance wheel  c. feed dog
   b. belt  d. stitch regulator

10. The part of the sewing machine that controls the bobbin while winding the thread is known as ____________.
    a. bobbin winder  c. needle clamp
    b. needle bar  d. spool pin

11. The fabric that appears different in the up-and-down directions depending on the reflection of the light is ____________.
    a. napped  c. synthetic
    b. non-woven  d. wash-and-wear
12. The first step in threading the upper part of the sewing machine is to
   a. bring the thread to thread guide
   b. pull it through the lower thread guide
   c. put the spool of thread on the spool pin
   d. thread the needle
13. The first step in threading the lower part of the sewing machine is to
   a. make sure that you hear the case being locked upon inserting the
      bobbin case inside the shuttle.
   b. pull the upper and lower thread together by 4 inches.
   c. put the bobbin back to the bobbin case and pull the thread
      through the little slot by at least 4 inches.
   d. remove the bobbin case by pulling on the bobbin case latch.
14. The most suitable fabric for beginners.
   a. brocade
   b. cotton
   c. satin
   d. velvet
15. When sewing, place one foot ____ on the treadle and the other foot
    slightly back.
    a. forward
    b. downward
    c. sideward
    d. none of the above
16. The correct way to stop the electric sewing machine is to ____________.
    a. ask for assistance
    b. release the pressure on the foot controller
    c. place one hand on the balance wheel
    d. push the sewing machine
17. One of these is a good characteristic of stitches:
    a. There are skipped or broken gaps in stitching.
    b. The length of stitches is proportioned to the texture of the fabric.
    c. The stitches have tangles.
    d. The stitches are tight.
18. The upper tension controls the thread from the ____________.
    a. bobbin
    b. needle
    c. thread guide
    d. spool pin
19. A documentation that shows the adjustments done on the sewing
    machine during the set up and the performance of the machine after
    setting.
    a. Accomplishment Record
    b. Fault Analysis Card
    c. Progress Chart
    d. Record Matrix Form
20. The pressure must be regulated according to the ____________ to be
    stitched.
    a. fabric
    b. clothing
    c. paper
    d. plastic
LESSON 1

SETTING THE SEWING MACHINE

INTRODUCTION

The lesson deals with the types of the sewing machines and how they are properly set.

ASSESSMENT CRITERIA

1. Product specifications are interpreted in relation to machine setting requirements.
2. Type of sewing machine to be set up is identified in accordance with the job requirement.
3. Parts of the lockstitch or electric sewing machine and their functions are identified according to the job requirements.
4. Machine is set in accordance with product specification, workplace instructions, and procedure.

DEFINITION OF TERMS

- **Recycling** – passing again through a cycle of changes or treatment.
- **Reinforcing** – strengthening with additional support.
- **Repairing** – restoring to good condition.
- **Setting** – preparing a sewing machine for operation.
- **Sewing Machine** – any of various foot operated or electric machine for sewing or making stitches.
INFORMATION SHEET 1.1

Types of Sewing Machine

A sewing machine is an equipment which is very important in any sewing activity, whether for repairing, altering clothes or recycling household articles. It makes sewing easier and faster. Since there are many types of sewing machines available in the market today, you should know the specification of the sewing machine you are using so that you can fully utilize it. A product specification is the detailed description of the machine that includes its appearance, performance or the standard of workmanship required in its manufacture. When buying a sewing machine, a manual accompanies the product which contains its specification.

A well-selected sewing machine is essential for achieving good results. It should be used correctly in accordance with the job requirements. Here are the types of sewing machine:

1. **Lockstitch Sewing Machine.** This is usually used in homes and sometimes in schools. This is also called “Domestic Sewing Machine”. It is run by foot and may also be converted to electric power machine.

2. **Hi-Speed Lockstitch Sewing Machine.** This is sometimes called ‘straight stitching machine” or industrial sewing machine. It has automatic lubrication and is commonly used in garment industry.

3. **Over Edging Machine.** Other companies call it “small machine”. It finishes the raw edges of the material for construction.

4. **Embroidery Machine.** This is used in making fancy stitches and in making different kinds of embroidery stitches on fabrics for the Barong Tagalog, pillow cases, linen, handkerchiefs and other novelty items.
5. **Buttonholer Machine.** This is used in making buttonholes on garments.

6. **Button Attachment Machine.** This is used in attaching buttons to the garments.

7. **Double Needle Machine.** This is used in the construction of the different kinds of clothing especially for the in-seam, outseam and side seam.

8. **Bartacking Machine.** This is used in reinforcing the opening and closing of pockets and plackets of garments.

**Two Major Parts of a Lockstitch Sewing Machine**

A lockstitch sewing machine produces machine thread in which the top thread interlocks with the bobbin thread. An ordinary sewing machine is a kind of lockstitch machine. The two major parts of a lock stitch sewing machine are the upper and lower parts.
The upper part includes:

1. **Head.** It is the complete sewing machine without a cabinet or stand.
2. **Arm.** The curve part of the head containing the mechanism for operating the needle.
3. **Bed** is the flat portion of the machine and beneath is the feed dog, shuttle and lower thread.

Parts of the Sewing Machine in the Arm

1. **Spool Pin** holds the thread in place.
2. **Thread Guide** keeps the thread in correct position.
3. **Thread Take up Lever** releases the thread and interlocks with the bobbin thread.
4. **Presser bar lifter** moves the presser foot up and down.
5. **Tension** controls the looseness and tightness of stitches.
6. **Needle Bar** holds the needle in place.
7. **Needle Clamp** holds and tightens the needle.
8. **Presser Foot** holds the fabric in place while sewing.
9. **Needle** is a slender tool attached in the needle clamp used for sewing.
10. **Bobbin Winder** controls the bobbin while winding thread.
11. **Stitch regulator** checks the length of the stitches.
12. **Balance Wheel** sets the mechanism in motion.
13. **Belt** connects the balance wheel to the drive wheel.
14. **Stop Motion Screw** hinders movement when loosened and starts moving when tightened.
Knowing the parts of a sewing machine helps you in determining a machine problem and even solves the problem once you know what each part of the sewing machine does to form stitches.

**Parts of the Sewing Machine under the Bed**

1. **Feed Dog** moves the fabric while sewing.
2. **Throat plate** is the window of the feed dog and it is where the bobbin thread comes out.
3. **Slide plate** is a movable plate that covers the shuttle and bobbin case.
4. **Shuttle** holds the bobbin case while sewing.
5. **Bobbin** is a metal spool for winding thread.
6. **Bobbin Case** holds the bobbin.

**The Lower Part of the Lockstitch Sewing Machine**

The lower part of the sewing machine consists of the following:
1. **Band Wheel** leads the balance wheel through the belt connection.
2. **Band Wheel Crank** moves the band wheel.
3. **Pitman Rod** holds the treadle to band wheel crank.
4. **Belt Guide** holds the belt in its place.
5. **Belt Shifter** removes the belt from the wheel.
6. **Dress Guard** protects the dress from the wheel.
7. **Treadle** is where the feet are stationed to drive the band wheel through the pitman rod.
8. **Legs** support the cabinet of the machine.
9. **Cabinet** holds the head of the machine by interlocking screws on the hinges.

**Setting of Sewing Machines**

Perfect machine stitching is easy to achieve if the machine is set properly. This involves changing the needle and threading the upper and lower parts of the sewing machine. A beginner must learn how to set the sewing machine as the first step in becoming a competent operator.

**A. Setting/Changing Needle**

**Needles**

Sewing machine needles are classified according to diameter and length. The size of the needle is shown by a number stamped on its shank. The lower number indicates needle of small diameter, while the higher number indicates larger sizes. Needles are furnished in sizes 11, 14, 16, 17, 18, 19, 21 and 23. The size of the needle depends upon the size of the thread to be used and material to be sewn.

**Parts and Functions of a Sewing Machine Needle**

1. **Butt** - absorbs the pressure of the needle bar.
2. **Shank** - provides stability to the needle blades and to its part when inserted.
3. **Shoulder** - supports the blade and shank.
4. **Blade** - the thinnest part of the sewing machine needle that always counters the friction while sewing.
5. **Long Groove** - the point where the shuttle hooks and the needle meet.
6. **Eye** - it is where the thread is inserted.
7. **Short Groove** - the part of the needle blade.
8. **Point/Tip** - it passes through the fiber of the materials.
Setting/Changing a Machine Needle

Machine needles have a long groove along one side and a short groove on the other side. The thread slides in the long groove as the needle passes through the material. When a needle is replaced, the long groove must be on the left side to carry the thread. If the long groove is not on the left, the thread will break as it passes through the material.

To change needle, the following steps should be done:

1. Turn the balance wheel toward you until the needle bar moves up to its highest point.
2. Loosen the screw in the lower end of the needle bar.
3. Remove the needle.
   **Note:** If the needle is broken, be sure to remove all broken pieces.
4. Push the new needle up into the needle bar as far as it will go, with the long groove of the needle toward the left and the eye of the needle directly in line with the arm of the machine.
5. Tighten the screw in the clamp.
   **Caution:** Keep the left hand away from the lower end of the needle bar when tightening the clamping screw, as the screw driver might slip and injure the hand.
6. Check stitching on a piece of swatches.
   **Note:** If skips occur in the stitches, the needle has not been pushed up far enough into the needle bar.

B. Threading The Machine

Threads

Sewing machine thread is furnished in cotton, linen, silk, or silk substitute. It is available in many colors and shades. The sizes in cotton range from number 8, a coarse thread, to number 100, a fine thread. Numbers 40, 50 and 60 are the sizes most commonly used in sewing clothing parts. The sizes in silk range from 0, a fine thread, through A, B, C, D, and E a heavy thread.
The thread should be selected to suit the materials to be sewn. The color, size and kind of thread are very important to the finished appearance of the garment. A thread which is shaded darker than the material is usually preferred as it blends well.

Machine thread for use in the garment shop is usually furnished on cones. The taper of the cone allows the thread to unwind freely as it is drawn through the machine. For general sewing, a soft finished cotton thread is more desirable than a glazed thread for it will slip down the cone and tangle. Mercerized cotton frays badly when used on the sewing machine.

**SIZES OF THREADS AND NEEDLES FOR MACHINE SEWING**

<table>
<thead>
<tr>
<th>TYPE OF FABRIC</th>
<th>TYPE OF WORK</th>
<th>SIZES AND KINDS OF THREADS</th>
<th>SIZES OF NEEDLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight Woolens, Cotton Silks and Shirting</td>
<td>General Sewing Seaming Setting Welts and Edge Stitching</td>
<td>60 -80 Cotton A &amp; B Silk OO Silk</td>
<td>11 &amp; 14</td>
</tr>
<tr>
<td>Woolens, Wool Rayon, Medium Weight Cotton and Shirting Heavy Silk</td>
<td>General Sewing Sewing Pockets and Linings, Taping Edge Sewing Pants</td>
<td>40-60 Cotton C Silk</td>
<td>16 &amp; 17</td>
</tr>
<tr>
<td>Heavy Cotton Goods Twills, Denims, Overcoating</td>
<td>General Heavy Sewing Work Clothing Sewing Overcoats</td>
<td>30 -40 Cotton D &amp; E Silk</td>
<td>18 &amp; 19</td>
</tr>
<tr>
<td>Heavy Duck, Sunning Materials</td>
<td>Sewing Laundry Bags, Cot Covers</td>
<td>16 -20 Cotton</td>
<td>21</td>
</tr>
<tr>
<td>Extra Heavy Duck</td>
<td>Extra Heavy Sewing</td>
<td>8 -16 Cotton</td>
<td>21 &amp; 23</td>
</tr>
</tbody>
</table>

**Threading the Upper Part of the Sewing Machine**

Each part of the threading mechanism on the head of a sewing machine has a definite purpose in guiding the thread from the spool to the needle. The thread must pass through the various guides in a given order so that the machine will function properly. Here are the steps in threading the sewing machine:

1. Put the spool of thread on the spool pin.
2. Bring the thread to the thread guide.
3. Pull the thread between the metal discs of the tension.
4. Bring the thread up to the thread take up lever and raise it as it goes.
5. Pull the thread down to the thread guide on the face plate.
6. Pull it through the lower thread guide.
7. Thread the needle.

**Threading the Lower Part of Lockstitch Sewing Machine**

Threading the lower part of the machine is as important as threading the upper part of machine. Balance must be attained to have perfect stitch. Below are the steps in threading the lower part of the machine:
1. Remove the bobbin case by pulling on the bobbin case latch.
2. Remove the bobbin from the case and wind the thread.
3. Put the bobbin back to the bobbin case and pull the thread through the little slot at least 4 inches.
4. Insert bobbin case to the shuttle.
5. Start the mechanism by rolling the balance wheel forward to get the thread of the bobbin through the needle.
6. Pull the upper and lower thread together by 4 inches.

**Removing the Bobbin and Bobbin Case**

It is often necessary to remove a bobbin to either refill or replace it. Here are the steps in removing the bobbin and bobbin case:

1. Turn the balance wheel toward you with the right hand until the needle has moved to its highest point.
2. Open the slide in the bed of the machine part way until the bobbin case is visible.
3. Reach under the bed of the machine and open the bobbin case latch with the thumb and forefinger of the left hand. Caution: Keep feet off the treadle.
4. Remove the bobbin case from the center stud with the latch held in the open position.
   Note: The bobbin will be held in the bobbin case while the latch is open.

5. Remove the bobbin from the case by releasing the latch and turning the open end of the case downward to allow the bobbin to drop out.

6. Place the bobbin case in machine drawer until you are ready to thread it or put it back on its original place.
   **Note:** Each bobbin case is adjusted to the machine on which it is used. Avoid using bobbin case from other machine.

**How to Wind the Bobbin with Thread**

Make sure that the bobbin fits the bobbin case of the machine you are using.

1. Loosen the stop motion screw by turning it toward you. This stops the needle from moving.
2. Put the spool of thread on the spool pin. Let it pass through the first thread guide and the bobbin winder thread guide.

3. Wind the end of the thread a little around the bobbin toward you, lift the bobbin winder latch and press the bobbin through its spindle.

4. Release the latch and press the bobbin winder against the balance wheel.

5. Run the machine until the bobbin is ¾ full. In some models, the bobbin winder automatically stops when the bobbin is sufficiently wound.

Product Specification and Parts of a Hi-Speed Lockstitch Sewing Machine

Specifications: 1) Purpose: medium 2) Maximum sewing speed: 5,000rpm 3) Maximum sewing length: 5mm 4) Needle bar stroke: 30.7mm 5) Lift of the work clamp foot: By knee: 13mm
Parts of a Hi-Speed Sewing Machine

- Thread holder
- Stitch regulator
- Forward and backward feed
- On and off switch
- Knee lifter
- Motor
- Pedal

Threading the Hi-Speed Sewing Machine
Threading the hi-speed lockstitch sewing machine is basically the same as threading the ordinary lockstitch sewing machine. Here is the sequence of threading the upper part of the machine:
1. Thread Holder
2. Thread Guide (three holes)
3. Tension
4. Take-up lever
5. Thread guide
6. Needle

Tips: Always use good quality thread whenever possible.

LET US REMEMBER

The success of machine operation depends on one’s ability to identify the types, parts, and functions of the sewing machine and the skills in setting sewing machine.
SELF-CHECK

A. Directions: Write your answer in your quiz notebook.

1. A detailed description of a sewing machine.
   a. product abilities
   b. operation manual
   c. product knowledge
   d. product specification

2. The part of a sewing machine that holds the fabric in place while sewing.
   a. belt
   b. bobbin case
   c. presser foot
   d. shuttle

3. What part of a sewing machine needle provides stability to the needle blades and to the other parts when inserted?
   a. butt
   b. eye
   c. shank
   d. shoulder

4. What is the last step in threading the upper part of the sewing machine?
   a. bring the thread to thread guide
   b. pull it through the lower thread guide
   c. put the spool of thread on the spool pin
   d. thread the needle

5. What is the first step in threading the lower part of the sewing machine?
   a. make sure that you hear the case being locked upon inserting the bobbin case inside the shuttle.
   b. pull the upper and lower thread together by 4 inches.
   c. put the bobbin back to the bobbin case and pull the thread through the little slot by at least 4 inches.
   d. remove the bobbin case by pulling on the bobbin case latch.

B. Match the types of the sewing machines in Column A with the descriptions in Column B. Write the letter of the correct answer in your quiz notebook.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This is used in making fancy stitches and in making different kinds of embroidery stitches.</td>
<td>a. hi-speed lockstitch sewing machine</td>
</tr>
<tr>
<td>2. This is used for making buttonholes on garments.</td>
<td>b. Lockstitch sewing machine</td>
</tr>
<tr>
<td>3. This is sometimes called &quot;straight stitching machine&quot;.</td>
<td>c. buttonholer machine</td>
</tr>
<tr>
<td>4. This is usually used at home and school.</td>
<td>d. hemming machine</td>
</tr>
<tr>
<td>5. This finishes the raw edges of a fabric.</td>
<td>e. overedging machine</td>
</tr>
<tr>
<td></td>
<td>f. embroidery machine</td>
</tr>
</tbody>
</table>
C. Identify the parts of the lockstitch sewing machine. Write your answers in your quiz notebook.

- Treadle Lockstitch Sewing Machine
D. Hi-Speed Lockstitch Sewing Machine
LET US APPLY WHAT YOU HAVE LEARNED

Task: Set the Sewing Machine

1. Perform the following operations:
   - Change Needle
   - Thread the Upper Part of the Sewing Machine
   - Wind the Bobbin
   - Thread the Lower Part of the Machine

2. Assess performance using the evaluation sheet below.

**EVALUATION SHEET FOR SETTING THE SEWING MACHINE**

<table>
<thead>
<tr>
<th>Specific Task</th>
<th>Competent (5)</th>
<th>Moderately Competent (3)</th>
<th>Not yet Competent (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing the Needle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threading the Upper Part of the Sewing Machine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winding the Bobbin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threading the Lower Part of the Machine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Final Score: _____________

**Legend:**

- 20  -  95
- 18  -  93
- 16  -  90
- 14  -  88
- 12  -  85
- 10  -  83
-  8  -  80
-  6  -  78
-  4  -  75
RESOURCES:

**Equipment**
Lockstitch Sewing Machine
Hi-speed Sewing Machine
Edging Machine

**Tools**
Scissors
Screw drivers

**Supplies**
Thread
Pencil
Ruler
Bond paper

**Accessories**
Presser foot
Machine Needle

**Learning Materials**
Writing Pad
Learning Modules
Manuals
LESSON 2

CONDUCTING A SAMPLE RUN

INTRODUCTION

The lesson deals with conducting a sample run on materials in accordance with the workplace instructions and procedure.

ASSESSMENT CRITERIA

1. Materials to be used for sampling are obtained in accordance with the workplace instructions and procedure.
2. Machine is operated in accordance with the workplace instructions and procedure.

DEFINITION OF TERMS

- **Colorfast** – does not fade easily.
- **Ravel** – loose threads of the raw edge or cut edge of fabric.
- **Shrinkage** – the reduction in length or width of a fiber yarn or fabric.
- **Treadle** – part of the sewing machine where the feet are stationed to drive the band wheel through the pitman rod.
- **Treadle Machine** – usually used in homes and sometimes in school. It is run by foot and may also be converted to electric machine.
- **Wrinkle resistance** – resiliency.
INFORMATION SHEET 1.2

Materials Used for Sample Run

The basis of any fashion is the materials of which it is made. Fabric is the seamstress’ raw material; his/her point and canvass. The fabric should be easy to handle, so that the learning process is not hampered by the fabric itself. It should be appropriate to the project to be done. The texture, design, and weight should be selected.

Factors to Consider in Fabric Selection

1. Texture – refers to the appearance of fabric, whether it is shiny or dull, smooth or rough.
2. Quality of fabric – refers to the desired characteristics such as color fastness, shrinkage, wrinkle resistance, and wash-and-wear properties.
3. Label – refers to the information about the fabric such as a) fiber content and percentages, b) name or identification number of manufacturer, c) permanent – care label, d) then brand name of the product.

Fabrics Suitable for Beginners

Firmly woven cotton is a good fabric choice since it is easy to handle. Percale, broadcloth, and chambray are fabrics which are easy to cut and sew. Indian Head and denim are also fairly easy to handle, but they may ravel and require a seam finish.

Fabrics Requiring Special Handling

It is important to know the fabrics that require special care to enable us to handle them properly and to know what particular garment they are suited. The following fabrics require special handling:

1. **Wash-and-Wear and Permanent Press Fabrics.** These fabrics are appropriate for simple patterns.

2. **Synthetic Suede and Leathers.** These fabrics are non-woven synthetic materials.
3. **Non Woven Fabrics.** These fabrics are limited largely to shaping, reinforcing, and padding.

4. **Napped and Patterned Fabrics.** These fabrics refer to pile fabrics, such as velvet; to fabric with fuzzy surfaces, such as fleece; and to textured fabrics, such as brocade, satin and knit. These fabrics change in appearance in the up-and-down directions, depending on the reflection of the light.

**Safety Precautions when Operating a Sewing Machine**

When sewing by hand or on the machine, there are certain practices that you should remember. Accidents may happen unless safe habits of sewing are practiced. Tools and equipment used in this activity are pointed and sharp. You must be careful to avoid pain and discomfort. Here are some safety habits when operating the sewing machine:

1. Always work with the light coming from the left. In this way you can see your work well. Your eyes do not suffer from the glare of a light that shines directly if it comes from the left.
2. Wash your hands before working. This will keep your work clean. Unwashed hands will soil your work. If your hands perspire, have a hand towel nearby. Wipe your hands on the towel every time you feel they are moist. Let some time pass before washing your hands after doing some sewing. The hands should not be washed when they are tired.
3. Use the scissors for cutting thread. Always have a pair of scissors nearby to cut thread either from the spool or ball or from the work. Cutting thread with your teeth is unsanitary. Breaking the thread by the hands is not advisable either. Sometimes the thread has a very tight twist which makes it difficult to break.
4. Keep your hand at safe distance from the needle. Do not run the machine too fast.
5. Use the open palm of the right hand to start and stop the machine. Do not use your fingers. They may get caught in the wheel.

**Developing Control on a Treadle Machine**

The following steps will help you in developing treadle control.

1. Rest both of your feet on the treadle, one ahead of the other.
2. Lift the presser foot before starting the sewing machine or put fabric under the presser foot.

3. Start turning the hand wheel towards you applying moderate force in it.

4. When the treadle starts to move, follow its flow, not pushing too much pressure against the treadle.

5. Make five rotations or more until you develop a good control of the sewing machine.

6. Stop your sewing machine by controlling the treadle then hold the band wheel. Practice more as needed.

The control of the sewing machine lies on your feet not in your hand so learn to start and stop the sewing machine instantly at a given point using this control. Lower the presser foot while sewing but be sure to insert fabric swatches so that the feed dog will not be worn out.
Steps in Operating the Treadle Machine

Working with the sewing machine harmoniously requires extra effort from you. Familiarity with its parts and functions are important to operate the sewing machine properly. Here are the steps in operating the treadle machine:

1. Put the chair directly in front of the machine. Sit comfortably using the back rest of the chair. Put both your feet on the treadle. You will have better balance and better control using both feet on the treadle. Place one foot forward on the treadle and the other foot slightly back.
2. Thread the upper and lower part of the machine.
3. Put a fabric under the presser foot.
4. Using the right hand, turn the balance wheel towards you.
5. As the treadle moves, apply pressure gradually first with the foot that is forward, then with the foot that is slightly back. Gradually withdraw the hand from the balance wheel as you run the machine.
6. Guide the material as it is being stitched with your hands at safe distance from the needle.
7. Fasten machine stitching by raising the stitch regulator to enable the machine to stitch backward.
8. To stop the machine, place one hand on the balance wheel and stop the motion of the feet.
9. Turn the balance wheel until the needle is at its highest position.
10. Cut the thread leaving about 6 centimeters from the needle. In this way, the thread does not get out of the needle when you start stitching again.

Note: Practice operating the machine until the balance wheel runs in the same direction and the treadle can be operated with an even, regular rhythm.

Steps in Operating the Electric Machine

The electric or motor driven sewing machine is easier to operate than the treadle machine because all you need to do is to press the foot controller and the machine will run in one direction. Here are the steps in operating the electric machine:

1. Attach foot controller to the motor part and plug in an electrical outlet.
2. Turn the balance wheel towards you with the right hand.
3. Place one foot on the foot controller and press.
4. Stop the machine by releasing pressure on the foot controller.
Steps in Operating a Hi-Speed Lockstitch Sewing Machine

Confidence in one’s ability to operate any mechanical device or machine is gained through practice. The learner should become accustomed to the “feel” of the machine before attempting to do actual sewing. Practicing on a piece of cloth in an unthreaded machine is recommended as a beginning exercise.

It is very important for the beginner to know that during practice and at all other times when a sewing machine is run without fabric on the presser foot, the needle should be unthreaded and the presser foot should not come directly in contact with the feeder.

As soon as the “feel” of the machine is acquired, the learner will be ready to try sewing with thread.

In learning to operate the hi-speed lockstitch sewing machine, you should know the names, locations, and purposes of those parts which control the machine. Like the driver of an automobile who must be able to start, stop, and steer the car, the sewing machine operator must be able to coordinate eye, hand, and foot movements in controlling the machine.

Below is the procedure in operating a hi-speed machine:

1. Sit in an erect position, leaning on the backrest of the chair, and close to the machine. The chair should be placed in such a way that the center of the body will be in line with the needle.
2. Start the motor by turning the switch to the “on” position.
3. Turn the balance wheel toward you until the needle is raised above the presser foot.
4. Raise the presser bar using the knee lifter and position the material under the presser foot. Release knee lifter when done.
5. Place the right foot on the treadle with the weight of the foot resting on the heel.
6. Place the hands on material at each side of the presser foot.
7. Start the machine by pressing down on the treadle with the ball of the foot.

Caution: Avoid running the machine with the presser foot directly against the feeder. This causes excessive wear on feeder and other parts.

8. Guide the material with the finger tips as the fabric feeds through the machine.

Caution: Keep both hands at a safe distance from the needle.

9. Stop the machine when the needle is about one inch from the end of the material.
10. Move the balance wheel by hand so that the needle is down through the material; then, raise the presser foot with the knee press and swing the material on the needle end to end.
11. Continue running the material through the machine from end to end until a fair degree of control is acquired.
Preliminary Sewing Machine Exercises

Preliminary sewing machine exercises include treadle control and positional control. These exercises are performed with the unthreaded sewing machine.

- **Treadle Control**

  This exercise enables you to gain control of the treadle and speed at the same time.

**Materials Needed:**

- Cloth - 150 cm x 20 cm (ends are joined to form a loop)
- Sewing machine needle

![Steps in Performing Treadle Control](image)

**Steps in Performing Treadle Control**

1. Position the fabric under the presser foot and around the table top.
2. With the left hand placed on the left side of the cloth and right hand with the fingers on top and thumb underneath the right side of the cloth, run the machine (unthreaded).
3. Make a gradual build up from a slow speed to a full speed running and vice versa.

- **Positional Control**

  This exercise is done to develop the skill in starting and stopping at an exact position while sewing.

**Materials Needed**

- cloth- 20cm x 10cm (cut in lengthwise grain)
- sewing machine needle
Steps in Performing Positional Control

1. Divide the cloth into three parts by marking it with a pencil. Subdivide the first part at 5 cm., the second part at 10 cm as shown:

```
5cm
10cm
20cm
```

2. Begin sewing on the first line (5cm.) then stop.
3. Sew on to the second line, stop, and repeat to the end of the line.
4. Repeat at 10cm and 20cm lines.

Basic Sewing Machine Exercises

Materials Needed

In performing the basic sewing machine exercises you will need the following materials:

- pieces of cloth - 20cm x 8cm (cut on lengthwise grain)
- spool of thread
- bobbins
- sewing machine needles
- scissors

- Straight Sewing

Procedure in Performing Straight Sew

1. Raise the needle to its highest position by turning the hand wheel towards you.
2. Raise the presser foot.
3. Thread the sewing machine and pull the top and bottom threads to the right then back of the machine.
4. Pick up the two pieces of cloth and line them at the edge of the foot.
5. Turn the hand wheel towards you until the needle pierces the fabric.
6. Hold the tail end of the pieces of cloth with your right hand, placing your thumb underneath and other fingers on top.
7. Put your left hand to the left side of the foot and rest it lightly so that it can help you guide the cloth.
8. Begin stitching by pressing on the machine foot pedal, gently guiding the fabric as it is pulled to the back of the machine.
9. End stitching by raising the needle to its highest position.
10. Raise the presser foot and gently pull the stitched fabric out while slightly moving the balance wheel.
11. Cut the top and bottom threads to release the fabric.

**TIPS:**
- Use the edge of the presser foot as your guide to make stitching lines straight.
- Take care not to let your right hand get under the needle clamp while guiding the fabric.
- Once you are finished sewing on your first trial, do not cut the thread; instead position the second trial under the presser foot and continue sewing. This way, you can prevent the thread from breaking thus saving some as well.

- **Straight Sewing with Backstitch**

```
+------------------------------------------+
|                                         |
|                                         |
|                                         |
|                                         |
|                                         |
|                                         |
```

**Procedure in Performing Straight Sew with Backstitch**

Make it a habit to perform backstitch whenever you sew because it will keep your seams from unraveling. In performing this exercise, follow the procedure in straight sewing except that in beginning and ending the stitches, you will have to perform the following steps:

1. Perform steps 1 to 7 of the previous exercise. (Straight Sew)
2. Begin stitching three to five stitches.
3. Raise the stitch regulator to its highest point. This will help you go back to the top edge.
4. Sew up to the top edge.
5. Return the stitch regulator to its original place.
6. Continue sewing up to the end.
7. Raise the stitch regulator once again and stitch at least three to five stitches.
8. Lower the stitch regulator and finish sewing up to the bottom edge.
Procedure in Performing Corner Sew

Corner sew is usually done on corners of collars and cuffs. Here are the steps in performing corner sew:

1. Perform steps 1 to 7 when you perform straight sew.
2. Start sewing by backstitching.
3. Sew towards a corner.
4. Once at the corner, lower the needle all the way into the fabric. Use the hand wheel to lower the needle.
5. Raise the presser foot. Leave the needle down on the fabric.
6. Turn the fabric to the new position, leaving the needle on it.
7. Lower the presser foot with the fabric in the new position.
8. Resume sewing in a new direction.
9. End stitching with backstitches
Curved Sewing

Procedure in Performing Curved Sew

The skill in performing curved sew is important especially when sewing collars, necklines, armhole and darts. The following are the steps in performing curved sew:

1. Draw a curved line with a fabric pencil on your cloth.
2. Fold the pieces of fabric into two and cut the curved line.
3. Perform steps 1 to 7 when you perform straight sew.
4. Start sewing by backstitching.
5. Once you reached the curved line, slowly work using the foot on the machine as your guide.
6. Continue sewing until you reach the end.
7. End stitching with three backstitches.

LET US REMEMBER

Confidence in one’s ability to operate any mechanical device or machine is gained through practice. It is important to become accustomed to the “feel” of the fabric and of the sewing machine.
SELF-CHECK

A. Directions: Read and understand the items being described. Write the letter of the correct answer in your quiz notebook.

1. Refers to the appearance of fabric whether a fabric is shiny or dull, smooth or rough.
   a. label  
   b. feel  
   c. quality of texture  
   d. texture

2. Refers to the information of fabric like brand name, fiber content, percentage, name of manufacturer.
   a. label  
   b. feel  
   c. quality of texture  
   d. texture

3. Refers to the desired characteristics such as color, fasteners, shrinkages, wrinkle resistance and others.
   a. napped and patterned fabrics  
   b. non-woven fabrics  
   c. synthetic suede  
   d. wash- and- wear permanent press fabric

4. These fabrics are non woven of synthetic materials, they look and feel like leather but has a texture like woven fabrics.
   a. napped and patterned fabrics  
   b. non woven fabrics  
   c. synthetic suede, leathers  
   d. wash-and-wear permanent press fabric

5. These fabrics are appropriate for simple patterns.
   a. napped and patterned fabrics  
   b. non woven fabrics  
   c. synthetic suede leathers  
   d. wash-and- wear permanent press fabrics

II. Answer the following questions briefly.

1. Why is the coordination of hand and foot necessary in operating the sewing machine?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

2. How do preliminary and basic exercises help in developing machine control?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

3. How is an electric machine controlled?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
LET US APPLY WHAT YOU HAVE LEARNED

Task: Conduct Sample Run/Operate Sewing Machine

<table>
<thead>
<tr>
<th>Sewing Machine Exercises</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4</th>
<th>Trial 5</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Treadle Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2. Positional Control</td>
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<td></td>
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<tr>
<td>3. Straight Sew</td>
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<tr>
<td>4. Straight Sew with</td>
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<tr>
<td>Backstitch</td>
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<tr>
<td>5. Corner Sew</td>
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<td></td>
<td></td>
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<tr>
<td>6. Curved Sew</td>
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</tbody>
</table>

Note: Mark C if competent, NC, if not. The last trial will be your final rating.

Final Assessment: __________

Noted by: ______________________________________

RESOURCES:

Equipment
Sewing Machine

Tools
Shears / Scissors

Supplies
Thread
Pieces of scrap fabrics

Learning Materials
CBLM
Manual
LESSON 3

TESTING SEWING MACHINE OUTPUT AND RE-ADJUSTING MACHINE SETTING

INTRODUCTION

The lesson deals with testing sewing machine output and making adjustment on the sewing machine in accordance with the workplace procedure.

ASSESSMENT CRITERIA

1. Sewing machine outputs are tested in accordance with the workplace procedures to ensure the required standards of quality.
2. Test results are interpreted to determine adjustment requirements.
3. Adjustment changes are assessed in accordance with the product and machine operation.

DEFINITION OF TERMS

- **Consistent** – uniform
- **Interlock** – to engage or interlace together
- **Lint** – soft light pieces of thread or wool that come off
- **Long groove** – the point where the shuttle hooks and the needle meets.
- **Pressure** – the force exerted on the fabric as it is moved, by the action of the feed, under the presser foot
- **Sheer off** – to change direction suddenly, especially in order to avoid something
- **Stitch length** – refers to how long its individual stitch
- **Swatches** – small pieces of fabrics.
- **Tangles** – a twisted mass of thread.
- **Tension** – refers to the force that is applied by the machine on the thread.
- **Tension spring** – small screw in the outside part of the bobbin case.
# INFORMATION SHEET 1.2

## How to Test Sewing Machine Output

Testing sewing machine output is important to produce perfect stitch for your sewing job. You need to prepare the following materials to get started:

<table>
<thead>
<tr>
<th>Materials</th>
<th>Equipment</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cotton fabric (4”x 5”)</td>
<td>Lockstitch Sewing Machine</td>
<td>scissors</td>
</tr>
<tr>
<td>1 silk fabric (4”x 5”)</td>
<td></td>
<td>shears</td>
</tr>
<tr>
<td>1 denim fabric (4”x 4”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 cotton fabric (4”x 5”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 silk fabric (4”x 5”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 denim fabric (4”x 5”)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Once you have the complete materials, do the following steps:

1. Arrange the swatches, from the right side to wrong side, with the smaller swatch on top and one side aligned.
2. Overlap each set of swatches by ½” and baste together.
3. Stitch on the swatches using various stitch lengths such as 8, 10 and 12.
4. Write down your observations.

## Standards for Judging Stitching

Interpreting sewing machine output will be an easy task if you know the characteristics of a good stitch which are as follows:

1. Stitches remain uniform in length through varying fabric types, weights, and thickness.
2. The length of stitch is proportioned to the texture of the fabric.
3. The stitches are of the same length.
4. The stitches on top and bobbin thread interlock between fabric layers.
5. The stitches are the same on both right and wrong sides of the fabric.
6. The stitching follows the intended line smoothly and accurately.
7. There are no skipped or broken gaps in stitching.
8. When retraced, it appears as one line of stitching.
9. The stitching has no tangles.

## How to Make Adjustment on the Machine

There are two tension adjustments on the sewing machine; the upper and the lower tensions. The upper tension controls the thread from the needle, while the lower tension controls the thread from the bobbin case. These tensions must be adjusted to suit various fabrics. If the tensions on both threads are properly adjusted, the threads will lock at the center of the material and form a correct stitch.
The size of stitches varies with the type of work being sewn. Thin materials require a short stitch, a light thread, a fine needle, and a tight tension. Heavier materials require a longer stitch, a coarser thread, a larger needle, and less tension.

Sewing machine needles become dull through hard usage and also through ordinary wear; sometimes, they become bent by improper use. The condition of the needle should be checked when sewing difficulties occur. A defective needle should be replaced by a new needle of proper size. A dull needle will show a flat shiny spot at the very tip when rotated between the fingers. The straightness of a needle can be tested by rolling the larger end on a flat surface; bent needles will wobble and straight needles will roll true.

A. How to Adjust Tension on the Needle Thread

The stitch tension control determines the amount of tension on the thread as it passes through the machine.

1. Correcting a Loose Top Stitch
When the needle thread tension is too tight, the thread will lie straight along the upper surface as shown in figure 1.

![Figure 1](image1.png)

- Lower the presser foot.
- Turn the small thumb nut at the front of the tension discs to the left (counter clockwise) to decrease the tension as shown in Figure 2.

![Figure 2](image2.png)

2. Correcting a Loose Bottom Stitch
When the needle tension is too loose, the thread will lie straight along the underside of the material as shown in Figure 3.

![Figure 3](image3.png)
• Lower the presser foot.
• Check to make sure that the thread is between the tension discs.
• Turn the small thumb nut, at the front of the tension disc to the right (clockwise) to increase the tension.
• Check the stitch on pieces of scrap material.

B. How to Adjust Tension on Bobbin Thread

1. Checking Bobbin Case

• Remove the bobbin from the bobbin case.
• Clean the inside of the bobbin case. Remove all particles of lint and dust with a small point stick as shown in Figure 4.

Note: If the tension spring is bent away from the bobbin case, or if the ends of the spring near the delivery eye are damaged, they should be replaced. Consult your teacher if defective parts are discovered.

2. Adjusting Tension Spring on Bobbin Case

The tension on the bobbin thread is controlled by adjusting the tension spring on the outside of the bobbin case (Figure 5). It is seldom necessary to change this adjustment once the tension has been properly set.

a. Correcting a Loose Bobbin Thread

If the tension on the bobbin thread is too loose, the needle thread will lie straight along the upper surface of the material.

• Tighten the tension
• Turn the regulating screw in the tension spring to the right.
• Test the tension
• Thread the bobbin case. Hold the end of the thread and allow the case to hang freely.
• Check stitch on pieces of scrap material
b. Correcting a Tight Bobbin Thread

If the tension on the bobbin thread is too tight, the bobbin thread will lie straight along the underside of the material.
- Loosen the tension
- Turn the regulating screw in the tension spring (Figure 6) slightly to the left.
- Thread the bobbin case and test the tension.
- Check stitch on pieces of scrap material.

C. How to Regulate the Length of the Stitches

The length of the stitch is regulated by the stitch regulator on the front side of the head.
- Move the stitch regulator downward to lengthen stitch.
- Move the stitch regulator upward to shorten stitch.
- Check the length of stitch on pieces of scrap material.

Note: For normal stitching, set the regulator at 10 to 12 stitches per inch, or at the number 3 for metric scale machines.

D. How to Regulate the Pressure on the Material

The pressure on the material is regulated by the adjusting screw on the top of the machine (Figure 7).
- Turn the adjusting screw to the right to increase the pressure for heavy materials.
- Turn the adjusting screw to the left to decrease the pressure for light weight materials.
- Check the pressure by stitching on pieces of scrap material of the same weight as the work.

Note: A pressure that is too heavy will cause the machine to run hard and will leave the print of the feed on fine materials.

LET US REMEMBER

A perfect stitch is a result of properly tested machine output and re-adjusted sewing machine.
SELF-CHECK

I. Directions: Write A if the statement is a characteristic of good stitch and B if it is not. Write your answer in your quiz notebook.

____ 1. The stitches have no tangles.
____ 2. The stitching follows the intended line smoothly and accurately.
____ 3. The length of stitch is not proportioned.
____ 4. There are skipped or broken gaps in stitching.
____ 5. The stitches appear on both right and wrong sides of the fabric.

II. Fill in the blanks with the correct answer.

1. Too little tension produces too much thread and a weak, loose ________.
2. When the needle tension is too loose, the thread will lie flat along the underside of the ________.
3. The tension on the bobbin thread is controlled by adjusting the tension spring on the ________.
4. The length of the stitch is regulated by the ________ in the slot on the front side of the head.
5. The pressure on the sewing material is regulated by the __________.

III. Answer the following questions briefly.

1. Why do we have to test a sewing machine output?
2. Does the type of fabric affect the sewing machine output? Why?
3. How are you going to test a sewing machine output?
LET US APPLY WHAT YOU HAVE LEARNED

Task: Test Machine Output and Make Adjustment

1. Prepare swatches of silk, denim and cotton. Stitch on the swatches by using various stitch length. Assess the output and record your observation on the table. Make adjustment when necessary.

Name: __________________________________ Machine No. ________

<table>
<thead>
<tr>
<th>Type of Fabric</th>
<th>Stitch Length Applied</th>
<th>Machine Output (consistency, tension)</th>
<th>Adjustment Done</th>
<th>Remarks Corrected (C); Not Corrected (NC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

2. Assess performance using the evaluation sheet below.

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Competent</th>
<th>Not Competent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sewing machine outputs were tested in accordance with the workplace procedures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Test results were interpreted to determine adjustment requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Adjustment changes were done and assessed in accordance with the product and machine operation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Final Assessment: __________

Noted by: ______________________

_____________________________________

42
RESOURCES:

Equipment
Sewing machine

Tools
Scissors
Flat screw

Supplies
Swatches of fabric
Thread

Learning Materials
Learning Module
Writing Pad
Textbook & Manual
LESSON 4

MAINTAINING RECORDS OF SEWING MACHINE
IN GOOD CONDITION

INTRODUCTION

The lesson deals with the importance of recording and maintaining records on the set up sewing machines.

ASSESSMENT CRITERIA

1. Records are maintained based on the undertaken work procedure.
2. Reports on the set-up machines are systematically prepared in accordance with the workplace procedure.

DEFINITION OF TERMS

- **Fault** – something is wrong with the machine, system, design etc, which prevents it from working properly.
- **Record** – information preserved in writing or the like as evidence.
- **Trend** – a general tendency in the way a situation is changing or developing.
- **Vital** – extremely important and necessary for something to succeed or exist.
**INFORMATION SHEET 1.3**

**Importance of Maintaining Records**

Quality is of prime importance in any aspect of business. Customers demand and expect value for money. As producers of apparel there must be a constant endeavor to produce work of good quality. This quality is usually checked by the systems of recording whether in machines, material and operators. As a future producer of clothes you should know the importance of recording. The following are the importance of recording:

1. It gives information for tracing the trend to the source.
2. It gives information on consistently unsatisfactory machines.
3. It provides vital information for without it, it is impossible to know the situation at any given time to make sound decisions.
4. It provides solutions to a problem.

**Record Matrix Form**

A **Record Matrix Form** is a documentation that shows the adjustments done on the sewing machine during the set up and the performance of the machine after setting. It is an important piece of evidence that you can use when finding the cause of a machine problem. A Record Matrix Form has the following contents:

1. Date – the day when the sewing machine is set and operated.
2. Project Title – correct name / agreed name of the operation.
3. Adjustments and Attachments – includes the tension, stitch length, thread used and number of the needle.
4. Remarks – the conditions of the sewing machine after setting.

### Record Matrix Form for Setting Up Sewing Machine

<table>
<thead>
<tr>
<th>Name of student: ___________________________</th>
<th>Machine No. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date</strong></td>
<td><strong>Project Title</strong></td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td><strong>Upper Tension</strong></td>
</tr>
<tr>
<td>July 14, 2012</td>
<td>Straight Stitching</td>
</tr>
</tbody>
</table>

Problems / faults encountered during machine operation are recorded on a separate form called Fault Analysis Card.
Fault Analysis Card

Fault analysis includes studying the possible causes of any error found while operating the sewing machine. The results are then recorded in the Fault Analysis Card for future reference. It may include description and action whether to correct or report machine fault.

Two Categories of Fault

1. **General Fault** – those resulting from machine or operative defects, such as:
   a. Incorrect threading
   b. Slipped stitches
   c. Bad tension
   d. Seam breaking away

2. **Job Fault** – those which occur specifically in the operation being studied, for example:
   a. step joins
   b. pleats
   c. wrong measurements
   d. wrong patterns

A Fault Analysis Card has the following contents:

1. Fault – correct name/agreed name.
2. Appearance – clear description or an example attached.
3. Cause – the main reason.
4. Effect – result of the fault.
5. Action – the action to be carried out on the discovery of the fault.
6. Prevention – any action which can be taken to avoid a recurrence of the fault.

**FAULT ANALYSIS CARD**

| Name: Mina de Leon | Date: ________________ |
| Machine No.: 1 | |

<table>
<thead>
<tr>
<th>Fault</th>
<th>Appearance</th>
<th>Cause</th>
<th>Effect</th>
<th>Action</th>
<th>Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven Stitches</td>
<td>-----------</td>
<td>Size of the needle did not match the thickness of a fabric.</td>
<td>Weak part in stitches that break way under pressure</td>
<td>Use the needle having the size that matches the fabric.</td>
<td>Set machine properly using correct size of needle.</td>
</tr>
</tbody>
</table>
LETS US REMEMBER

- A Record Matrix Form is an important piece of evidence that you can use when conducting fault analysis.
- An effective record and report must be concise and well laid out.
- Proper use and interpretation of records can lead to corrective action resulting in improved machine performance.

SELF-CHECK

Directions: Answer the following questions briefly.

1. Why is maintaining records of sewing machine in good condition important?
2. How does a Record Matrix Form differ from a Fault Analysis Card?
3. Why do you have to record at once the performance of your sewing machine?
LET US APPLY WHAT YOU HAVE LEARNED

Task: Make Record of Sewing Machine in Good Condition

1. Set up and operate a sewing machine and record its performance using the Record Matrix Form below.

Record Matrix Form for Set up Machines

<table>
<thead>
<tr>
<th>Date</th>
<th>Project Title</th>
<th>ADJUSTMENTS AND ATTACHMENTS</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Upper Tension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stitch Setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thread Used</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Needle Size</td>
<td></td>
</tr>
</tbody>
</table>

Name of Student: ___________________________ Machine No. ____
2. Be able to make adjustment on the machine in case a problem exists.
3. Fill out the Fault Analysis Card below for the details of the fault.

FAULT ANALYSIS CARD/CHART

Name: ___________________________________________ Machine No.: _______

<table>
<thead>
<tr>
<th>Date</th>
<th>Fault</th>
<th>Appearance</th>
<th>Cause</th>
<th>Effect</th>
<th>Action</th>
<th>Prevention</th>
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</tbody>
</table>

4. Assess output using the evaluation sheet below.

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Competent</th>
<th>Not Competent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Records were correctly done and maintained based on the work procedure.</td>
<td></td>
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</tr>
<tr>
<td>2. Reports on the set-up machines were systematically prepared.</td>
<td></td>
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<tr>
<td>3. Filled out record forms completely and correctly.</td>
<td></td>
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</tr>
</tbody>
</table>

Final Assessment: ________

Noted by: ___________________________________________
RESOURCES:

**Equipment**
Sewing machine

**Tools**
Scissors
shears

**Supplies**
Needle
Threads
Swatches of fabric

**Learning Materials**
Writing Materials
Manual
Learning Module
Record Matrix (Sample Form)
Fault Analysis Card (Sample Form)
SELF-CHECK

**Directions:** Choose the correct answer. Write only the letter of your choice in your quiz notebook.

1. When sewing, place one foot ______ on the treadle and the other foot slightly back.
   a. forward  
   b. downward  
   c. sideward  
   d. none of these

2. What part of the sewing machine controls the looseness and tightness of stitches?
   a. bobbin  
   b. presser foot  
   c. thread guide  
   d. upper tension

3. What part of the sewing machine checks the length of stitches?
   a. balance wheel  
   b. belt  
   c. feed dog  
   d. stitch regulator

4. A detailed description of requirements, dimensions, etc., as of proposed machine is called _________.
   a. product abilities  
   b. operation manual  
   c. product knowledge  
   d. product specification

5. Which part of the sewing machine controls the bobbin while winding thread?
   a. bobbin winder  
   b. needle bar  
   c. needle clamp  
   d. spool pin

6. What size of the sewing machine needle is used for general sewing?
   a. 10  
   b. 12  
   c. 14  
   d. 16

7. Which of the following machines is run by foot and may also be converted to electric power machine ________?
   a. hemmer machine  
   b. high speed over edger  
   c. lockstitch machine  
   d. over edging machine

8. This machine has an oiler tank where the oil is restored under its bed.
   a. embroidery machine  
   b. hemmer machine  
   c. hi-speed lockstitch  
   d. over edging machine

9. These fabrics appear different in the up-and-down directions depending on the reflection of light.
   a. Napped  
   b. non-woven  
   c. synthetic  
   d. wash-and-wear

10. The type of machine used in making fancy on different fabric.
    a. buttonholer machine  
    b. double needle machine  
    c. embroidery machine  
    d. lockstitch sewing machine

11. It is the flat portion of the machine.
    a. arm  
    b. bed  
    c. cabinet  
    d. head

12. The mechanism of the sewing machine that sets it in motion.
13. The first step in threading the upper part of the sewing machine is to _________.
   a. bring the thread to thread guide
   b. pull it through the lower thread guide
   c. put the spool of thread on the spool pin
   d. thread the needle

14. The first step in threading the lower part of the sewing machine is to _________.
   a. be sure that you hear the case being locked upon inserting the bobbin case inside the shuttle
   b. pull the upper and lower thread together by 4 inches
   c. put the bobbin back to the bobbin case and pull the thread through the little slot at least 4 inches
   d. remove the bobbin case pulling on the bobbin case latch.

15. The best fabric suitable for beginners is ____________.
   a. brocade
   b. cotton
   c. satin
   d. velvet

16. How does one stop the electric sewing machine?
   a. by asking for assistance
   b. by releasing the pressure on the foot controller
   c. by placing one hand on the balance wheel
   d. by pushing the sewing machine

17. The pressure must be regulated according to the ______ to be stitched.
   a. fabric
   b. clothing
   c. paper
   d. plastic

18. A good characteristic of machine stitches is _________.
   a. There are skipped or broken gaps in stitching
   b. The length of stitches are proportioned to the texture of the fabric
   c. The stitching has tangles
   d. None of the above

19. The upper tension controls the thread from the _____________.
   a. bobbin
   b. needle
   c. thread guide
   d. spool pin

20. A documentation that shows the adjustments done on the sewing machine during the set up and the performance of the machine after setting.
   a. Accomplishment Record
   b. Fault Analysis Card
   c. Progress Chart
   d. Record Matrix Form
MODULE 2

QUALIFICATION TITLE : DRESSMAKING/TAILORING NC II
UNIT OF COMPETENCY : PERFORM BASIC MAINTENANCE
MODULE TITLE : PERFORMING BASIC MAINTENANCE
NOMINAL DURATION : 100 HRS.

GARMENTS
(DRESSMAKING/TAILORING NC II)
MODULE INTRODUCTION

The module covers the knowledge, skills and attitudes in performing major/minor maintenance of the sewing machine done by a dressmaker or tailor.

EXPECTED OUTCOMES

At the end of this module, you should be able to:

a. operate a sewing machine and assess its performance;
b. clean and lubricate sewing machines; and
c. check sewing machine operations/performance.
PRETEST

Directions: Read and analyze each item carefully and choose the letter of the best answer from the options below. Write your answers in your quiz notebook.

1. The upper part of the sewing machine head being driven by hand when starting the machine.
   a. balance wheel
   b. band wheel
   c. stop motion screw
   d. treadle

2. The control of an ordinary sewing machine lies on the ________.
   a. balance wheel
   b. band wheel
   c. belt
   d. treadle

3. The part of the sewing machine that controls the looseness and tightness of stitches.
   a. bobbin
   b. presser foot
   c. thread guide
   d. upper tension

4. A type of oil that lubricates and gives the sewing machine longer life.
   a. baby oil
   b. coconut oil
   c. crude oil
   d. machine oil

5. A machine problem that occurs when there is incorrect size of needle or thread.
   a. fabric jams
   b. needle breaks
   c. seam puckers
   d. thread breaks

6. When working on the machine, the light should come from ________.
   a. front
   b. left
   c. rear or back
   d. right

7. The part of the sewing machine that controls the stroke of the feed dog is __________.
   a. face plate
   b. feed dog
   c. slide parts
   d. stitch regulator
8. The correct posture when working in a sewing machine is
   ____________.
   a. leaning backward
   b. slouching forward
   c. slightly leaning forward
   d. straight back

9. An ordinary lockstitch sewing machine can be instantly stopped by
   ____________.
   a. removing cord or belt
   b. holding the balance wheel
   c. stopping the treadle
   d. any of the above

10. When the upper tension is too tight, it may cause ____________.
    a. loose lower thread
    b. loose upper thread
    c. puckered seam
    d. skipped stitches

11. In wiping spilled oils during cleaning, the correct cloth is ____________.
    a. damp cloth
    b. dry cloth
    c. oiled cloth
    d. any of the above

12. The part of the sewing machine that should be avoided when oiling.
    a. bobbin winder
    b. rubber ring
    c. stitch regulator
    d. stop motion screw

13. The part of the sewing machine that can be considered a safety device
    since it covers the lower mechanism and is important during garment
    construction.
    a. bobbin winder
    b. slide plate
    c. tension disc
    d. throat plate

14. The correct sequence in threading the upper part of the sewing
    machine.
    a. spool, upper tension, thread take-up lever, upper thread
    b. spool, upper thread guide, upper tension, thread take up, face
       plate needle thread guide and needle.
    c. Spool, upper tension, upper thread guide, thread take up, needle
    d. Spool, thread take up, upper tension, upper thread guide, needle.
15. If the stitch regulator is accidentally set to 0, the possible trouble is

   a. heaviness on the machine
   b. no fabric movement
   c. seams pucker
   d. upper thread breaking

16. A material that maintains moving parts of a sewing machine in smooth operation.
   a. absorbent cloth
   b. lint brush
   c. machine oil
   d. water

17. A good practice of cleaning and lubricating sewing machine.
   a. every two weeks
   b. once a week
   c. once a month
   d. twice a week

18. The part of the sewing machine that covers the inner mechanisms of presser bar and needle bar.
   a. face plate
   b. slide plate
   c. throat plate
   d. any of the above

19. When we turn the screw of the upper tension clockwise, the stitches will tend to be

   a. loose
   b. no changes occur
   c. tight
   d. all of the above

20. To regulate the length of stitches, the sewer can adjust the

   a. needle bar screw
   b. stitch regulator
   c. stop motion screw
   d. upper tension

21. In setting the needle properly, the flat side should be placed in

   a. front
   b. left
   c. rear or back
   d. right

22. The correct measure of thread to fill up the bobbin is

   a. at least ½ of the bobbin
   b. at least 1/3 of the bobbin
   c. at least 2/3 of the bobbin
   d. completely filled up
23. To correct a puckering seam, the sewer or mechanic may check the following for possible cause EXCEPT __________.
   a. bobbin case
   b. spool pin
   c. upper tension
   d. bobbin winder

24. Oiling of machine should be regularly done in order to prevent the accumulation of dust and formation of __________.
   a. gum
   b. lint
   c. rust
   d. thread

25. This part of sewing machine is being adjusted to apply correct pressure on the fabric against the feed dog.
   a. needle bar
   b. presser bar screw
   c. stitch regulator
   d. tension spring

26. An improperly threaded machine may cause the following problems EXCEPT __________.
   a. needle breaking
   b. seam puckering
   c. skipping stitches
   d. upper thread breaking

27. A source of information in the accurate use, care and maintenance of your sewing machine is __________.
   a. instruction book or manual
   b. module
   c. textbook
   d. any of the above

28. A good posture during machine operation prevents one from __________.
   a. back pain
   b. leg cramps
   c. pulled muscles
   d. stomach pain

29. Which of the following materials is not included in cleaning a sewing machine?
   a. brush
   b. rag
   c. oil
   d. screw driver

30. If a chemical or small broken part gets into your eyes accidentally during machine operation, you may __________.
   a. apply first aid by yourself
   b. ask a classmate to blow your eyes
   c. call the attention of your teacher
   d. never inform anyone about the incident
LESSON 1

OPERATING SEWING MACHINE AND ASSESSING ITS PERFORMANCE

INTRODUCTION

The lesson deals with the operation of sewing machine, the standards of operation, the identification and classification of its troubles and possible remedies that will lead to its high performance level.

ASSESSMENT CRITERIA

1. Machine is started and stopped in accordance with the job requirements.
2. Machine’s performance is monitored and assessed to ensure application of correct procedure based on standard machine operations.
3. Minor and major machine problems are identified, recorded, and reported.

DEFINITION OF TERMS

- **Blunt** – refers to needle point that is irreplaceable.
- **Jam** – to cause a machine to stick fast so that it cannot work.
- **Manipulation** – the act of managing or operating manually or mechanically a given tool or equipment
- **Posture** – the way one holds the body.
- **Treadle** – this is where the feet rest to drive the band wheel through the pitman rod.
INFORMATION SHEET 2.1

Standards for Sewing Machine Operation

Understanding and following the correct procedure in operating a sewing machine will make your work easier, more interesting and challenging. Here are some pointers that you need to follow in manipulating your sewing machine.

1. Start with the right tools and supplies. Have your needle, thread, screwdriver ready for use. With your tools at hand, you can start working continuously on your machine.

2. Always maintain good working posture. Sit on your back slightly leaning forward. It can prevent body pains after working on your machine.

3. Learn to thread the sewing machine using the guidebook. This will save your time to get a correct threading. Refer to a manual or someone to check if you have threaded it properly.

4. Be sure that the needle is properly set according to the directions for the specific models. A properly attached needle will make you work without any trouble.
5. Set the stitch regulator according to job specifications and test the stitches for possible adjustments.

6. Check tension dials and adjust according to project requirement of the stitches. A correct adjustment on the tension dials will make perfectly sewn garment.

7. Turn power off (for electric machines) when the sewing machine is not in use. This will save electricity and avoid possible minor accidents.

8. Keep sewing tools in proper place and dust the sewing machine before putting a little amount of machine oil in slots. This will make the sewing machine run smoothly.

**Classifications of Sewing Machine Troubles**

If the sewing machines in your laboratory are kept in good condition and are carefully adjusted and threaded, not too many things can go wrong. But there are certain difficulties that occur during an operation so often, so you should know these minor and common problems and their causes. There are two classifications of sewing machine troubles, namely:

1. **Minor sewing machine trouble**
   This refers to problems that arise involving incorrectly attached accessories or supplies, unadjusted tensions, or that requires a little dusting or oiling.

2. **Major sewing machine trouble**
   This involves replacing or removing damaged spare parts that made the sewing machine not totally functioning.
Let us look at the illustrations below and try to classify the troubles you might encounter in operating a machine.

Common Sewing Machine Troubles

**SKIPPING STITCHES**

**PUCKERING STITCHES**

**NEEDLE BREAKING/BENDING**

**LOOSE LOWER TENSION**

**LOOSE UPPER TENSION**

**LET US REMEMBER**

- The instruction manual or book of a sewing machine is very important. It is your source of information regarding its uses, care, and maintenance. It may also contain information on how to perform simple troubleshooting.
- Problems arise because of lack of familiarity with the machine and failure to use it as directed. It is therefore important to refer to the suggested procedure before attempting to use it. This will save a lot of trouble as you progress in your project.
SELF-CHECK

A. Directions: Identify whether a machine trouble is a major or minor problem. Write Mj for major problems and Mn for minor problems.
   1. Needle breaking
   2. Looping stitches
   3. Motor stuck
   4. Puckered stitches
   5.Skipping stitches

B. Answer the following questions briefly.

   1. Why do we have to maintain good working posture while sewing?

   2. Why is there a need to assess the performance of the sewing machine?

   3. How are sewing machine troubles classified?
LET US APPLY WHAT YOU HAVE LEARNED

Task: Assess Machine Performance

1. With a partner, assess the performance of the assigned sewing machine. Write the information called for in the given form.

SEWING MACHINE PERFORMANCE ASSESSMENT FORM

<table>
<thead>
<tr>
<th>Name: ___________________________</th>
<th>Sewing Machine No.______</th>
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<tbody>
<tr>
<td>Machine Problem</td>
<td>Minor</td>
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</table>

2. Assess performance using the rating scale below.

RATING SCALE FOR OPERATING AND ASSESSING THE SEWING MACHINE PERFORMANCE

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Student Score</th>
<th>Teacher’s Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Tools and Materials</td>
<td>10</td>
<td></td>
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<tr>
<td>B. Performance</td>
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<td></td>
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<tr>
<td>• Machine was started and stopped in accordance with the job requirements</td>
<td>20</td>
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<tr>
<td>• Machine’s performance was monitored and assessed.</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Minor and major machine problems were identified, recorded, and reported.</td>
<td>20</td>
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<tr>
<td>C. Safety Habits</td>
<td>20</td>
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<tr>
<td>D. Speed/Time Management</td>
<td>10</td>
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<tr>
<td>TOTAL</td>
<td>100</td>
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</tbody>
</table>

RESOURCES

Sewing machine and accessories
Sewing machine manual
LESSON 2

CLEANING AND LUBRICATING SEWING MACHINE

INTRODUCTION

The lesson deals with sewing machine maintenance in accordance with the occupational health and safety procedure.

ASSESSMENT CRITERIA

1. Machine operation is monitored to ensure application of correct procedure based on the workplace requirements.
2. Machine is cleaned and lubricated in accordance with occupational health and safety procedures.

DEFINITION OF TERMS

- **Absorbent** – a material property that sucks-up or takes-in the manner of sponge.
- **Bent** – a change of shape or angle caused by pulling or pricking to a harder part such as a machine needle driven out of throat plate slot.
- **Damp cloth** – a cloth applied with moisture on water.
- **Gummy** – a thick of sticky quality such as oiled accumulated dust on sewing machine part.
- **Lubricate** – the act of applying a lubricating agent between moving parts to reduce friction and prevent the formation of rust.
- **Lubricant** – a material capable of reducing friction when applied between moving parts.
INFORMATION SHEET 2.2

Occupational Health and Safety Procedure in Sewing Machine Maintenance

Cleaning and lubricating a sewing machine are quite messy and hazardous tasks. Therefore, personal care should be observed during these activities. The following health and safety procedure should be followed when cleaning the sewing machine:

1. Wear personal protective equipment. This prevents your clothing from being stained by oil and dirt. Be sure to wear gloves to avoid accumulation of oil and dirt in your nails and palms. (Wearing of protective eye glasses is optional).
2. Remove the upper belt or turn power off (for powered sewing machine) before cleaning the sewing machine.
3. When a chemical or small spare part get into your eyes, call the attention of your teacher at once.
4. Do not remove any safety device from the machine.
5. Be sure that all screws are well-tightened before starting the machine.
6. Make sure that no screws or tools are left on the floor to avoid slipping.
7. Wipe dry spilled oils on the floor to avoid accidents.
8. Assign colored tags for a newly maintained sewing machine. This will make the user be aware of its present condition.
9. Provide a small bin for your garbage when performing this job.
10. Have a separate cabinet or storage for tools and supplies for sewing machine maintenance.
11. Always refer to the sewing machine service manual for accurate application of procedure.

Procedure in Cleaning and Oiling the Sewing Machine

To get the best result from any machine, give it the necessary proper care, such as cleaning and lubricating. If it is not kept clean and lubricated, it may run heavily.

As you clean the machine, it is best to clean one area at a time. Remove only the parts that are involved and be sure to note where each part is located.

Below are the preliminary steps in cleaning the machine:

1. Prepare the needed tools and supplies in cleaning the sewing machine. Cleaning tools and materials include sewing machine oil, lint brush or dry paint brush, screw drivers, pen, record notebook and cotton buds (optional)
2. Remove the needle if there is any. This will prevent your fingers from being pricked during the cleaning process.

A. **Face plate** (presser bar, needle bar, thread take up lever, lifter).

1. Unscrew face plate and keep it in the drawer while cleaning.
2. Brush dust away then put a little amount of oil while rotating the balance wheel so inner parts can be accessed.
3. Put back the face plate in place and tighten the screw.

B. **Upper Tension (disc spring and dial)**

1. Remove outer bolt, tension dial, discs and disc spring.
2. Lay each part on your front table following its disassembling for easier assembling.
3. Brush dust and wipe with absorbent cloth with oil.
4. Assemble by following the laid parts on your table.
C. **Lower Mechanism (rotary oscillating hook)**

1. Remove bobbin case and shuttle race assembly.

   ![Bobbin Case and Latch](image)

2. Remove dust with lint brush.

   ![Dust Removal](image)

3. Put a little amount of machine oil on moving parts.

4. Return machine parts in place.

D. **Other Minor Parts**

1. Remove entangled threads on the balance wheel.
2. Brush accumulated dust in the treadle joints connecting the band wheel.
3. Clean gummy dust on the band wheel.
4. After all parts were dusted, lubricate all joints and oil slots with good quality oil.
5. Wipe off all surplus oil then put a piece of absorbent cloth under the presser foot for dripping oil.
6. 

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68
When the machine has been thoroughly cleaned and oiled, run it slowly for several minutes to allow the oil to work on its moving parts. Place a scrap of fabric under the presser foot and lower the needle to absorb excess oil.

**OILING POINTS**

Figure 1 shows the upper mechanisms oiling points. Figure 2 shows lower mechanisms of the sewing machine that need to be oiled to maintain moving parts in good condition.

- **Figure 1**  
  (Upper mechanism)

- **Figure 2**  
  (Lower mechanism)

  Back part of the head  
  Face plate oiling point
LET US REMEMBER

- A sewing machine like any piece of equipment needs some care and cleaning. Keep it free from dust and lubricated at least once a week or more often if the machine is in constant use.
SELF-CHECK

A. Directions: Select your answer from the given options on each item.
Write your answer in your quiz notebook.

1. A good practice of cleaning and lubricating the sewing machine is _____________.
   a. every two weeks
   b. once a week
   c. once a month
   d. twice a week

2. A material that maintains moving parts of sewing machine in smooth operation is _____________.
   a. absorbent cotton
   b. lint brush
   c. machine oil
   d. water

3. If the stitch regulator is accidentally set to 0, the possible trouble is _____________.
   a. heaviness of the machine
   b. seam pucker
   c. upper thread breaking
   d. there will be no fabric movement

4. In wiping spilled oils during cleaning, the correct cloth is ________.
   a. damp cloth
   b. dry cloth
   c. oiled cloth
   d. any of the above

5. The part of the sewing machine that should be avoided when oiling is _____________.
   a. bobbin winder
   b. rubber ring
   c. stitch regulator
   d. stop motion screw

B. Read and answer the following questions:

1. Why is it necessary to keep the machine clean and lubricated?
2. Why is it important to remove the needle and other parts of the sewing machine before attempting to clean it?
3. If a sewing machine oil is not available, can you use ordinary oil? Why?
LET US APPLY WHAT YOU HAVE LEARNED

Task: Clean and Lubricate Sewing Machine

1. Perform the steps in cleaning and lubricating the machine. Accomplish the Activity Sheet below.

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Check when done</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clean and lubricate the inner part of face plate</td>
<td></td>
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<tr>
<td>• Disassemble, clean and assemble the upper tension</td>
<td></td>
<td></td>
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<tr>
<td>• Clean and lubricate the lower mechanisms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clean and lubricate other parts of the machine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Assess performance using the rating scale below.

RATING SCALE FOR CLEANING AND LUBRICATING SEWING MACHINE

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Tools and Materials (10%)</td>
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<tr>
<td>• Prepared the needed tools and supplies in cleaning the sewing machine</td>
<td>5</td>
<td>5</td>
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<tr>
<td>• Used appropriate cleaning tools</td>
<td></td>
<td></td>
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<tr>
<td>B. Performance (60%)</td>
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<tr>
<td>• Cleaned and lubricated the inner part of face plate</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>• Disassembled, cleaned and assembled the upper tension</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>• Cleaned and lubricated the lower mechanisms</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>• Cleaned and lubricated other parts of the machine</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>C. Safety and Work Habits (20%)</td>
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<tr>
<td>• Worn PPE</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>• Maintained cleanliness of the work area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Observed proper waste disposal</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>D. Speed/Time Management (10%)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
RESOURCES:

- Personal Protection Equipment (PPE)
- Treadle or lockstitch sewing machine
- Sewing machine accessories
- Set of screw drivers
- Sewing machine lubricants and dispenser
- Pieces of absorbent cloth
- Sewing machine manual
- Writing pad with pen
LESSON 3

CHECKING SEWING MACHINE PERFORMANCE

INTRODUCTION

The lesson deals with correcting the identified troubles in a sewing machine and improving its performance through correct applications based on the occupational health and safety procedure.

ASSESSMENT CRITERIA

1. Machine troubles are corrected in accordance with the occupational and health safety procedures.
2. Sewing machine performance is improved based on the workplace requirements.

DEFINITION OF TERMS

- **Adjust** – change present setting as in adjusting tensions.
- **Entangle** - forming knots like thread entangled in the bobbin case.
- **Lift** – moving upward as in a presser foot lifter.
- **Replace** – putting something new in the place of an old or damaged part.
- **Rewind** – winding again or repeat winding.
- **Pucker** – wrinkling of fabric caused by very tight stitches.
INFORMATION SHEET 2.3

Common Sewing Machine Problems, Causes and Remedies

In the previous lesson you have studied how to assess machine performance. Knowing the problem is not enough. You should also know the common causes of sewing machine troubles and their remedies. This will save time and effort and prevent damage on your sewing job.

The following table shows the sewing machine problems, possible causes and remedies.

<table>
<thead>
<tr>
<th>PROBLEMS</th>
<th>POSSIBLE CAUSES</th>
<th>REMEDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Thread Breaks</strong></td>
<td>1. Size of needle too big or too small.</td>
<td>✗ Change the needle with the correct size</td>
</tr>
<tr>
<td></td>
<td>2. Type of thread too thin, knotted, or uneven</td>
<td>✗ Change thread with the correct type</td>
</tr>
<tr>
<td></td>
<td>3. Size of needle maybe wrong for the fabric</td>
<td>✗ Change the needle with the correct type</td>
</tr>
<tr>
<td></td>
<td>4. Machine threading may be incorrect</td>
<td>✗ Thread the machine properly</td>
</tr>
<tr>
<td></td>
<td>5. Tension may be too tight.</td>
<td>✗ Adjust tension then check stitches</td>
</tr>
<tr>
<td><strong>B. Skipped Stitches</strong></td>
<td>1. Size of needle may be wrong for the fabric</td>
<td>✗ Change the needle with the correct size</td>
</tr>
<tr>
<td></td>
<td>2. Stitch length may be too long.</td>
<td>✗ Adjust the stitch length to standard size</td>
</tr>
<tr>
<td></td>
<td>3. Condition of the needle may be dull or bent</td>
<td>✗ Replace the needle with a new one</td>
</tr>
<tr>
<td></td>
<td>4. Machine threading may be incorrect</td>
<td>✗ Thread the machine properly</td>
</tr>
<tr>
<td></td>
<td>5. Needle position may be wrong</td>
<td>✗ Set the needle properly</td>
</tr>
<tr>
<td><strong>C. Needle breaks</strong></td>
<td>1. Tension may be too tight</td>
<td>✗ Adjust the tension and test stitches</td>
</tr>
<tr>
<td></td>
<td>2. Needle position may be wrong</td>
<td>✗ Set the needle properly</td>
</tr>
<tr>
<td></td>
<td>3. Presser foot may not be tight</td>
<td>✗ Tighten the presser foot</td>
</tr>
<tr>
<td></td>
<td>4. Fabric may have too many layers or may be too thick.</td>
<td>✗ Adjust pressure on the presser foot</td>
</tr>
</tbody>
</table>
### D. Seams Pucker

1. Tension may be too tight
2. Needle may be too big or dull
3. Thread may be too coarse
4. Stitch length may be too long

- Loosen tension screw
- Replace the needle
- Change the thread with correct thickness
- Adjust stitch regulator to normal stitch length

### E. Fabric jams in machine

1. Thread ends may need to be held at start of stitching
2. Needle may be too big
3. Throat plate may need round hole plate

- Hold thread before start stitching
- Replace the needle with correct size
- Replace throat plate

### F. Machine jams

1. Bobbin threading may be incorrect.
2. Thread may be knotted or too coarse
3. Bobbin case threads may catch thread
4. Needle position may be wrong
5. Machine threading may be incorrect

- Rewind thread to bobbin
- Entangle thread or change thread
- Remove caught threads from bobbin
- Set the needle properly
- Thread the machine properly

### G. No Fabric Movement

1. Setting of stitch regulator may be set to 0
2. Feed dog may be lowered

- Set stitch to normal length
- Set feed reverse lever upward

**Note:** If there is no improvement after known remedies have been applied, call the teacher or technician to fix the sewing machine for you.

### Checking Sewing Machine Performance

To check the performance of your sewing machine, you need to prepare first the following materials:

- 5 inches x 5 inches bias cut swatches
- 4 inches x 4 inches lengthwise cut swatches
- thread
- Thread clipper or sharp scissors
- Machine needles
• **Checking the Thread Tension**

Learning to recognize standard tension and poor tension promptly is necessary for efficient sewing. You can learn to identify good and poor tension by its appearance.

- **Upper tension is too tight.**
  - Spool thread lies flat or floats on the upper side.
  - Work draws or puckers.
  - More of the bobbin threads show between the stitches on the upper side than in a perfect tension.

- **Upper tension is too loose**
  - Stitches on the upper side look fat, bulgy, and loose.
  - Stitches sometimes looped, staggered in a sort of wavy line.
  - None of the bobbin thread shows on the surface.

- **Perfect or balance tension**
  - Stitches are slightly oval.
  - Stitches are pinched in at the ends.
  - Stitches are evenly shaped or regular.
  - Stitches look alike on either side of the work.

Top view of a perfect tension
Testing Machine Stitches
1. Stitch over two layers of cloth on the bias. Then stretch the cloth firmly between your fingers and thumb.

When the stitches are balanced, stitches will remain intact. When loose, stitches will form a loop and when tight, stitches will break.

2. **Stitch over two layers of cloth on the lengthwise cut.** Make another test for perfect tension adjustment. Get your prepared 2 layers 4 x 4 inches cloth cut in lengthwise grain. Stitch and pivot on a square corner.

- If the corner draws a little or does not make a perfect right angle, the tension needs adjustment.
- If the stitch seems to draw or jump across the corner on the top side, the upper tension is too tight.
- If this effect shows up on the wrong side, the upper tension is too loose.
Observe the sound of your sewing machine as you do the activity. If it makes clucking noise, try to find out the exact parts where it needs additional oiling or repair.

LET US REMEMBER

- Knowledge on the parts and functions of sewing machine will help you much in determining the causes of unsatisfactory sewing performance.
- Knowledge on the common causes of sewing machine troubles and their remedies will save time and effort and prevent damage of the sewing job you are working on.

SELF-CHECK

Directions: Read and answer the following questions:

1. Why is it important to know the causes of sewing machine problems and their remedies?
   ____________________________________________________________________________
   ____________________________________________________________________________

2. How can we prevent needle from breaking? Cite instances on how to avoid it.
   ____________________________________________________________________________
   ____________________________________________________________________________

3. Why do we need to thread the machine correctly? What minor problems might be encountered if the sewing machine is not threaded properly?
   ____________________________________________________________________________
   ____________________________________________________________________________
LET US APPLY WHAT YOU HAVE LEARNED

**Task:** Check Sewing Machine Performance


**REPORT ON IDENTIFIED MACHINE PROBLEMS AND CORRECTIVE ACTION DONE**

<table>
<thead>
<tr>
<th>Name: ___________________________</th>
<th>Sewing Machine No. _____</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Identified Problem</th>
<th>Possible Cause</th>
<th>Action Taken</th>
<th>Remarks (Corrected (C)/Not Corrected (NC))</th>
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<tbody>
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</tbody>
</table>

2. Assess performance using the rating scale below.

**RATING SCALE FOR CHECKING MACHINE PERFORMANCE**

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Tools and Materials (10%)</td>
<td>10</td>
<td></td>
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<tr>
<td>B. Performance (60%)</td>
<td></td>
<td></td>
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<tr>
<td>1. Machine troubles were identified and corrected in accordance with occupational and health safety procedures.</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2. Sewing machine performance is improved based on the workplace requirements.</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>C. Safety Habits (20%)</td>
<td>20</td>
<td></td>
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<tr>
<td>D. Speed/Time Management (10%)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
RESOURCES

Equipment

Sewing machine

Materials

- Fabric swatches
- Sewing machine accessories
- Personal Protective Equipment (PPE)
- Scissors
- Ruler
- Pencil
- Paper and pen
- Sewing machine manual
- Learning modules
SELF-CHECK

Directions: Identify the word being described in each item. Write the letter of your answer in your quiz notebook.

1. Needles can possibly be broken under the following conditions EXCEPT _______.
   a. improper upper threading
   b. improperly set needle
   c. pulling materials between feed dog and presser foot
   d. improperly wound bobbin

2. A part of a sewing machine connected to a balance wheel through a belt is _______.
   a. treadle
   b. band wheel
   c. band wheel crank
   d. feed dog

3. A setting on the stitch regulator with no control of the feed dog is _______.
   a. 0
   b. 5
   c. 6
   d. 7

4. Feet during machine operation should be _______.
   a. far apart
   b. inline together
   c. forward together
   d. one ahead of the other

5. Which of the following materials is not included in cleaning a sewing machine?
   a. brush
   b. rag
   c. oil
   d. screw driver

6. The following tools are essential in sewing machine operation except _______.
   a. thread
   b. special foot attachment
   c. screw driver
   d. machine needle

7. When the feed dog is worn smooth, the trouble it can possibly cause is _______.
   a. puckering seam
   b. upper thread breaking
   c. heaviness of the machine
   d. machine not feeding properly
8. Stopping of sewing machine lies in the_______.
   a. band wheel  
   b. balance wheel  
   c. treadle  
   d. pitman rod

9. The following are minor sewing machine troubles EXCEPT______.
   a. heaviness of sewing machines  
   b. machine is locked  
   c. skipping stitches  
   d. loose upper thread

10. The part of the sewing machine that controls the delivery of the upper thread.
   a. stitch regulator  
   b. tension  
   c. feed dog  
   d. bobbin winder

11. When the upper tension is too tight, it may cause______.
   a. loose lower thread  
   b. loose upper thread  
   c. puckering seam  
   d. skipping stitches

12. In wiping spilled oils during cleaning, the best cloth to use is______.
   a. damp cloth  
   b. dry cloth  
   c. oiled cloth  
   d. any of the above

13. The part of the sewing machine that should be avoided when oiling is______.
   a. bobbin winder  
   b. rubber ring  
   c. stitch regulator  
   d. stop motion screw

14. The part of the sewing machine that is considered a safety device since it covers the lower mechanism is______.
   a. bobbin winder  
   b. slide plate  
   c. tension disc  
   d. throat plate

15. The correct sequence of machine parts in upper threading is______.
   a. spool, upper tension, thread take-up lever, upper thread  
   b. spool, upper thread guide, upper tension, thread take up, face plate needle guide needle.  
   c. Spool, upper tension, upper thread guide, thread take up, needle  
   d. Spool, thread take up, upper tension, upper thread guide, needle.
16. If the stitch regulator is accidentally set to 0, it would possibly result to ________.
   a. heaviness on the machine.
   b. machine will not feed/no fabric movement.
   c. seams pucker.
   d. upper thread breaking.
17. A cleaning material that maintains moving parts of a sewing machine in smooth operation.
   a. absorbent cloth
   b. lint brush
   c. lubricant
   d. water
18. A good practice of cleaning and lubricating the sewing machines should be ________.
   a. Every two weeks
   b. once a week
   c. once a month
   d. twice a week
19. A part of sewing machine where the inner mechanism of presser bar and needle bar is found.
   a. face plate
   b. slide plate
   c. throat plate
   d. any of the above
20. When we turn the screw of the upper tension clockwise, the stitches will tend to be ________.
   a. loose
   b. no changes occur
   c. tight
   d. all of the above
21. To regulate the length of stitches, the sewer can adjust the ________.
   a. needle bar screw
   b. stitch regulator
   c. stop motion screw
   d. upper tension
22. In setting the needle properly, the flat side should be placed on the ________ side.
   a. front
   b. left
   c. rear or back
   d. right
23. A bobbin should be filled with ________ of the thread.
   a. at least ½
   b. at least 1/3
   c. at least 2/3
   d. any of the above
24. To correct a puckering seam, the sewer or mechanic may check the following for possible cause EXCEPT ______.
   a. bobbin case
   b. spool pin
   c. upper tension
   d. bobbin winder

25. Oiling of machine should be regularly done in order to prevent the accumulation of dust and the formation of ______.
   a. gum
   b. lint
   c. rust
   d. thread

26. The part of sewing machine that is being adjusted to apply correct pressure on the fabric against the feed dog is ______.
   a. needle bar
   b. presser bar screw
   c. stitch regulator
   d. tension spring

27. An improperly threaded machine may cause the following EXCEPT ______.
   a. needle breaking
   b. seam puckering
   c. skipping stitches
   d. upper thread breaking

28. The source of information in the accurate use and proper maintenance of your sewing machine is ______.
   a. instruction book or manual
   b. module
   c. textbook
   d. any of the above

29. A good posture during machine operation prevents one from ______.
   a. back pain
   b. leg cramps
   c. pulled muscles
   d. stomach pain

30. When a balance wheel is turning back and forth the following can possibly happen EXCEPT ____________.
   a. looping stitches
   b. belt stuck
   c. needle breaking
   d. upper thread breaking
MODULE 3

QUALIFICATION TITLE: DRESSMAKING/TAILORING NC II
UNIT OF COMPETENCY: CARRY OUT MEASUREMENTS AND CALCULATIONS

MODULE TITLE: CARRYING OUT MEASUREMENTS AND CALCULATIONS

NOMINAL DURATION: 50 HRS.

GARMENTS (DRESSMAKING/TAILORING NC II)
MODULE INTRODUCTION

This module covers the knowledge, skills and attitudes required in taking accurate measurements of the client and carrying out simple calculations and estimations of the cost of materials.

EXPECTED OUTCOMES

At the end of this module, you should be able to:
1. obtain body measurements;
2. perform simple calculations/estimations; and
3. estimate approximate quantities for job requirement.
PRETEST
Directions: Read and understand the items below. Write the letter of the correct answer in your quiz notebook.

1. The exactness of a measured distance or circumference.
   a. accuracy
   b. appropriateness
   c. correctness
   d. exactness

2. A perfect fit requires ______ measurement of body, pattern, and fabric.
   a. accurate
   b. appropriate
   c. exact
   d. perfect

3. The system where the unit of measurement is centimeter.
   a. Metric System
   b. English System
   c. SI Measurement
   d. Decimal System

   a. tape measure
   b. yard stick
   c. L-square
   d. T-square

5. An electronic device used for speed computations.
   a. computer
   b. calculator
   c. cellphone
   d. none of the above

6. The four fundamentals of operation are applied on the following except__________.
   a. converting body measurements
   b. estimating cost of fabric
   c. packing finished product
   d. drafting pattern

7. Simple calculations cannot be applied in ________________.
   a. getting the personal data of the clients/customers
   b. getting the body measurements of the clients/customers
   c. computing the cost of the apparel being made
   d. getting the length and width of the fabric needed

8. Body measurement taken from the tip of the left shoulder to the tip of the right shoulder.
   a. back chest
   b. bust
   c. front chest
   d. shoulder width

9. Body measurement taken from the left (back) armhole seam to the right (back) armhole.
   a. back chest
   b. bust
   c. front chest
   d. shoulder width
10. This is taken around the bust with the tape measure running on the same level in front, at the back and on the sides.  
   a. back chest  
   b. bust  
   c. front chest  
   d. shoulder width  

11. This measurement is taken from the base of the neck on the shoulder level to the tip of the bust.  
   a. back figure  
   b. bust height  
   c. bust width/distance  
   d. front figure  

12. Body measurement from one tip of the bust to the other tip.  
   a. back figure  
   b. bust height  
   c. bust width/distance  
   d. front figure  

13. Body measurement from the base of the neck on the shoulder over the bust down to the waistline level.  
   a. back figure  
   b. bust height  
   c. bust width/distance  
   d. front figure  

14. A body measurement along the whole circumference of the body at the waistline.  
   a. back figure  
   b. bust height  
   c. hips  
   d. waist  

15. Why do we need to add 10% when estimating the quantities of material?  
   a. for extra income of sewer  
   b. to provide an allowance for shrinkage  
   c. for convenience  
   d. none of the above  

16. How many inches are there in 5.08 centimeters?  
   a. 1 ¼ inches  
   b. 1 inch  
   c. 2 ¼ inches  
   d. 2 inches  

17. Lorna needs 2 1/2 meters of material for her client’s dress which costs Php80.00 per yard. How much money will she need to buy the material?  
   a. Php150.00  
   b. Php 200.00  
   c. Php 250.00  
   d. Php 300.00
18. Your client’s bust measurement is 32 inches. If you will draft the bodice pattern using the metric system, what is its equivalent to centimeters?
   a. 80 cm
   b. 81 cm
   c. 81.28 or 82 cm
   d. 82.28 or 83 cm

19. Your client asks you to make a blouse with short sleeves. The length of the blouse is 25 inches and the sleeve length is 7 inches. Using a 60 inch-width material, how much would you need in yard?
   a. 1 yard
   b. 1 ½ yards
   c. 2 yards
   d. 2 ½ yards

20. Measurements taken around the body such as bust and waist are divided into _____ for the pattern measurement.
   a. 2
   b. 4
   c. 6
   d. None of the given
LESSON 1

OBTAINING MEASUREMENTS

INTRODUCTION

The lesson deals on how to carry out and obtain measurements in accordance with job requirements and instructions.

ASSESSMENT CRITERIA

1. Type of measurements to be used is identified and applied in accordance with the job requirements.
2. Measurements are carried out and obtained based on job instructions using the measuring devices.
3. Measurements are identified and recorded accurately.

DEFINITION OF TERMS

- **Accuracy** – refers to the exactness of a measured distance or circumference.
- **Grain** – the direction of fabric threads.
- **Hemline** – the marked line at the bottom of the garment where the hem is turned.
- **Measurement** – the quantity or extent of the entire measurable dimension.
- **Pattern** – a piece of paper usually one-half of the body part used as a guide in cutting the garment.
- **Pleat** – fold of fabric used to control fullness.
INFORMATION SHEET 3.1

Systems of Measurement

Basically, there are two systems of measurements: English and the metric system. The former uses inches as the basic unit of measurement while the latter uses centimeter. Nowadays, people use the metric system because it is considered as the international system of measurement. Most pattern instructions are now in centimeters. There are dressmakers who still use the English system because for them, measuring in inches is easier than measuring in centimeters. Whatever system of measurement you preferred to use, it is best that you know how to convert measurements into the desired unit.

• **English System** – the English system has inches for its basic unit. It is often used in Dressmaking except by some designers. An inch has eight equal parts as follows:

1. The first line is 1/8
2. The second line is ¼
3. The third line is 3/8
4. The fourth line is 4/8 or ½ of an inch
5. The fifth line is 5/8
6. The sixth line is ¾
7. The seventh line is 7/8
8. The eight line is 1 inch

• **Metric System** – A decimal system of physical units based on a unit of length known as the meter (Greek *metron*, “measure”). The metric system is the world standard for measurement.

Nowadays, designers use centimeter in drafting patterns. A centimeter has 10 equal parts and these are as follows:

1. The first line is 1 millimeter
2. The second line is 2 millimeters
3. The third line is 3 millimeters
4. The fourth line is 4 millimeters
5. The fifth line is 5 millimeters or one half centimeter
6. The sixth line is 6 millimeters
7. The seventh line is 7 millimeters
8. The eight line is 8 millimeters
9. The ninth line is 9 millimeters
10. The tenth line is 10 millimeters or one centimeter
How to Read the Tape Measure in Inches

Source: Simplified Pattern- Making of Basic Ladies Blouse
By: Chic Francisco
How to Read the Tape Measure in Centimeters

Source: Simplified Pattern - Making of Basic Ladies Blouse
By: Chic Francisco
Measuring Devices and Their Uses

Pattern and body measurements both require measuring tools. In order to ensure a good fit, one has to measure accurately using the best tool. The following tools are used in measuring:

- **Tape measure**
  
  **Use.** It is used in taking body measurements. Fiberglass tape is commonly used by professional dressmakers.
  
  **Characteristic.** One side is calibrated in inches and the other side, in centimeters.

- **L-square**
  
  **Uses.** It is used to divide measurements into needed pattern measurements. It also used in taking crotch measurements.
  
  **Characteristics.** It has two (2) arms connected perpendicularly. The longer arm is 24 inches long and contains the following divisions: 12ths, 6ths, 3rds and 2/3rds. The shorter arm is 16 inches long and contains 16ths, 8ths, 4ths and halves.

- **Yardstick/Meter Stick**
  
  **Uses.** It is used for general marking and for measuring fabric length.
  
  **Characteristic.** It is made of smooth, shellacked hardwood or metal.

- **Ruler**
  
  **Uses.** It is used for general marking. It aids in connecting lines.
  
  **Characteristics.** The most useful sizes are 12” or 18” (30.5 cm or 46 cm) long. They are graduated in inches and centimeter and made of wood or plastic.
Seam gauge

Uses. This measuring tool helps make quick, accurate measurements for hems, buttonholes, scallops and pleats.

Characteristics. It is a small, 6" (15 cm) metal or plastic ruler with a sliding marker.

Taking Body Measurements

Before a pattern is made, body measurements are taken first. The accuracy of measurements is very important in ensuring a well-fitted garment.

Below is the diagram of the female body with identified points and lines. Knowing the body points and lines makes taking body measurements easy.
Procedure in Taking Body Measurements

A. Shoulder- measure from the tip of the left shoulder to the tip of the right shoulder.
B. Back chest- measure from the left (back) armhole seam to the right (back) armhole.
C. Front chest- measure from the left (front) armhole seam to the right (front) armhole seam.
D. Bust- measure around the bust with the tape measure running on the same level in front, at the back and on the sides.
E. Bust height—measure from the base of the neck on the shoulder to the tip of the bust.
F. Bust distance—measure across, from the tip of the bust.
G. Empire level—measure from the base of the neck on the shoulder line over the bust down to the empire level, which is directly below the bust.
H. Empire circumference – measure around the whole circumference of the empire level.
I. Front figure—measure from the base of the neck on the shoulder over the bust down to the waistline level.
J. Waist—measure along the whole circumference of the body at the waistline.
K. First hip—measure around the hip level where the stomach is fullest.
L. Second hip—measure around the hip level where the buttocks is fullest.
M. Short skirt—measure from the waistline level down to the desired skirt length for a short skirt.
N. Long skirt—measure form waist line level down to the desired level for a long skirt.
O. Armhole—measure around the circumference of the armhole.
P. Length of the short sleeve – measure from the tip of the shoulder down to the desired length of the short sleeve.
Q. Fullest arm circumference – measure from the tip of the shoulder down to the desired width of the hem of the short sleeve.
R. Elbow length—measure from the tip of the shoulder down to the tip of the elbow.
S. Three-fourth length – measure from the tip of the shoulder over the elbow (with the arm slightly bent) to the 3/4 length of the sleeve.

U. Three-fourth circumference – measure along the whole circumference of the ¾ level of the arm with two fingers in at the end of the tape measure.
V. Long sleeve length – measure from the tip of the shoulder over the arm slightly bent down to after wrist bone.
E. Wrist—measure along the whole circumference of the wrist with two fingers in at the end of the tape measure for easing.
X. Neck—measure along the base of the neck with the two fingers in at the end of the tape measure for easing.
Individual Measurement Chart

As the body measurements are taken, they should be recorded in the Individual Measurement Chart (IMC). Below is a sample of IMC.

Source:  *Simplified Pattern Making of Basic Ladies Wear*  
by Chic R. Francisco
INDIVIDUAL MEASUREMENT CHART

<table>
<thead>
<tr>
<th>Body Part to be measured</th>
<th>Actual Body Measurement</th>
<th>Measurement Needed (divisor)</th>
<th>Computed Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td>Cm</td>
<td>In</td>
</tr>
<tr>
<td>A. Shoulder</td>
<td>15</td>
<td>38.1</td>
<td>2</td>
</tr>
<tr>
<td>B. Back Chest</td>
<td>13</td>
<td>33.02</td>
<td>2</td>
</tr>
<tr>
<td>C. Front Chest</td>
<td>12</td>
<td>30.48</td>
<td>2</td>
</tr>
<tr>
<td>D. Bust</td>
<td>34</td>
<td>86.36</td>
<td>4</td>
</tr>
<tr>
<td>E. Bust Height</td>
<td>8</td>
<td>20.32</td>
<td>-</td>
</tr>
<tr>
<td>F. Bust Distance</td>
<td>6</td>
<td>15.42</td>
<td>2</td>
</tr>
<tr>
<td>G. Empire Level</td>
<td>13</td>
<td>33.02</td>
<td>-</td>
</tr>
<tr>
<td>H. Empire Circumference</td>
<td>31</td>
<td>78.74</td>
<td>4</td>
</tr>
<tr>
<td>I. Front Figure</td>
<td>16</td>
<td>40.64</td>
<td>-</td>
</tr>
<tr>
<td>J. Back Figure</td>
<td>15</td>
<td>38.1</td>
<td>-</td>
</tr>
<tr>
<td>K. Waist</td>
<td>24</td>
<td>60.69</td>
<td>4</td>
</tr>
<tr>
<td>L. First Hip</td>
<td>30</td>
<td>76.2</td>
<td>4</td>
</tr>
<tr>
<td>M. Second Hip</td>
<td>34</td>
<td>86.36</td>
<td>4</td>
</tr>
<tr>
<td>N. Short Skirt</td>
<td>13</td>
<td>33.02</td>
<td>-</td>
</tr>
<tr>
<td>O. Long Skirt</td>
<td>20</td>
<td>50.8</td>
<td>-</td>
</tr>
<tr>
<td>P. Armhole</td>
<td>15</td>
<td>38.1</td>
<td>2</td>
</tr>
<tr>
<td>Q. Short Sleeve Length</td>
<td>13</td>
<td>33.02</td>
<td>-</td>
</tr>
<tr>
<td>R. Fullest Arm Circumference</td>
<td>11</td>
<td>27.94</td>
<td>2</td>
</tr>
<tr>
<td>S. Elbow Length</td>
<td>10</td>
<td>25.4</td>
<td>-</td>
</tr>
<tr>
<td>T. Three-fourth length</td>
<td>13</td>
<td>33.02</td>
<td>-</td>
</tr>
<tr>
<td>U. Three-fourth circumference</td>
<td>8</td>
<td>20.32</td>
<td>2</td>
</tr>
<tr>
<td>V. Long Sleeve Length</td>
<td>21</td>
<td>53.34</td>
<td>-</td>
</tr>
<tr>
<td>W. Wrist</td>
<td>7</td>
<td>17.78</td>
<td>2</td>
</tr>
<tr>
<td>X. Neck</td>
<td>14</td>
<td>35.56</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: *Simplified Pattern Making of Basic Ladies Wear*  
*by Chic R. Francisco*
LET US REMEMBER

- Accurate measuring tools are essential for ensuring accurate measurements.
- Accurate measurements ensure a well-fitted garment.

SELF-CHECK

Directions:
I. Multiple Choice: Identify the words being describe in each item. Write the letter of your answer in your quiz notebook.

1. The system where the unit of measurement is centimeter is___________________.
   a. Metric system
   b. English system
   c. IS Measurement
   d. Decimal System

2. The four fundamentals of operation are applied on the following except_________________.
   a. converting body measurement
   b. estimating cost of fabric
   c. packing finished product
   d. drafting pattern

3. How many centimeters are there in 3 inches?
   a. 5.35 cm.
   b. 6.67 cm.
   c. 7.62 cm.
   d. 8.28 cm.

4. The measuring tool that helps make quick, accurate measurements for hems, buttonholes scallops, and pleats is ____________________.
   a. seam gauge
   b. tape measure
   c. skirt marker
   d. L- square

5. A device used for general marking and for measuring fabric length is ____________________.
   a. Tape measure
   b. Yard stick
   c. L- square
   d. T- square
II. Answer the following questions briefly.

1. Which system of measurement is easy to use? Why?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

2. What will happen if the measuring tools used are not accurate?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

3. Why is accuracy of body measurements important in garment construction?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
LET US APPLY WHAT YOU HAVE LEARNED

Task: Obtain Body Measurement

1. Get a partner and take body measurements by pair. Accomplish the IMC below. Leave the 3rd and 4th columns blank as you will accomplish these in the next lesson.

INDIVIDUAL MEASUREMENT CHART

Name: ___________________________ Date Taken: _____________

<table>
<thead>
<tr>
<th>Body Part to be measured</th>
<th>Actual Body Measurement</th>
<th>Measurement Needed (divisor)</th>
<th>Computed Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>Cm</td>
<td>in</td>
</tr>
<tr>
<td>1. Shoulder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Back Chest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Front Chest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Bust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Bust Height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Bust Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Empire Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Empire Circumference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Front Figure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Back Figure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Waist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. First Hip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Second Hip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Short Skirt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Long Skirt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Armhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Short Sleeve Length</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Fullest Arm Circumference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Elbow Length</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Three-fourth length</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Three-fourth circumference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Long Sleeve Length</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Wrist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Neck</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Assess your performance and output using the evaluation sheet below.

### Score Card for Obtaining Body Measurement

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Highest possible score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Tools (10%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Measuring tools appropriate and properly used</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>• Measuring tools in good condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Procedure (30%)</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>• The procedure in taking body measurements were correctly followed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Accuracy of Measurements (40%)</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>D. Record Management (10%)</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>• Measurements were recorded accurately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Speed</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

### RESOURCES

**Tool**
- Tape measure

**Materials**
- Pencil
- Paper and pen
- IMC
- Learning modules
LESSON 3

PERFORMING SIMPLE CALCULATIONS

INTRODUCTION

The lesson deals with the simple calculation based on the requirements of clients/customers.

ASSESSMENT CRITERIA

- Simple calculations are performed based on the requirements of the clients/customers.

DEFINITION OF TERMS

- **Calculation** – the process or an act of calculating.
- **Conversion** – a change of figures like changing from centimeters to inches and vice-versa.
- **Cost** – the amount paid or charged for something that is acquired.
- **Length** – the longer or longest dimension of an object to measure.
- **Width** – measurement taken at the shortest dimension of the object to measure.
Fundamental Operations Used for Simple Calculations

A simple calculation is a process in which the four fundamental operations such as addition, subtraction, multiplication and division may be involved. Knowing how to perform simple calculations enables one to correctly compute the needed measurement in pattern drafting and estimate material quantities and cost to create a garment.

Applications of Simple Calculation

There are procedures in garment construction that simple calculations are done: pattern drafting, determining material length and computing the cost of materials.

- Calculating Measurements for Pattern Drafting

Once body measurements are obtained, they are computed based on the required pattern measurements since pattern is usually one fourth of the garment. Here are some points to remember:

- Measurements taken horizontally such as shoulder and bust point width are divided into two (2).
- Measurement taken around the body limbs such as arm and leg are divided into two (2).
- Measurements taken around the body (circumferential) such as bust, waist and hips are divided into four (4).
- There are procedures in pattern drafting that use Metric System. If you are not used to this kind of system, you need to make some conversion.

- Calculating the Length of Material

The following gives you idea on how to convert a yard to meter and vice-versa.

<table>
<thead>
<tr>
<th>Problem 1-</th>
<th>Converting Meter to Yard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given: Fabric length = 1.2 meter</td>
<td></td>
</tr>
<tr>
<td>Calculation:</td>
<td>1.2 meter</td>
</tr>
<tr>
<td></td>
<td>.914 meter</td>
</tr>
<tr>
<td></td>
<td>1.31 yards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem 2-</th>
<th>Converting Yard to Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given: Fabric length = 5 yards</td>
<td></td>
</tr>
<tr>
<td>Calculation:</td>
<td>5 yards x .914 meter</td>
</tr>
<tr>
<td></td>
<td>4.57 meters</td>
</tr>
</tbody>
</table>
The following conversion table will help you in doing calculations.

<table>
<thead>
<tr>
<th>To Convert</th>
<th>Multiply by</th>
<th>To obtain</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>2.540</td>
<td>Centimeters</td>
</tr>
<tr>
<td>inches</td>
<td>0.0254</td>
<td>Meter</td>
</tr>
<tr>
<td>yard</td>
<td>91.44</td>
<td>Centimeters</td>
</tr>
<tr>
<td>yard</td>
<td>.914</td>
<td>Meter</td>
</tr>
<tr>
<td>yard</td>
<td>36</td>
<td>Inches</td>
</tr>
<tr>
<td>centimeters</td>
<td>0.3937</td>
<td>Inches</td>
</tr>
<tr>
<td>centimeters</td>
<td>0.1094</td>
<td>Yards</td>
</tr>
<tr>
<td>centimeters</td>
<td>.01</td>
<td>Meters</td>
</tr>
<tr>
<td>meters</td>
<td>39.37</td>
<td>Inches</td>
</tr>
<tr>
<td>meters</td>
<td>1.094</td>
<td>Yards</td>
</tr>
<tr>
<td>meters</td>
<td>100</td>
<td>Centimeters</td>
</tr>
</tbody>
</table>

- **Computing the Material Cost**

Simple calculations are also done in determining the cost of materials to get the sewing job done. For example, you need 10 yards of material and it costs Php55.00 per yard. To know how much a 10-yard material will cost, do the following:

Problem: Finding the cost of a 10-yard material  
Given: Fabric length- 10 yard  
Cost per yard- Php55.00  
Calculation: Cost of material $= 10 \times \text{Php55.00}$  
$= \text{Php550.00}$

**LET US REMEMBER**

*Knowledge on simple calculation is important as you will be doing calculations in pattern drafting and estimating material quantities.*

**SELF-CHECK**

A. Directions: Answer the given problems.

1. Lorna needs 6 meters of material which costs Php80.00 per yard. How much money will she need to buy the material?
2. Your client’s bust measurement is 32 inches. If you will draft the bodice pattern using the metric system, what is its equivalent to centimeters? What would be the pattern measurement?
3. Your client asks you to make a blouse with short sleeves. The length of the blouse is 25 inches and the sleeve length is 7 inches. Using a
60 inches wide material, how much would you need in yard? How much material would you need in meter?

B. Complete the following table by computing the total cost.

<table>
<thead>
<tr>
<th>Qty</th>
<th>Unit</th>
<th>Description of Materials</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>yards</td>
<td>Cotton</td>
<td>45.00</td>
<td>1.</td>
</tr>
<tr>
<td>1</td>
<td>spool</td>
<td>Thread</td>
<td>10.00</td>
<td>2.</td>
</tr>
<tr>
<td>4</td>
<td>pcs.</td>
<td>Pattern paper</td>
<td>5.00</td>
<td>3.</td>
</tr>
<tr>
<td>5</td>
<td>pcs.</td>
<td>Button</td>
<td>5.00</td>
<td>4.</td>
</tr>
<tr>
<td>½</td>
<td>yard</td>
<td>pellon</td>
<td>20.00</td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

**LET US APPLY WHAT YOU HAVE LEARNED**

**Task: Perform Simple Calculations**

6. Retrieve your IMC and accomplish blank columns by doing some calculations.

**INDIVIDUAL MEASUREMENT CHART**

Name: ___________________________  Date Taken:_____________________

<table>
<thead>
<tr>
<th>Body Part to be measured</th>
<th>Actual Body Measurement</th>
<th>Measurement Needed (divisor)</th>
<th>Computed Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>cm</td>
<td>in</td>
</tr>
<tr>
<td>1. Shoulder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Back Chest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Front Chest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Bust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Bust Height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Bust Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Empire Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Empire Circumference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Front Figure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Back Figure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Waist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. First Hip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Second Hip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Short Skirt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Long Skirt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Armhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Short Sleeve Length</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Fullest Arm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------</td>
<td>-------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>

**RESOURCES:**

- Writing pad
- Calculator
- Learning materials
LESSON 3

ESTIMATING APPROXIMATE QUANTITIES

INTRODUCTION

The lesson deals with the estimation of material quantities based on the job requirements of clients.

ASSESSMENT CRITERIA

1. Quantities of materials are estimated based on the job requirements.
2. Quantities of materials are calculated and recorded according to job instructions.

DEFINITION OF TERMS

- **Approximate** - nearly, but not exactly.
- **Estimate** - to form an approximate opinion of size, amount, number, etc., calculate roughly.
- **Quantity** - that property of a thing which admits of exact measurement and numerical statement.
INFORMATION SHEET 3.3

Factors in Estimating Material Quantities

Estimating material quantities is very important in every transaction for production cost. An additional 10% on the quantity of materials must be taken into consideration to plan and produce a quality product. In estimating the material quantity, the following factors should be considered.

- **Body measurement/Body figure.** A man or woman with large figure normally needs a wider material.
- **Accuracy of measurements found in the IMC.** Inaccurate measurements lead to wrong estimation.
- **Job requirements/specifications.** Estimated quantities should be based on the specifications given by your client.
- **Fabric Types and Prints.** Some fabrics may shrink slightly in the wash and some ravel easily. Be sure to add a little extra to your yardage estimate. A print on fabric that goes in one direction requires extra yardage.
- **Fabric Width.** Different types of fabric have different width. As a rule, the wider the width of the material, the lesser the length needed.

Fabric Widths and Lengths

The width of the fabric varies depending on the type of material. The table below shows the standard widths of the different types of fabric used in ladies’ apparel.

<table>
<thead>
<tr>
<th><strong>FABRIC WIDTHS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Fabric</strong></td>
</tr>
<tr>
<td>Cotton</td>
</tr>
<tr>
<td>Poplin</td>
</tr>
<tr>
<td>Wool</td>
</tr>
<tr>
<td>Muslin</td>
</tr>
<tr>
<td>Tetoron</td>
</tr>
<tr>
<td>Linen</td>
</tr>
<tr>
<td>Cotton satin</td>
</tr>
</tbody>
</table>

When buying material, the most common lengths are 1/8 yard, 1/4 yard, 1/2 yard, 3/4 yard and 1 yard.

How to Estimate Fabric Yardage

Estimating the fabric yardage needed would be easy by following these steps:

1. Layout your pattern pieces on the table so that they are arranged as they would be on the fabric. Measure the total length of all the pattern pieces.
2. Divide the number of inches you need by 36 to calculate the number of yards. Round up to the nearest 1/8, ¼ or ½ of a yard. For example, if you need 40 inches of fabric for a blouse, 40/36 = 1.11 yards, or 1 1/4 yards.

3. Determine the width of the fabric you will be using. You will need fewer yards with a wider fabric.

4. Find out if the fabric has print or texture that only goes in one direction. If so, you will need extra yardage since you need to cut all the pieces facing the same way. If not, you can arrange the pieces in any direction you want to make them fit, as long as they still line up with the grainline of the fabric.

Tip: Another way of approximating the yardage of material needed is by finding the length and the width of a dress. The bust measurement is the initial measurement needed in finding the width of a dress.

Example: Blouse with short sleeves

<table>
<thead>
<tr>
<th>Length of Blouse</th>
<th>25 inches (with allowance for shoulder and hem)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Sleeves</td>
<td>9 inches (with allowance for cap and hem)</td>
</tr>
<tr>
<td>Total length</td>
<td>=34 inches</td>
</tr>
<tr>
<td>Bust Measurement</td>
<td>=36 inches plus 16 inches (for the ease, allowance, buttonhole and facing)</td>
</tr>
<tr>
<td>Total width</td>
<td>=52 inches</td>
</tr>
</tbody>
</table>

With the length of 34 inches and a width of 52 inches, a one yard fabric using a 60-inch width material would be enough for a blouse with short sleeves.

The following table will help you in estimating the correct yardage or length for different widths of material to avoid wastage of your resources.

**FABRIC CONVERSION CHART**

<table>
<thead>
<tr>
<th>FABRIC WIDTHS</th>
<th>35&quot;-36&quot;</th>
<th>39&quot;</th>
<th>41&quot;</th>
<th>44&quot;-45&quot;</th>
<th>50&quot;</th>
<th>52&quot;-54&quot;</th>
<th>55&quot;-60&quot;</th>
<th>66&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>YARDAGE</td>
<td>1 1/4</td>
<td>1 1/2</td>
<td>1 1/2</td>
<td>1 3/8</td>
<td>1 1/4</td>
<td>1 1/8</td>
<td>1</td>
<td>7/8</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>1 5/8</td>
<td>1 1/2</td>
<td>1 3/8</td>
<td>1 1/4</td>
<td>1 1/8</td>
</tr>
<tr>
<td></td>
<td>2 1/4</td>
<td>2</td>
<td>2</td>
<td>1 3/4</td>
<td>1 1/2</td>
<td>1 1/4</td>
<td>1 3/8</td>
<td>1 1/4</td>
</tr>
<tr>
<td></td>
<td>2 7/8</td>
<td>2 1/4</td>
<td>2 1/4</td>
<td>2</td>
<td>1 3/4</td>
<td>1 1/4</td>
<td>1 5/8</td>
<td>1 1/2</td>
</tr>
<tr>
<td></td>
<td>3 1/8</td>
<td>2 1/2</td>
<td>2 1/2</td>
<td>2 1/4</td>
<td>2</td>
<td>1 7/8</td>
<td>1 1/4</td>
<td>1 1/4</td>
</tr>
<tr>
<td></td>
<td>3 3/8</td>
<td>3</td>
<td>2 3/4</td>
<td>2 3/8</td>
<td>2 1/4</td>
<td>2</td>
<td>1 7/8</td>
<td>1 7/8</td>
</tr>
<tr>
<td></td>
<td>3 3/4</td>
<td>3 1/4</td>
<td>2 7/8</td>
<td>2 5/8</td>
<td>2 3/8</td>
<td>2 1/4</td>
<td>2 1/4</td>
<td>2 1/8</td>
</tr>
<tr>
<td></td>
<td>4 1/4</td>
<td>3 1/2</td>
<td>3 1/8</td>
<td>2</td>
<td>2 3/4</td>
<td>2 3/8</td>
<td>2 3/8</td>
<td>2 1/2</td>
</tr>
<tr>
<td></td>
<td>4 1/2</td>
<td>3 3/4</td>
<td>3 3/8</td>
<td>3</td>
<td>3</td>
<td>2 5/8</td>
<td>2 5/8</td>
<td>2 1/2</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 1/4</td>
<td>3 7/8</td>
<td>3 3/8</td>
<td>3 1/8</td>
<td>3 7/8</td>
<td>2 7/8</td>
<td>2 3/4</td>
</tr>
</tbody>
</table>
Note: Add ¼ yard for: large difference in fabric widths; one-directional fabrics and; one piece dress with sleeves.

**LET US REMEMBER**

- *Knowing how to estimate/approximate material quantities helps you save time, money and effort.*
- *Having an accurate estimate for fabric yardage helps ensure that you will not run out of fabric, or buy more fabric than you need.*
HOW MUCH HAVE YOU LEARNED?

Directions: Answer the following questions briefly.

1. Why is there a need to approximate the materials for a certain job?
   ________________________________________________________________
   ________________________________________________________________

2. How does the Fabric Conversion Table help in determining the length of fabric for a certain job requirement?
   ________________________________________________________________
   ________________________________________________________________

3. Why are accurate body measurements important in estimating material quantities?
   ________________________________________________________________
   ________________________________________________________________
LET US APPLY WHAT YOU HAVE LEARNED

Task: Estimate Quantities

1. Fill out the table with the correct yardage or length of material for a specified job order.

<table>
<thead>
<tr>
<th>Job Order</th>
<th>Significant Measurements</th>
<th>Fabric Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Blouse with Set-in Sleeves</td>
<td>Blouse Length-22 in Sleeve Length-6 in Bust-34 in</td>
<td>36 in 45 in 60 in</td>
</tr>
<tr>
<td>2. Skirt</td>
<td>Length-25 in Hipline-34 in</td>
<td></td>
</tr>
<tr>
<td>3. Polo Shirt</td>
<td>Shirt Length-25 in Sleeve Length-7 in Chest-36</td>
<td></td>
</tr>
<tr>
<td>4. Short pants</td>
<td>Length-14 in Hips-32 in</td>
<td></td>
</tr>
<tr>
<td>5. Long pants</td>
<td>Length-34 in Hips-34 in</td>
<td></td>
</tr>
</tbody>
</table>

2. Assess performance using the evaluation sheet below.

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Competent</th>
<th>Not Competent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quantities of materials were correctly estimated based on the job requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Quantities of materials were correctly recorded.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Final Assessment: __________

Noted by: __________________________

RESOURCES:

Measuring tools and devices
Writing pad
Calculator
Model
Learning materials
Textbooks
SELF-CHECK
Directions: Read and understand the items below. Write the letter of the correct answer in your quiz notebook.

1. Body measurement from one tip of the bust to the other tip.
   a. back figure
   b. bust height
   c. bust width/distance
   d. front figure

2. This is taken around the bust with the tape measure running on the same level in front, at the back and on the sides.
   a. back chest
   b. bust
   c. front chest
   d. shoulder width

3. This measurement is taken from the base of the neck on the shoulder level to the tip of the bust.
   a. back figure
   b. bust height
   c. bust width/distance
   d. front figure

4. Body measurement from the base of the neck on the shoulder over the bust down to the waistline level.
   a. back figure
   b. bust height
   c. bust width/distance
   d. front figure

5. A body measurement along the whole circumference of the body at the waistline.
   a. back figure
   b. bust height
   c. hips
   d. waist

6. Body measurement taken from the tip of the left shoulder to the tip of the right shoulder.
   a. back chest
   b. bust
   c. front chest
   d. shoulder width

7. Body measurement taken from the left (back) armhole seam to the right (back) armhole.
   a. back chest
   b. bust
   c. front chest
   d. shoulder width

8. Simple calculations cannot be applied in _______________.
   a. getting the personal data of the clients/customers
   b. getting the body measurements of the clients/customers
   c. computing the cost of the apparel being made
   d. getting the length and width of the fabric needed
9. The system where the unit of measurement is centimeter.
   a. Metric System
   b. English System
   c. SI Measurement
   d. Decimal System

10. A device used for general marking and for measuring fabric grainline.
    a. tape measure
    b. yard stick
    c. L-square
    d. T-square

11. The exactness of a measured distance or circumference.
    a. accuracy
    b. appropriateness
    c. correctness
    d. exactness

12. An electronic device used for speed computations.
    a. computer
    b. calculator
    c. cellphone
    d. none of the above

    a. accurate
    b. appropriate
    c. exact
    d. perfect

14. The four fundamentals of operation are applied on the following except__________.
    a. converting body measurements
    b. estimating cost of fabric
    c. packing finished product
    d. drafting pattern

15. Lorna needs 2 1/2 meters of material for her client’s dress which costs Php80.00 per yard. How much money will she need to buy the material?
    a. Php150.00
    b. Php 200.00
    c. Php 250.00
    d. Php 300.00

16. Your client’s bust measurement is 32 inches. If you will draft the bodice pattern using the metric system, what is its equivalent to centimeters?
    a. 80 cm
    b. 81 cm
    c. 81.28 or 82 cm
    d. 82.28 or 83 cm

17. Why do we need to add 10% when estimating the quantities of material?
    a. for extra income of sewer
    b. to provide an allowance for shrinkage
    c. for convenience
    d. none of the above

18. How many inches are there in 5.08 centimeters?
    a. 1 ¼ inches
    b. 1 inch
    c. 2 ¼ inches
    d. 2 inches
19. Measurements taken around the body such as bust and waist are divided into ______ for the pattern measurement.
   a. 2
   b. 4
   c. 6
   d. None of the given

20. Your client asks you to make a blouse with short sleeves. The length of the blouse is 25 inches and the sleeve length is 7 inches. Using a 60 inch-width material, how much would you need in yard?
   a. 1 yard
   b. 1 ½ yards
   c. 2 yards
   d. 2 ½ yards
<table>
<thead>
<tr>
<th>QUALIFICATION TITLE</th>
<th>DRESSMAKING/TAILORING NC II</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT OF COMPETENCY</td>
<td>APPLY QUALITY STANDARDS</td>
</tr>
<tr>
<td>MODULE TITLE</td>
<td>APPLYING QUALITY STANDARDS</td>
</tr>
<tr>
<td>NOMINAL DURATION</td>
<td>50 HRS.</td>
</tr>
</tbody>
</table>

**GARMENTS**

**(DRESSMAKING/TAILORING NC II)**
MODULE INTRODUCTION

This module covers the knowledge, skills and attitudes required in applying quality standards on finished or completed work.

EXPECTED OUTCOMES

At the end of this module, you should be able to:
1. assess finished/ completed work;
2. measure garment parts;
3. record information; and
4. study causes of quality deviations.
PRETEST
A. Directions: Read and understand the questions below. Choose the correct answer by writing the letter of your answer in your quiz notebook.

a. The thread used in sewing a garment should match the color of the_____.
   a. accent  c. collars
   b. button  d. fabric

2. Sewn darts in a blouse are _______.
   a. alike on both sides  c. gradually tapered
   b. balance  d. puckered

3. A well-constructed buttonhole is _______.
   a. appropriately located  c. sewn properly
   b. bulky  d. smooth

4. Which is not a standard of a set-in sleeve?
   a. balance  c. no wrinkles
   b. ease  d. with wrinkle

5. The seam of the blouse should have the following characteristics except:
   a. correctly placed  c. flat
   b. edge finished  d. well-turned corner

6. Any deviation from the client’s requirements.
   a. critical defect  c. major defect
   b. defect  d. minor defect

7. A defect in a finished garment where a fabric hole is found.
   a. critical defect  c. major defect
   b. defect  d. minor defect

8. A defect in finished garment that can be corrected.
   a. critical defect  c. major defect
   b. defect  d. minor defect

9. A worst and serious defect on a garment that can harm a client.
   a. critical defect  c. major defect
   b. defect  d. minor defect

10. This is a preventive action to ensure quality garments.
    a. fault analysis  c. quality control
    b. quality assurance  d. recording

11. Spots or stains on a garment are caused by the following except:
    a. dirty machine
    b. dirty work area
    c. excessive oil in the machine
    d. excessive strain on the machine

12. A tear on a finished garment is caused by _______.
    a. dirty machine
    b. dirty work area
    c. excessive oil in the machine
    d. excessive strain on the machine

13. Which is not a standard for a dress?
    a. Buttons and buttonholes are evenly distanced
    b. Collar lies flat on the shoulder
    c. Sleeves are of different fullness
    d. Sleeves are of the same length
14. The guarantee given to client that the product, parts, components and services contain the desired features.
   a. fault analysis  c. quality control inspection
   b. quality assurance d. recording

15. A technique for identifying and recording error on a finished garment.
   a. fault analysis  c. quality control
   b. quality assurance d. recording

16. Which should be recorded and maintained in a garment factory?
   a. equipment
   b. purchased material and service
   c. workmanship
   d. all of the above

17. The following are the advantages of recording except _______.
   a. continued monitoring of processes
   b. prompt detection and correction of inferior quality
   c. review of any corrective actions taken
   d. ensures client’s satisfaction

18. Weak spots, pilling and bleeding fall under ______.
   a. Color fault
   b. Construction fault
   c. Labeling fault
   d. Material fault

19. Measuring a completed garment is part of ______.
   a. fault analysis
   b. quality assurance
   c. quality control inspection
   d. recording

20. The following are construction process fault except ______.
   a. puckered stitches
   b. unfinished raw edges
   c. untrimmed hanging threads
   d. wrong color combination
ASSESSING FINISHED/ COMPLETED WORK

INTRODUCTION

This lesson deals with how to assess a completed garment or a blouse with sports collar and plain set-in sleeves based on the job quality standards.

ASSESSMENT CRITERIA

1. Completed work is assessed based on the job quality standards.
2. Work instruction specifications are interpreted according to the job requirements.
3. Causes of any identified faults are recorded in accordance with the workplace procedure.

DEFINITION OF TERMS

- **Bulk** - to cause a swell of bulge.
- **Collar** - part of the garment attached to the neckline of the bodice.
- **Dart** - a stitched tapering fold in a garment.
- **Fault** – a defect seen on a garment subject for mending or repair.
- **Placket** - a finished opening in a garment made for convenience in putting and taking off garment.
- **Pucker** - a fold or wrinkle on the material created by wrong assembly or technique like on set-in sleeves.
- **Standards** - an authoritative rule that usually implies model for determining excellence and correctness of things.
Aspects of Quality

A product is said to be of good quality if the client is happy and satisfied with it. He will buy a product and recommend it to others if it fulfils his/her needs and expectations. The customer usually is ready to pay more for the good quality product as it proves to be a good investment in the long run. The customer or the buyer's satisfaction is the driving force behind the manufacturers' perusal of quality. They try to achieve excellence in the manufacture of their product.

The product or the service must have the properties and attributes which make it of superior quality. There are two aspects of quality:

1. **Quality of Design.** It pertains to the specifics and effort put in the design of the product at the development stage. To give the customer a good quality product or service, quality of design is the most fundamental and compulsory requirement.

2. **Quality of Construction.** It is concerned with the degree to which the garment produced conforms to the standards or client’s specifications.

**General Standards for Finished Garment**

In assessing a well-made garment, one must consider the characteristics of well made parts and construction. A garment that meets quality standard is more durable and fashionable. The following are the general standards of finished apparel.

<table>
<thead>
<tr>
<th>Item</th>
<th>Standards</th>
<th>Quality Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread</td>
<td>The chosen color should be slightly darker than the fabric, because thread appears lighter in line than when on the spool.</td>
<td>✓ Matches the color of the fabric&lt;br&gt; ✓ Correct size and type</td>
</tr>
<tr>
<td>Machine Stitching</td>
<td>In a perfect or balance tension the stitches are slightly oval, pinched in at the ends and evenly shaped or regular.</td>
<td>✓ Stitches are alike on either sides as to shape and tightness&lt;br&gt; ✓ Length of stitches matched to the thickness and texture of the material&lt;br&gt; ✓ Even and the same in length</td>
</tr>
<tr>
<td>Darts</td>
<td>A dart appears on the right side as a plain seam, well-pressed and lying smoothly without a pucker or bubble at its point.</td>
<td>✓ Evenly and gradually tapered&lt;br&gt; ✓ Well placed&lt;br&gt; ✓ Thread ends tied</td>
</tr>
<tr>
<td>Seams</td>
<td>A stitching should appear as a line on the outside of the garment. Cross seams should not add bulk or show an obvious imprint on the right side of the garment after it has been pressed.</td>
<td>✓ Correctly placed&lt;br&gt; ✓ Smooth&lt;br&gt; ✓ Flat</td>
</tr>
</tbody>
</table>
| Buttonholes | Well-made buttonholes must be functional, well-proportioned, and well-planned spacing. | ✓ Correctly positioned in the placket  
✓ Both edges caught, fraying  
✓ On-grain  
✓ Edge purled by buttonhole stitch  
✓ Lips parallel, not wavy  
✓ Thread colour coordinates with the fabric  
✓ Button slips through easily |
|---|---|---|
| Collar | A well constructed collar hugs the neck or stand away, often hollowed out to give a comfortable, cool effect or to provide room for a necklace or scarf. | ✓ Interfacing properly attached  
✓ Seam hidden under edge of the collar  
✓ Corners are well pointed  
✓ Collar points and edges lie flat on neck or shoulders |
| Sleeves | The sleeve must have sufficient fabric to cover the rounded part of the upper arm. | ✓ No wrinkles  
✓ Sleeves are balanced  
✓ Curve of the armhole is smooth and gradual  
✓ Eased-in fullness is evenly distributed |
| Placket | Placket should reinforce the garment area where they are placed. Seam allowances or facings provide light. Reinforcement | ✓ Lies smoothly on the body  
✓ Front lap completely concealed inside the placket  
✓ Stitching evenly distanced from the seamline |
| Fasteners | Well-chosen fasteners match the color of the finished garment and contribute to its appearance. It may enhance or destroy the look of the apparel. | ✓ Color match the material/fabric  
✓ Evenly spaced on the garment  
✓ Secured and attached in place |
| Hems | A well-finished hem should appear flat on the right side of the garment and is finished with appropriate hemming stitches. | ✓ Even in width when turned inside  
✓ Appropriately chosen for the fabric  
✓ It is not obviously seen on the right side.  
✓ Pressed without bulk |

- The relationship between balance and proportion can be a useful tool in evaluating finished garments.
Specific Standards for a Blouse

Balanced shoulders

Sleeves are of the same length
Buttons and Buttonholes are evenly and properly located
Sides are equal /Hem is balanced

Collar lies flat on shoulders
Dart lines are evenly spaced from the placket

Specific Standards for a Skirt

Waistband is even in width
Darts are of the same length
Skirt is even in length
Bottom hem is parallel to the floor
Standards for a Dress

- Balanced shoulders
- Collar lies flat on front shoulder
- Sleeves are of the same length
- Sleeves are of the same fullness
- Buttons and buttonholes are evenly distanced
- Dart lines are evenly spaced from the placket
- Right to left overlap
- Collar lies flat on front shoulder
- Sleeves are of the same length
- Sleeves are of the same fullness
- Buttons and buttonholes are evenly distanced
- Dart lines are evenly spaced from the placket
- Right to left overlap

Princess Dress
Common Faults of Finished Garments

There are certain quality related problems in garment construction that should not be overlooked:

- **Construction Process Faults** – These are the faults that occur during the sewing stage like open seams, wrong stitching techniques used, use of different thread color on the garment, miss out of stitches in between, wrinkle in some parts, conspicuous hemming stitches, creasing of the garment, erroneous thread tension, unfinished raw edges, uneven parts, and untrimmed hanging threads.

- **Garment part Faults** - During manufacturing process defects could occur like - faulty zippers, irregular hemming, loose buttons, improper button holes, inappropriate trimming.

- **Color Faults** - Color defects that could occur are - difference of the color of final produced garment to the sample shown, accessories used are of wrong color combination and mismatching of dye amongst the pieces.

- **Sizing defects** - Wrong gradation of sizes, difference in measurement of a garment part from other, for example- sleeves of 'XL' size but body of 'L' size.

- **Material Faults.** These are faults found in fabric such as weak spots, pilling and bleeding.

- **Labelling and specifications faults.** These include incorrect care label and instructions and; incorrect size.

Fault Analysis

Fault analysis is a well tried technique in which all facets of each garment fault are recorded under appropriate headings. Together with an example of each fault, the analysis provides an invaluable tool for improving performance. Below is a sample Fault Analysis Form.

<table>
<thead>
<tr>
<th>FAULT</th>
<th>APPEARANCE</th>
<th>CAUSE</th>
<th>EFFECT</th>
<th>ACTION</th>
<th>PREVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>loose thread</td>
<td>There is looping on the underside of the material</td>
<td>Incorrect machine setting</td>
<td>The product might be rejected or further damage may occur.</td>
<td>Rip/ resew</td>
<td>Set machine properly</td>
</tr>
</tbody>
</table>

- Fault-pertains to identified error or defect. Example: loose thread
- Appearance- a clear description of the fault. A sample fault can be attached so that the appearance or feel of the defect will be recognized.
- Cause- reason for the defect.
- Effect- result or outcome of the fault.
- Action-thing to do to correct the fault.
- Prevention-thing to do so that the fault will not happen again.
LET US REMEMBER

- Quality in a garment must be the primary concern of every dressmaker or tailor. It is where accuracy and creativity can be best applied.
- Good quality increases the value of a product and builds up good reputation which in turn results into client satisfaction.

SELF-CHECK

Directions: Choose the correct answer from the options under each item. Write the letter of your answer in your quiz notebook.

1. The thread used in sewing a garment should match the color of the__________________.
   a. accents
   b. buttons
   c. collars
   d. fabric
2. Sewed darts in a blouse are ________________.
   a. Alike in both sides
   b. Balance
   c. Gradually tapered
   d. Puckered
3. Well constructed buttonholes must be__________________.
   a. appropriately located
   b. attached properly
   c. bulky
   d. smooth
4. ______________ is NOT standard in attaching set-in sleeve.
   a. balance
   b. ease
   c. no wrinkles
   d. with wrinkles
5. The seams of a blouse should have the following characteristics except__________________.
   a. correctly placed
   b. edges finished
   c. flat
   d. well turned corner
LET US APPLY WHAT YOU HAVE LEARNED

Task: Assess a Completed Garment

1. Assess a completed garment. Write the information called for in the given form.

GARMENT QUALITY STANDARDS ASSESSMENT FORM

<table>
<thead>
<tr>
<th>Area of Assessment</th>
<th>Met quality standards?</th>
<th>Findings/Faults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Thread</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine Stitching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Darts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seam Finish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fasteners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buttonholes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waistband</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pocket</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Students may assess the completed work of the Third/Fourth Year students.

2. Assess performance using the rating scale below.

RATING SCALE FOR ASSESSING GARMENT PARTS

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Completed work was assessed based on the job quality standards.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>• Work instruction specifications were interpreted according to the job requirements.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>• Faults were identified and recorded.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Legend:

<table>
<thead>
<tr>
<th>Score</th>
<th>15</th>
<th>14</th>
<th>13</th>
<th>12</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>93</td>
<td>90</td>
<td>88</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>80</td>
<td>78</td>
<td>75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESOURCES

Blouse
Pencil
Paper

127
LESSON 2

MEASURING GARMENT PARTS

INTRODUCTION

The lesson deals with measuring the different parts of a blouse using appropriate measuring tool in accordance with the work place procedure.

ASSESSMENT CRITERIA

1. Materials and components of product are measured using the appropriate measuring instruments in accordance with the workplace procedure.

DEFINITION OF TERMS

- **Across Back** - from arm crease to arm crease at the back.
- **Across Chest** - from arm crease to arm crease at the front.
- **Across Shoulder** - from shoulder and passing the nape bone to the other shoulder end.
- **Sleeve** - part of a garment attached set into the armhole.
- **Upper Arm** - around the armhole.
INFORMATION SHEET 4.2

Quality Assurance

Quality assurance refers to guarantee given to consumers or clients that the product, parts, components and services contain the promised features or characteristics. It implies that the process used to manufacture a product or deliver a service is tried and tested and it is fit for intended use. Here are the steps taken to ensure quality assurance:

1. **Quality specifications.** In this stage, the specific features are established. Then the product is designed to meet these specifications.

2. **Quality inspections.** It is in this stage that testing and inspections are regularly done at every stage of manufacture. Raw materials, parts, equipment and qualified personnel are all selected according to quality guidelines.

3. **Quality evaluation.** Follow up and evaluation is done to measure the degree of effectiveness and efficiency of a product.

Measuring Garment Parts

Measuring a completed garment part is a part of quality inspection and is done to ensure that it conforms to the client’s specification. Here is the standard operating procedure in measuring garment parts:

1. Tools and equipment are obtained and set up in readiness for use according to work requirement.

   A tape measure will help you in measuring components of product. The best tape measure used in measuring is made of long, narrow piece of strong material that does not stretch. The small piece of metal found at each end of many tape measures is helpful because it keeps the end from raveling and gives a true edge. The most convenient kind of tape measure is one that is numbered on both sides with the numbers going in opposite directions. No matter which end you pick up, start measuring from number one.

2. Garment is obtained and laid out for measuring.
3. Garment measurements are taken accurately and compared to specifications within garment measurement table.
4. Any problems with garment are identified and recorded.
5. Problems are then reported to designer, patternmaker and sample machinist. This procedure applies when working in a garment industry.
Procedure in Measuring Garment Parts

- **Center Back Length**: Lay the garment flat and measure from the collar or neck seam to the bottom of the garment down the center back.

- **Across Shoulder**: Lay the garment flat with natural fold at shoulder and measure from the point where seams should meet the top of armholes straight across the shoulder and back from left side to right side.

- **Across Back**: Lay the garment flat and place the zero point of the tape measure on the collar seam at the center back neck of the garment. Then, measure straight across from armhole seam to armhole seam.

- **Upper Arm**: Lay the sleeve flat and move the body at the garment to eliminate all wrinkles under the arm where the sleeves join the body and measure.

- **Across Chest**: Place the zero point of the tape measure on the neck seam where it joins the shoulder seam with the tape measure straight across the armhole to armhole at 5 inches mark on the first tape measure.

- **Bust**: Measure the straight bust/chest across from top of the left side seam where sleeve joins the armhole.

- **Waist**: Lay the garment flat and measure from side at the narrowest point measure 20 cm. from armhole joining.

- **Sleeve**: Lay the garment flat with sleeve and shoulder of the garment. Measure from where shoulder seams meet the neck seam. Along the shoulder and down the center of the sleeve following the contour of shoulder and sleeve all the way to the desired length.

- **Collar Length**: Undo all buttons and lay the collar flat so that the inside of the garment is towards you. Measure from the stitches of the button along the center of the collar stand to the end of the buttonholes nearest to the front of the garment.
LET US REMEMBER

Garment parts are measured to check if they conform to the job requirements and quality standards.

SELF-CHECK

Directions: Identify the parts of garment being measured. Write the answer in your quiz notebook.

1. Measure from where shoulder seams meet the neck seam.
2. Distance from the nape bone to the bottom of blouse.
3. A measurement taken from arm crease to arm crease at the back.
4. Measure from the stitches of the button along the center of the collar stand to the end of the buttonholes.
5. Measure the straight bust/ chest across from top of the left side seam where sleeve joins armhole.

LET US APPLY WHAT YOU HAVE LEARNED

Task: Measure Garment Parts

1. Bring to class a completed blouse with collar and sleeves. Measure the garment parts and write down your findings using the following table.

<table>
<thead>
<tr>
<th>Garment Parts</th>
<th>Measurement</th>
<th>Findings/Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Right/Front</td>
<td>Left/Back</td>
</tr>
<tr>
<td>Center back length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Across shoulder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Across back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper arm girth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Across chest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bust/Chest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collar length</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Assess performance using the rating scale below.

RATING SCALE FOR MEASURING GARMENT PARTS
<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Student Score</th>
<th>Teacher’s Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Used appropriate measuring tool</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Materials and components of product were measured in accordance with the workplace procedure.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Measurements were taken accurately.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Listed down correct findings.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

- 20 - 95
- 19 - 93
- 16-18 - 90
- 12-15 - 88

**RESOURCES:**

- Blouse
- Tape measure
- Paper and pencil
LESSON 3

RECORDING INFORMATION

INTRODUCTION

The lesson is focused on how to systematically record basic information on the quality performance in accordance with the workplace procedure.

ASSESSMENT CRITERIA

1. Basic information on the quality performance is systematically recorded in accordance with the workplace procedure.
2. Records of work quality are maintained according to the job requirements.

DEFINITION OF TERMS

- **Record**- to set down in writing or the like, as for the purpose of preserving evidence.
- **Tangible**- capable of being touched.
- **System**- an assemblage or combination of things or parts forming a complex or unitary whole.
INFORMATION SHEET 4.3

Record Management

Record management is the practice of maintaining the records of any activity in an organization. This may include classifying, storing and securing of records. This could either be a tangible object or digital information. It is primarily concerned with the evidence of an organization’s activities, and is usually applied according to the value of the records rather than their physical format.

In garment manufacturing, a record of the following will be of help in improving the system:

- **Equipment.** All equipments require effective maintenance and calibration. By recording information, maintenance would be easy.
- **Purchased Material and Service.** All incoming goods must be inspected and tested as appropriate records maintained.
- **Manufacturing Control.** In-work inspection should be conducted during manufacture on all characteristics to prevent subsequent sub-standard products and a record should be maintained for this task as reference.
- **Work Instructions/Workmanship.** Satisfactory written standards are established and recorded.

Advantages of Recording Information

Recording information is a must in garment production. It could help in improving the system or procedure through the following:

- Prompt detection and correction of inferior quality.
- Continued monitoring of processes and work operations including performance testing.
- Actions to be taken with suppliers on receipt of sub-standard materials.
- Review of any corrective actions taken.

Requisite for Recording Information

When recording information, take note of the following:

1. Date and time should always be indicated.
2. Information should be clear, detailed and complete.
3. Record in garment construction must identify the following:
   - Criteria for acceptance/ rejection
   - Action to be taken
   - Essential information and data to identify item and batch.
   - Details of equipment and calibration
4. Records must be kept up to date and be stored for easy access and retrieval and be available for examination.
LET US REMEMBER

Records enable current data to be compared with previous data. They create rapid feedback of vital information to production.

SELF-CHECK

Directions: Answer the following questions briefly.

1. Why is recording information important in garment construction?

________________________________________________________

2. How does record help in manufacturing control?

________________________________________________________

3. Why it is important to maintain a record in garment construction?

________________________________________________________
LET US APPLY WHAT YOU HAVE LEARNED

Task: Record Information

1. Bring fabric in class and inspect its quality. Write your feedback and action to be taken by accomplishing the Fabric Inspection Report below.

**FABRIC INSPECTION REPORT**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>TYPE OF FABRIC</th>
<th>FEEDBACK</th>
<th>ACTION TAKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Assess performance using the rating scale below.

**RATING SCALE FOR RECORDING INFORMATION**

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Student Score</th>
<th>Teacher’s Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic information was systematically recorded.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Recorded information is clear and complete.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Provided correct and concise feedback</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ticked correct action.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:

<table>
<thead>
<tr>
<th>Score</th>
<th>20</th>
<th>19</th>
<th>16-18</th>
<th>12-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>-</td>
<td>-</td>
<td>90</td>
<td>88</td>
</tr>
<tr>
<td>9-11</td>
<td>-</td>
<td>-</td>
<td>5-8</td>
<td>1-4</td>
</tr>
<tr>
<td>93</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>90</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>
LESSON 4

STUDYING CAUSES OF QUALITY DEVIATIONS

INTRODUCTION

This lesson deals with the defects and deviations to product quality, causes of defects in a garment and identification of preventive actions and recommendations.

ASSESSMENT CRITERIA

1. Defects and deviations to product quality are recognized.
2. Causes of defects are identified.
3. Causes of deviation are analyzed.
4. Preventive action is recommended.

DEFINITION OF TERMS

- **Defects** – refers to the deformity or imperfection in a garment.
- **Deviation** – inconsistency of a design in a garment.
- **Parameters** - limits or boundaries; guidelines.
- **Quality** - degree or standard of excellence, esp. a high standard.
- **Scorch** - a slight burn.
INFORMATION SHEET 4.4

Recognizing Garment Defects/Deviation

An important skill that is necessary in garment construction is recognizing a garment deviation/defect. A deviation is a difference from standard procedures or specifications resulting in non-conforming material and/or processes or where there have been unusual or unexplained events which have the potential to impact on product quality, system integrity or personal safety. Deviation in garments includes non-conforming, obsolete raw materials used in finished goods.

There are many causes of deviation from the quality or the product may be lacking in the feature described. The variations may occur due to negligence or oversight on part of the sewer or faults in the machines. Any deviation from the client’s requirements is called a defect. It can be noticed visually. Defects are classified into three categories:

1. **Critical Defect.** This is the worst and serious defect and can cause harm or injury to the user and or result in a hazardous situation. Example: using dangerous material.

2. **Major Defect.** A defect that falls to meet the mandatory regulations directly affecting the usability, saleability, safety and value of the merchandise or as specified by buyer are considered major defects and are generally non repairable. This kind of defect is not acceptable by most users in most circumstances. For example: fabric hole, shading among panel, wrong measurement, foreign yarn, dye patches etc. The measurement tolerate level may vary from client to client.

3. **Minor Defect.** A defect that does not adversely affect the usability of the product but does consist of a deviation from the original sample, and may affect the sale of the product. Some of these defects are due to workmanship and some can be repairable but still can deteriorate the serviceability of the merchandise. This kind of defect might not be a problem to most users. For example: stain, skip stitch, wavy bottom hem, etc.
Standard Operating Procedures in Identifying Defects/Quality Deviations

Here are the standard operating procedures in identifying defects or quality deviations in garments:

1. Fabric performance and testing information is obtained and verified against label information.

2. Faults or production problems for garment construction or patterns are identified. This may include the following:
   - material faults such as weak spots, pilling, bleeding
   - construction process faults such as broken thread, inappropriate seams, seam finishing, seam puckering, needle damage
   - labeling and specifications faults such as incorrect care label and instructions, incorrect size

3. Suitable preventive or corrective action is recommended based on quality standards

Causes of Garment Defects

Knowledge on the causes of garment defects enables one to take preventive action thereby producing good quality garments. The table below lists the possible causes of some defects in garments.

<table>
<thead>
<tr>
<th>Garment Defect</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spots/Stains/soil</td>
<td>Dirty machine; excessive oil in the machine; dirty work area</td>
</tr>
<tr>
<td>Loose Threads</td>
<td>Can be caused either by malformed stitching or poor trimming techniques.</td>
</tr>
<tr>
<td>Tear</td>
<td>Usually the result of excessive strain or snagging on the machine; wrong use of scissors or trimmers</td>
</tr>
<tr>
<td>Puckered Seams</td>
<td>Incorrect setting of the machine</td>
</tr>
<tr>
<td>Pleated seams</td>
<td>Feeding fabric faster than normal feeding action of the machine</td>
</tr>
<tr>
<td>Wrong shade of thread</td>
<td>Purchasing error or wrong selection of thread color</td>
</tr>
<tr>
<td>Wrong seam or stitch type</td>
<td>Error in selection; operator failed to follow specification</td>
</tr>
<tr>
<td>Loose Thread tension</td>
<td>Tension not adjusted correctly</td>
</tr>
<tr>
<td>Wrong stitch per inch</td>
<td>Lengthening stitch to increase machine speed</td>
</tr>
<tr>
<td>Skipped stitches</td>
<td>Excessive needle heat due to friction</td>
</tr>
<tr>
<td>Broken stitches</td>
<td>Wrong type of stitch for specific seam; too tight tension</td>
</tr>
<tr>
<td>Twisted seam</td>
<td>Improper alignment of fabric pieces or uneven tension.</td>
</tr>
<tr>
<td>Uneven edge</td>
<td>Stitching not straight</td>
</tr>
<tr>
<td>Ragged edges</td>
<td>Knives on automatic buttonhole machines do not clip smoothly.</td>
</tr>
<tr>
<td>Uncut buttonhole</td>
<td>Buttonhole knife failed to cut buttonhole</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Hole</td>
<td>Faulty machine or related equipment</td>
</tr>
<tr>
<td>Misaligned closure</td>
<td>Closure components do not line up</td>
</tr>
<tr>
<td>Uneven stitch</td>
<td>Speeding up machine too rapidly; holding back or pushing fabric through machine</td>
</tr>
<tr>
<td>Wrinkled garment</td>
<td>Improper pressing</td>
</tr>
<tr>
<td>Zippers</td>
<td>Poor quality zipper</td>
</tr>
<tr>
<td>Slider do not lock</td>
<td>Poor quality zipper</td>
</tr>
<tr>
<td>Crushed slider</td>
<td>Improper pressing</td>
</tr>
<tr>
<td>Improperly attached button</td>
<td>Lack of sufficient reinforcement</td>
</tr>
<tr>
<td>Damaged or crushed button</td>
<td>Poor quality button</td>
</tr>
<tr>
<td>Improperly applied hook and eyes</td>
<td>Improperly adjusted attaching equipment</td>
</tr>
<tr>
<td>Water spots</td>
<td>Leaks in pressing unit or improper steam</td>
</tr>
<tr>
<td>Scorch</td>
<td>Temperature of pressing equipment too high</td>
</tr>
</tbody>
</table>

**Preventive Action to Ensure Quality Garment**

Deviations and defects are reported to maintain continuous improvement of processes by taking corrective and preventive actions. One preventive action to ensure quality in garment construction or manufacturing is **quality control inspection**. With this, quality is controlled at various stages of production as follows:

1. **Design stage.** The product is designed according to the specifications laid out while conceiving the product. The standard of the product is predetermined before the start of production.

2. **Purchasing stage.** The raw materials and components purchased meet the quality standards. They are examined and inspected carefully for flaws and defects.

3. **Production stage.** The stage where raw materials are converted into finished products is the longest and most exhaustive since one has to make sure that the processes involved, equipment and personnel expertise all deliver on quality.

**Advantages of Quality Control Inspection**

The following are the advantages of quality control inspection:

1. It ensures that the product or service meets the design specifications and safety guidelines.
2. It pushes the sewer to improve the quality level of his/her workmanship because of the pressure of inspections and non-acceptance.
3. It forces suppliers to meet your order terms and product requirements such as exact and quality material and color.
4. It reduces the quantity of scrap, wastage and the degree of spoilage during production.
5. Faults are corrected at once or eliminated during the construction process.
Pre-production Inspection

The following parameters & defects are checked prior to cutting:

- Shade Matching
- Fabric Construction
- Diameter
- Length
- Dyeing Levelness
- Ecological parameters
- Softness
- Shrinkage

- Matching of Rib, Collars & Cuffs
- Fabric Holes
- Vertical & Horizontal Stripes
- Bowing
- Skewing
- Yarn defects
- Dirt and stain

Parameters during Production Inspection

The following parameters & defects are checked during production:

- Verify cutting patterns
- Cut components measurements
- Cutting shapes
- Fabric defects
- Other specific parameters as required by the customers Rib, Collars & Cuffs matching

- Stitching defects
- Sewing threads matching
- Dirt & Stain
- Measurements
- Labels
- Trims & Accessories

Final Inspection Parameters

The following parameters & defects are checked after production:

A. Packing & assortment

- Wrong model
- Wrong quantity
- Missing labels & tags

- Wrong size & color assortment
- Wrong folding

B. Fabric defects

- Wrong shade
- Uneven dyeing
- Holes
- Knitting stripes
- Thick & thin places
- Dirt & stains

- Oil stains
- Sinker line
- Poor softness
- Higher shrinkage
- Crease marks

C. Workmanship defects

- Open seam
- Puckering
- Needle holes & marks
- Unbalanced sleeve edge

- Unbalanced placket
- Insecure shoulder stitch
- Incorrect side shape
- Bottom hem bowing
• Uneven neck shape
• Cross labels
• Broken & Missing stitch
• Not secured buttons

• Untrimmed threads & fabrics
• Poor Ironing
• Double stitch

D. General defects

• shade variation within the garment parts
• shade variation between the garments

• defective printing
• defective embroidery
• defective buttons

LET US REMEMBER

• Quality control helps to ensure that all garment products meet production standards and match the original sample.
• Following correct inspection procedures gives the clear judgement of the quality of the garment.

SELF-CHECK

Directions: Choose from the word pool the correct answer to the given problem.

<table>
<thead>
<tr>
<th>a. Critical defect</th>
<th>b. Defect</th>
<th>c. Quality control</th>
</tr>
</thead>
<tbody>
<tr>
<td>d. Minor defect</td>
<td>e. Major defect</td>
<td>f. Deviation</td>
</tr>
</tbody>
</table>

1. A deviation from the client’s requirements.
2. It is done to prevent faults in garments.
3. A defect where a fabric hole is found.
4. A defect that can be corrected.
5. A defect that can harm a client.
LET US APPLY WHAT YOU HAVE LEARNED
Task: Identify Quality Deviations and Causes

1. Bring to class a completed blouse with collar and sleeves. Inspect the garment and list down the deviation/defect and its possible cause.

Type of Garment: ____________________________

<table>
<thead>
<tr>
<th>Garment Area/ Details</th>
<th>Deviation / Defect</th>
<th>Defect Category (Write C for critical, M for major, Mn for minor)</th>
<th>Possible Cause</th>
<th>Recommendation /Preventive Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine Stitching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Darts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placket</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fasteners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buttonholes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Assess performance using the rating scale below.

RATING SCALE FOR IDENTIFYING QUALITY DEVIATIONS AND CAUSES

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>Perfect Score</th>
<th>Student Score</th>
<th>Teacher’s Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recognized garment defects.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Identified possible causes of the defects.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Recommended suitable preventive action.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
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Legend:
15 - 95
14 - 93
13 - 90
12 - 88
11 - 85
10 - 83
9 - 80
8 - 78
7 below - 75
SELF-CHECK
Directions: Read and understand the items below. Write the letter of the correct answer in your quiz notebook.

1. Any deviation from the client’s requirements.
   a. critical defect  
   b. defect  
   c. major defect  
   d. minor defect

2. The thread used in sewing a garment should match the color of the_____.
   a. accent  
   b. button  
   c. collars  
   d. fabric

3. Which is not a standard of a set-in sleeve?
   a. balance  
   b. ease  
   c. no wrinkles  
   d. with wrinkle

4. The seam of the blouse should have the following characteristics except:
   a. correctly placed  
   b. edge finished  
   c. flat  
   d. well-turned corner

5. Sewn darts in a blouse are _______.
   a. alike on both sides  
   b. balance  
   c. gradually tapered  
   d. puckered

6. Weak spots, pilling and bleeding fall under _______.
   a. color fault  
   b. construction fault  
   c. labeling fault  
   d. material fault

7. Measuring a completed garment is part of _______.
   a. fault analysis  
   b. quality assurance  
   c. quality control inspection  
   d. recording

8. The following are construction process fault except _______.
   a. puckered stitches  
   b. unfinished raw edges  
   c. untrimmed hanging threads  
   d. wrong color combination

9. Which is not a standard for a dress?
   a. Buttons and buttonholes are evenly distanced  
   b. Collar lies flat on the shoulder  
   c. Sleeves are of different fullness  
   d. Sleeves are of the same length

10. Spots or stains on a garment are caused by the following except:
    a. dirty machine  
    b. dirty work area  
    c. excessive oil in the machine  
    d. excessive strain on the machine]
11. This is a preventive action to ensure quality garments.
   a. fault analysis
   b. quality assurance
   c. quality control
   d. recording

12. The guarantee given to client that the product, parts, components and services contain the desired features.
   a. fault analysis
   b. quality assurance
   c. quality control inspection
   d. recording

13. A technique for identifying and recording error on a finished garment.
   a. fault analysis
   b. quality assurance
   c. quality control
   d. recording

14. Which should be recorded and maintained in a garment factory?
   a. equipment
   b. purchased material and service
   c. workmanship
   d. all of the above

15. The following are the advantages of recording except ________.
   a. continued monitoring of processes
   b. prompt detection and correction of inferior quality
   c. review of any corrective actions taken
   d. ensures client’s satisfaction

16. A tear on a finished garment is caused by _______.
   a. dirty machine
   b. dirty work area
   c. excessive oil in the machine
   d. excessive strain on the machine

17. A well-constructed buttonhole is ________.
   a. appropriately located
   b. bulky
   c. sewn properly
   d. smooth

18. A kind of defect in a finished garment where a fabric hole is found.
   a. critical defect
   b. defect
   c. major defect
   d. minor defect

19. A kind of garment defect that can be corrected.
   a. critical defect
   b. defect
   c. major defect
   d. minor defect

20. A worst and serious defect on a garment that can harm a client.
   a. critical defect
   b. defect
   c. major defect
   d. minor defect
### KEY TO CORRECTION

**Module 1**

<table>
<thead>
<tr>
<th>PRETEST</th>
<th>Lesson 1 Self Check</th>
<th>Lesson 2 Self Check</th>
<th>Lesson 3 Self Check</th>
<th>SELF CHECK</th>
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<td>A.</td>
<td>1. D</td>
<td>A</td>
<td>1. A</td>
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<tr>
<td>6. B</td>
<td>5. D</td>
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<td>B.</td>
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<td>12.C</td>
<td>5. E</td>
<td>5. pressure screw</td>
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<td>12.A</td>
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<td>17.B</td>
<td>3. thread guide</td>
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<td>17.A</td>
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<tr>
<td>18.D</td>
<td>4. arm</td>
<td></td>
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<td>18.B</td>
</tr>
<tr>
<td>19.D</td>
<td>5. stitch regulator</td>
<td></td>
<td></td>
<td>19.D</td>
</tr>
<tr>
<td>20.A</td>
<td>6. thread take up lever</td>
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<td></td>
<td>20.D</td>
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<tr>
<td></td>
<td>7. needle clamp</td>
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<td>8. presser bar lifter</td>
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<td></td>
<td>9. feed dog</td>
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<tr>
<td></td>
<td>10. balance wheel</td>
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<tr>
<td></td>
<td>11. bobbin winder</td>
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<td></td>
<td>12. belt</td>
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<td></td>
<td>13. drive wheel</td>
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<td></td>
<td>14. treadle</td>
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<td></td>
<td>15. bed</td>
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<td></td>
<td>16. throat plate</td>
<td></td>
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<td>17. dress guard</td>
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</table>

**Lesson 3**

- A. 1. stitch
  - B. 1. bobbin case
  - C. 1. thread holder
  - D. 1. motor

**Lesson 2**

- A. 1. presser foot
  - B. 1. arm
  - C. 1. wheel
  - D. 1. bed

**Lesson 1**

- A. 1. motor
  - B. 1. treadle
  - C. 1. bed

**Self Check**

- A. 1. stitch
  - B. 1. bobbin case
  - C. 1. thread holder
  - D. 1. motor

- B. 1. presser foot
  - 2. arm
  - 3. wheel
  - 4. bed
### KEY TO CORRECTION

#### Module 2

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<td>8. C</td>
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<td>17. B</td>
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<td>17. C</td>
</tr>
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<td>29. C</td>
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<tr>
<td>30. C</td>
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<td>30. B</td>
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KEY TO CORRECTION

Module 3

PRE TEST  Lesson 1  SELF CHECK
Self Check

5. B    5. B    5. D
6. C    Lesson 2    6. D
7. A
8. D
9. A

A

10. B
11. B
12. C
13. D
14. D
15. B
16. D
17. B
18. C
19. A
20. B

1. P 480.00
2. 81.28 or 82; 20.32 or 21
3. 1 yd; .83 m
4. B
5. P 90.00
6. P 10.00
7. A
8. A
9. A
10. B
11. A
12. B
13. A
14. C
15. B
16. C
17. B
18. D
19. B
20. A

148
### Key to Correction

#### Module 4

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<td>10. C</td>
<td>1. across shoulder</td>
<td>10. D</td>
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<tr>
<td>11. D</td>
<td>2. center back</td>
<td>11. C</td>
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<tr>
<td>13. C</td>
<td>3. across back</td>
<td>13. A</td>
</tr>
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<td>15. A</td>
<td>4. collar length</td>
<td>15. D</td>
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<td>19. D</td>
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<tr>
<td>20. D</td>
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<td>20. A</td>
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</tbody>
</table>

#### Lesson 2 Self Check

1. across shoulder
2. center back
3. across back
4. collar length
5. bust

#### Lesson 4 Self Check

1. B
2. C
3. E
4. D
5. A
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Websites

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www.piercetransit.org/purchasing.htm

www. Jando.fabrics.com

www.info@ellisdev.co.uk

www.Sewusa.com Kennmore 385.12014  385.11608  385.12814 Maintenance & Troubleshooting
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This learning material was developed, enhanced and refined by the following writers:

Writeshop on the Development of CBC-CLM

Writers:

- **LUZ AGBULUS**  
  Zamboanga del Sur School of Arts and Trades

- **ANNABELLE R. DE LEON**  
  Tanza National Trade School

- **MARIA M. DEL MUNDO**  
  E. Rodriguez Vocational High School

- **LORENA GENITO**  
  Zamboanga Del Sur School of Arts and Trades

- **JULIE ANNIE M. PESTAÑO**  
  General Mariano Alvarez Technical High School

- **PRESCILLA RAYOS**  
  Community Vocational High School

- **PURIFICACION RAZON**  
  Don Alejandro Sr. Science and Technology High School

- **ROSSANA I. SAGUID**  
  Tanza National High School

- **ELORJEN VILLAMAYOR**  
  M. S. Enverga Memorial College of Arts and Trades
Writeshop on the Finalization, Packaging and Repackaging of CBC-CLM-CBLM

- **FRANCISCA BUMANGLAG**  
  Jones Rural School

- **ANNABELLE R. DE LEON**  
  Tanza National Trade School

- **MARIA M. DEL MUNDO**  
  E. Rodriguez Vocational High School

- **ALVA NALDOZA**  
  General Santos City

- **ESTREULINA PALALON**  
  Glan School of Arts and Trades

- **JULIE ANNIE M. PESTAÑO**  
  General Mariano Alvarez Technical High School

Writeshop on the Refinement and Enrichment of CBC-CLM-CBLM of Arts and Trades Specializations

- **ANNABELLE R. DE LEON**  
  Teacher III  
  *Tanza National Trade School*  
  Paradahan I, Tanza, Cavite  
  *Region IV-A*

- **MARIA M. DEL MUNDO**  
  Teacher III  
  *E. Rodriguez Vocational High School*  
  Naqtahan, Sampaloc, Manila  
  *NCR*

- **MARIA VICTORIA M. FERNANDO**  
  Teacher III  
  *Pangasinan School of Arts and Trades*  
  Lingayen, Pangasinan  
  *Region I*

- **NIMFA O. MARMOL**  
  Teacher I  
  *Muntinlupa Business High School*  
  Muntinlupa City  
  *NCR*

- **DR. MILAGROS M. TORRES**  
  Master Teacher I  
  *Sanchez Mira School of Arts and Trades*  
  Sanchez Mira, Cagayan, Region 2
Writeshop on the Integration of Evaluation Results/Recommendations
by the IMCS Editors / Evaluators
November 21 – 25, 2011

- LENELIA F. JAMILE
  Teacher II
  Miagao National High School
  Region VI

- ELENA C. REYES
  Head Teacher III
  Elpidio Quirino High School (Manila)
  NCR

- SUSAN SISON
  Teacher I
  Benigno Aquino High School
  NCR

- MARITA TAMAYOSA
  Head Teacher VI
  Lubang Vocational High School
  Region III

Finalization and Packaging of Learning Materials
December 5 – 9, 2011

- LENELIA F. JAMILE
  Teacher II
  Miagao National High School
  Region VI

- ELENA C. REYES
  Head Teacher III
  Elpidio Quirino High School (Manila)
  NCR