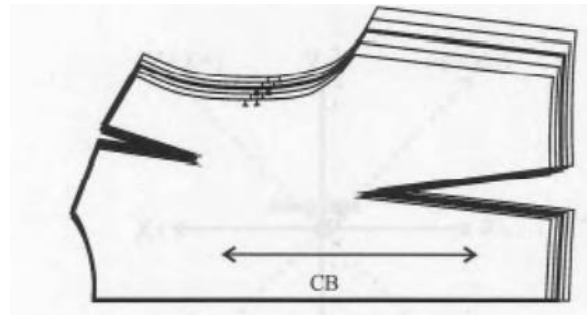


# Fashion Design Level II

**Based on March 2022, Curriculum Version 1**



**Module Title: - Analyze fit model; develop pattern and  
apply pattern grading**

**Module code: IND FAD2 MO8 0322**

**Nominal duration: 80 Hour**

**Prepared by: Ministry of Labor and Skill**

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**Addis Ababa, Ethiopia**

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## Introduction to the Module

Analysing fit model; develop pattern and apply pattern grading is an integral role in the design process; commenting on garments and materials with regards to fit. A pattern needed to be graded to a range of sizes to properly fit on different body types. In fashion design select and measure appropriate fit model, identify their physical characteristics helps to develop grading to represent the selected target group.

### This module covers the units

- workstation
- Grading
- Base pattern
- Grade pattern
- Design brief
- Measure fit model
- physical characteristics
- Representation of fit model

### Learning Objective of the Module

- Set up workstation
- Develop grading specifications
- Set up base pattern
- Apply pattern Grading
- Identify Scope design brief in relation to target market
- Apply Measure of fit model
- Identify physical characteristics
- Select representation of fit model

### Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercise

## Unit one: Work station

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

- OHS practices
- Patternmaking tools and equipment

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

- Apply OHS practices
- Identify and prepare patternmaking tools and equipment

## 1.1 Occupational Health and Safety (OHS) Practices

Occupational Safety and Health (OSH) is an important aspect which allows an organization to systematically manage the safety and health of the workers in a workplace.

The first step in the process is an important one in creating the most efficient workstation lay out. This means that the workstation should be such that it does not create risks to the worker's health and safety

In every working area OHS \ Occupational Health & Safety is implemented. When using tool and equipment's basic safety precautions should always be followed to reduce the risk of personal injury and damage to tools & equipment.

Working on the principle of “A PLACE FOR EVERYTHING, and EVERYTHING IN ITS PLACE”, you can adapt these ideas the equipment you already have or can easily obtain.

- Safe Keep work area clean
- Observe work area conditions
- Store idle equipment / When not in use, tools must be stored in appropriate location
- Dress properly
- Observe all, before, safety precautions related to your work.
- Report unsafe conditions or any equipment or materials you think might be unsafe.
- Report any injury
- Wear protective clothing
- Always inspect equipment and associated attachments for damage before using.
- Select and lay out materials accordance to work specifications materials handling and safe storage of equipment

Like in any activity, gathering the proper tools for the job will make each step along the way better & more accurate.

Generally follow all precautions and regulations while working in the lab. Make sure that your working space is clean and organized, and all the required stocks and materials are kept ready & maintain the discipline in your working area

## 1.2 Patternmaking tools and equipment














### 1.2.1 Patternmaking tools and equipment

Pattern making tools & materials are used to prepare neat and accurate pattern. To a greater extent, the accuracy of the pattern depends on the quality of instruments used to prepare them.

Like in any activity, gathering the proper tools for the job will make each step along the way better, more accurate. Without the proper tools each task is hard.

Below is a guide of some of the items you will want to have on hand when getting into pattern making.

Table 1.1 pattern making tools

Name of Tool	Image	Description of Use
Set Square		To draw perpendicular lines that need to be squared out
Transparent Ruler		To measure straight line
Tape measure		To measure curved line.
Hip curves/fashion curve		To make curves like hip, It used to make for side seams & in seam of trousers & the like.
French Curve		Make for shaping edge of curved Collars, Armscyes, neck lines & other additional types of curves.
T- Square		Is used to locate cross grains, alter patterns and square off straight edges.
Awl		Indicate the ending of darts, pocket, and buttonhole placements
Paper scissors		To cut a paper of pattern
Metal weights		Hold patterns in place for tracing and marking.
Notcher:		Cuts opening at the pattern's edge to indicate seam allowance, center lines, and to identify front and back of patterns.
Tracing wheel		To transfer lines or symbols from one pattern to another
Pattern paper		They are available in many varieties and good quality paper with smooth surface should be selected
Pencil & Eraser		Used for patterning on pattern paper. A good eraser used to cleanly remove unwanted lines leaving no marks.



## Self-check-1

### Part-I Short answer

Instruction: write the correct answer for the given question. You have given 10 minutes.

Each question carries 2 Point.

1. Write the function of the listed pattern making tools.
  - A. Transparent ruler \_\_\_\_\_
  - B. Hip /fashion curve \_\_\_\_\_
  - C. T-square \_\_\_\_\_
  - D. Tape measure \_\_\_\_\_
  - E. Notcher \_\_\_\_\_
  - F. Tracing wheel \_\_\_\_\_
2. Why you apply or implement Occupational Health & Safety/OHS in working place?

Note: Satisfactory rating – above 60%      Unsatisfactory - below 60%

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

## Unit Two: Grading

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

- Definition and purpose of grading in pattern making
- Measurements of base size.
- Sizes in grading
- Grade increments between sizes.

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

- Use grading system used in pattern making
- Identify measurements of base size.
- Apply calculation number of sizes in grading
- Explain grade increments between sizes

.

## 2.1 Definition and purpose of pattern grading

### 2.1.1. Definition of pattern grading

To create grade specs, will need to figure out the sample size measurements first. Some of these measurements will come directly from body measurement data, while add the garment ease amount to others

Grading specifications or grading specs are the measurements that indicate how much to want each size to change, by becoming larger or shrinking.

Pattern grading is one of the most significant steps in the garment manufacturing process. Pattern grading **allows fashion designers to create different sized patterns from the original pattern** to put it another way, pattern grading leads to the creation of a variety of sizes for a single garment style.

**Pattern Grading** is the process of turning a sample size (base size) into additional smaller or larger sizes. Pattern grading is step-wise increase and/or decrease of base size or sample size proportionate to specific instructions using a size specification sheet according to measurements

### 2.1.2 Purpose of pattern grading

The main purpose of pattern grading is to proportionally increase or decrease the size of a pattern, whilst also maintaining the same fit and shape of a garment.

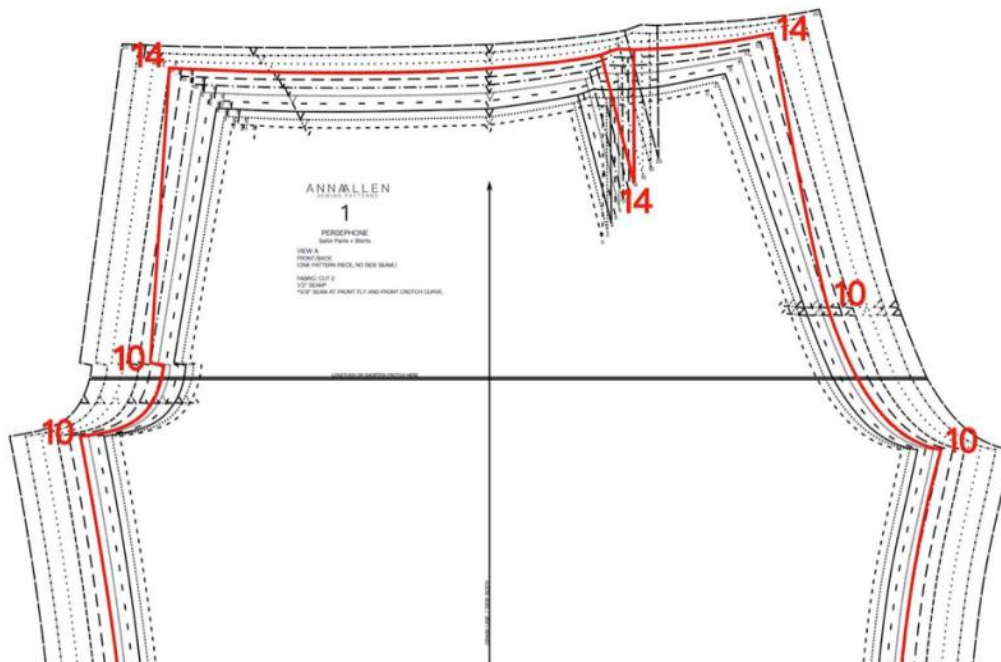


Fig 2.1 Grading trouser pattern

### 2.1.3 Grading terminology:

**Grade:** The ‘grade’ of a pattern is the incremental increase or decrease in a pattern size at a given cardinal point. For example; a large majority of commercial patterns will have a 2" grade. This means that there is a 2" difference between sizes.

**Grading:** The process of increasing or decreasing the dimensions of a base pattern style.

**Base pattern:** The original pattern created (usually the middle of the size run).

**Cardinal Points:** The points on a pattern where it either increases or decreases. E.g. Neck, shoulder, armhole, length, girth etc

**Nested (stacked) grading:** This describes the superimposing of one size on another so that the progression of increase is clearly visible.

**2-D grading:** When the pattern changes only in girth and not in shape it is termed 2-Dimensional. This type of grade is invariably a simplified grade and is initially easier to learn and apply.

**3-D Grading:** This term is applied to grading technique which changes suppression as well as girth and height grades.

**Suppression grading:** This term is applied when the amount of suppression in a pattern is increased or decreased. Suppression is all forms of darts, seams, pleats and gathers which are used to control shapes or contours. It is nothing to do with styling.

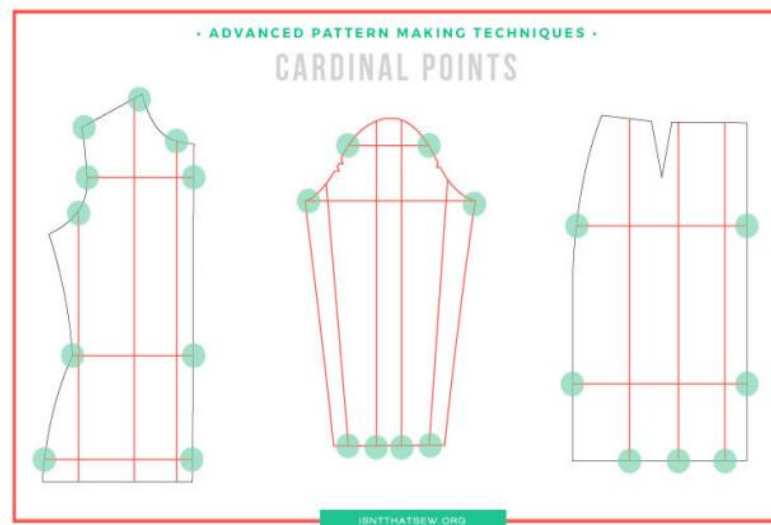


Fig 2.2 Cardinal points

## 2.2 Measurements of base size

The actual sizing and size range varies among the fashion brands as the base size (e.g. Medium) can be assigned to **10 to 12 numeric equivalent**. The assigned base size will be the starting point for creating a grade rule for the rest of the sizes within the size range.

A pattern needed to be graded to a range of sizes to properly fit on different body types. Nowadays, garment manufacturers and pattern makers use a middle-sized pattern (typically size S or M) as a **base and** grade it up or down for larger and smaller sizes.

## 2.3 Calculating number of sizes in grading

Then you will determine how many sizes you would like to go up or down. After adding your points of measurement, the grade rule is added to calculate larger and smaller sizes based on your selected sample size.

## 2.4 Grade increments between sizes

A grading increment is the different in measurement between two sizes, either in size chart or specific point on a pattern. When looking at a set of stacked or nested graded patterns (figure 2.3) it appears that only the perimeter of the pattern alters in size.

The full girth and length grading increment are found in most size charts. The sectional increments which are a proportion or section of the full increment also have to be known. E.g. across back, across front, shoulder, depth and width of arm hole.

The increment can be calculated from any reliable drafting system by calculated two sizes then subtracting the smaller from the larger.

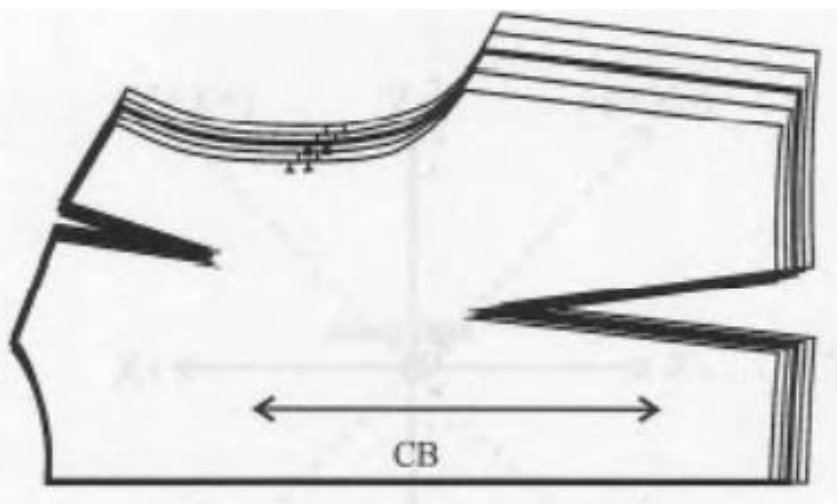


Fig 2.3 Nested graded patterns

## Self-check-2

**Instruction:** Match the descriptions in column **A** with the correct answer from the options given in column **B**. You have given 10 Minute for all question. Each question carries 2 Point.

<b>A</b>	<b>B</b>
<p>___1. 3-D Grading.</p> <p>___2. Nested(stacked)grading</p> <p>___3. Cardinal Points</p> <p>___4 Grading increment</p> <p>___5.3-D Grading</p> <p>___6. 2-D grading</p>	<p>A. The different in measurement between two sizes To measure straight line</p> <p>B. Pattern changes on in girth and not in shape2.</p> <p>C. The superimposing of one size on another</p> <p>D. Changes suppression as well as girth and height grades</p> <p>E. The points on a pattern where it either increases or decreases.</p> <p>F. The original pattern created (usually the middle of the size</p>

Note: Satisfactory rating – above 60%      Unsatisfactory - below 60%

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

## Unit Three: Base pattern

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

- Grad rule and grade point
- Base size pattern
- Style and fabric characteristics
- Grade rule table.

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

- Perform grading rule and grade point for basic style
- Check base size pattern for correct information
- Identify style and fabric characteristics
- Construct grade rule table

### 3.1. Grading rule and grade point for basic style

#### 3.1.1 Grade Rule

The "grade rules" refer to the amount of change between sizes, for each measurement point.

For example, the bust, waist and hip "grade" 1" between sizes for most of the Misses size range.

A grade rule is a technical set of numbers that the patternmaker or pattern grader uses to create other sizes from the base or sample size. Example, the grade rule will determine how much the chest measurement will decrease or increase in size.

The grading rule determines how much each POM (point of measurement) is made larger or smaller in order to fit a wide range of sizes. The main purpose of it is to ensure good fit and overall balance of shape in a manufactured garment.

If started with a size 8 dress and needed to make another one in a size 10, make the bust, waist and hip 1" larger. To do this primarily by making the adjustment at the side seam, and distribute the 1" size difference evenly at each seam.

Since the dress has a front and back, then adjust 1/2" each in the front and back and since the front and back each have a left and right side, then divide that 1/2" in half again - so adjust each seam (each side of the front and each side of the back) by 1/4" - the total will be a 1" difference between the sizes. Generally, do NOT make adjustments at the center front or center back.

The shoulder, armhole, and neck would be made a bit larger also (see the sketch below to get an idea of the difference between a size and 8 and a size 10 bodice).

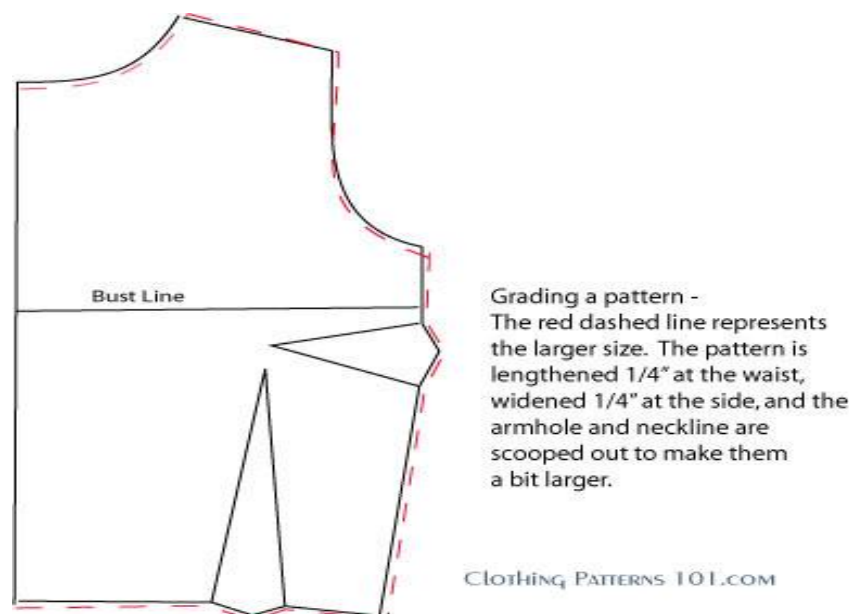


Fig 3.1 grading



Similar adjustments are made to the sleeve and skirt, as well as any other styling details (the collar would have to be adjusted to fit the neckline,

The chart below shows a few of the grade rules for a Misses size range. **The "+/-"** means, for example, if you are starting with a size 8 and are grading to a size 10, you would ADD 1" to that area of the pattern. If you are grading down to a size 6, you would SUBTRACT 1".

- The grade rules change as you get into sizes 12 - 16, and again for size 18.

Table 3.1 grad rule chart

	Grade rule between sizes Misses 4 - 18							
Measurement Point	4	6	8	10	12	14	16	18
Bust	+/- 1	+/- 1	+/- 1	+/- 1	+/- 1.5	+/- 1.5	+/- 1.5	+/- 2
Waist	+/- 1	+/- 1	+/- 1	+/- 1	+/- 1.5	+/- 1.5	+/- 1.5	+/- 2
Hip	+/- 1	+/- 1	+/- 1	+/- 1	+/- 1.5	+/- 1.5	+/- 1.5	+/- 2
CB waist length	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4
CB skirt length	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4
Sleeve length from shoulder	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4	+/- 1/4

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### 3.1.2 Grade point

Grade points are positioned at the cardinal points of a pattern where the measurements to another size take place. This movement is an **X (horizontal)** and **Y (vertical)** direction. The distance and direction of the grade point movement recorded on an X-axis and Y-axis from zero point.

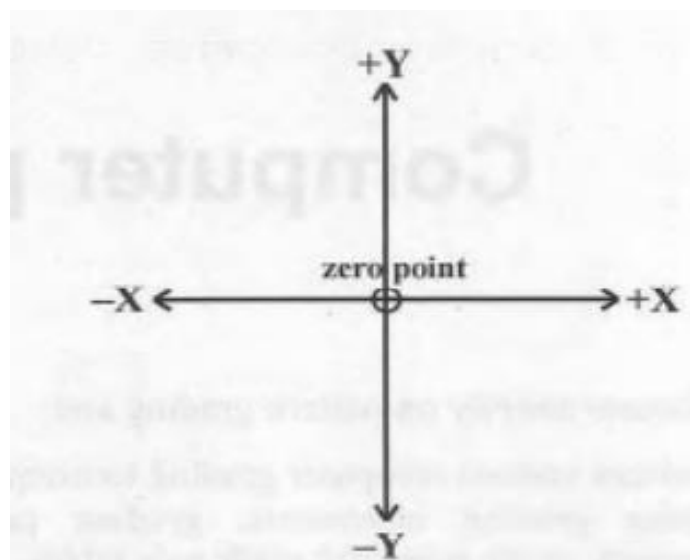


Fig 3.2 grading point

## 3.2 Checking base size pattern for correct information

### 3.2.1 Measure the pattern

Measure the paper pattern in the same places measured the body measurements (bust, waist, hip) and subtract seam allowances to determine the ease or check the finished measurement chart.

Check that darts are marked using pencil markings, holes or notches. Check that corners are right angles at bottom and top edges of pattern pieces, waistbands, hems and that sort of thing.

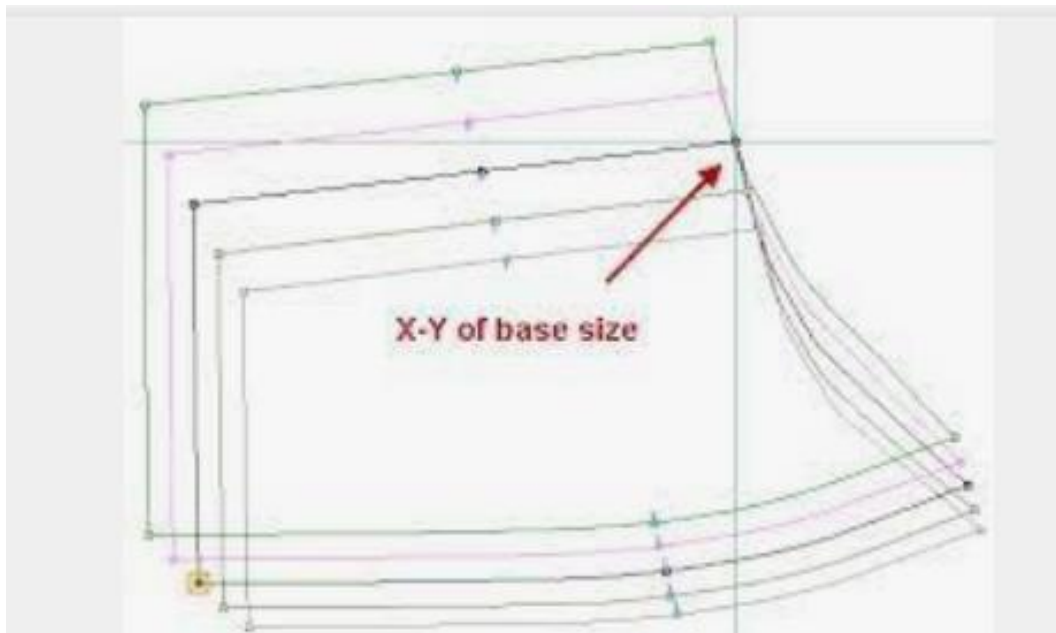


Fig 3.3: base size of grade pattern

## 3.3 Style of garment and Type of fabric characteristics

### 3.3.1 Types of Fabric

For grading purpose fabrics may be classified in to two broad types:

- Stretch
- Non-stretch

**Stretch fabrics** are more for adjustable and will fit readily to the body contours or silhouettes and therefore, it can be employed.

**A non-stretch fabric** has the reverse effect and must be kept under the control and in balance through the size range.

### 3.3.2 Style of garment

The closer the garment fit, the more important it is to select a sophisticated garment grading system which adjusts the garment with the garment suppression. If the garment fit is loose the value of adjusting the garment suppression decreases and a two dimensional system becomes more advisable.

Most of the garments will grade consistently, especially if when working with the same type of fabric and styles. Or can create templates for each type of fabric/style work with. From there, adjust slightly between styles. For example, if a grade template for men's knits and a separate template for men's outwearing, to account for the different fabric types and styles.

### 3.4 Constructing grade rule table

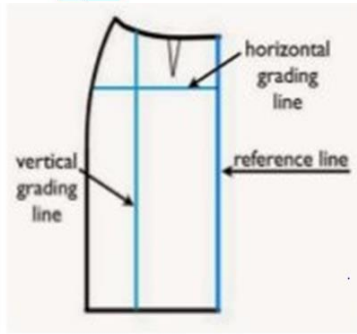
The numbers in a grade rule can be described as amounts of movement. Each number indicates how much (and in which direction) a given point moves between two adjacent sizes.

The grade rule has to be calculated from the **zero point** by adding up all the sectional increment. For example calculated by adding the CB waist to dart increment of 0.5cm to the dart to side seam increment of 0.5cm, which equal to 1cm. it will be noticed that most of the grade rules are common to both the back and the front skirts where the pattern movement is identical.

The waist band is graded from the CB full increment of 4cm divided in to 1cm for each quarter of the skirt.

Table 3.2: grading rule table

Size	mm	34	36	38	40	42	44	46
Waist	40	60	64	68	72	76	80	84
hip	40	86	90	94	98	102	106	110
Waist to hip	0	22	22	22	22	22	22	22
Waist to knee	10	56	57	58	59	60	61	62



Pattern line grading

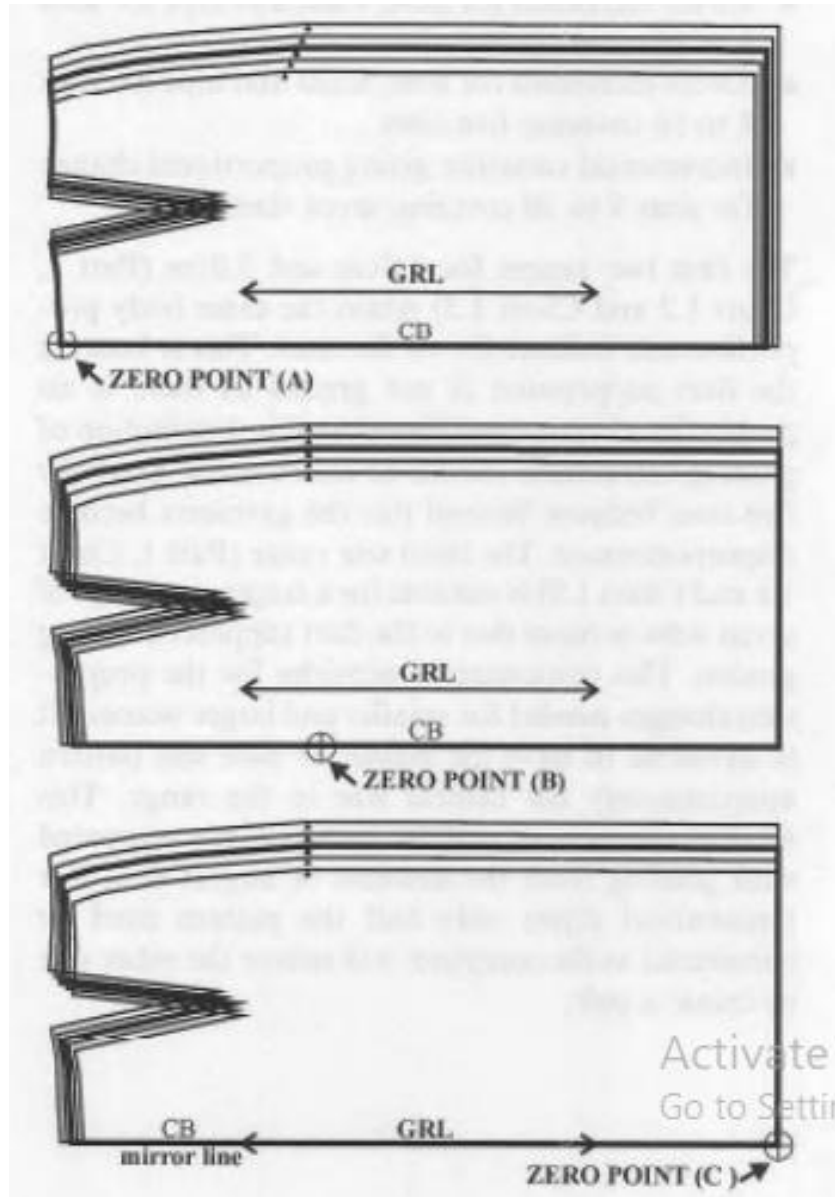


Figure 3.4 grading skirt pattern

## Self-check-3

### Part-I: Choose

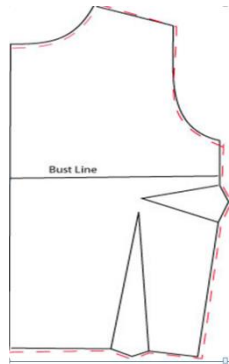
Instruction: select the correct answer for the give choice. You have given 1 Minute for each question. Each question carries 1 Point.

1. It refers to the amount of change between sizes.  
 a. Grading    b. grade rule    c. grade point    d. grade size
2. Pattern grader uses to create other sizes from \_\_\_\_\_.  
 a. large size    b. zero    c. small size    d. base size
3. Direction of “X” movement is  
 a. vertical    b. central    c. horizontal    d. diagonal
4. Direction of “Y” movement is  
 a. vertical    b. central    c. horizontal    d. diagonal
5. Grade point movement recorded on an X-axis and Y-axis from.  
 a. zero point    b. negative point    c. positive point    d. central point

### Part II. Short answer

Write the correct answer from the given pattern

1. The dotted line represent? 5pt



Note: Satisfactory rating – above 60%      Unsatisfactory - below 60%

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

### Operation sheet 3

<b>OPERATION TITLE:</b>	Constructing grade rule table
<b>PURPOSE:</b>	To show the trainee how to read and develop gardening table from the size chart.
<b>CONDITIONS FOR THE OPERATION:</b>	<ul style="list-style-type: none"> <li>• Trainees should know the rules how a develop grading table from the given measurement chart</li> <li>• Trainees should have a know how to calculate number of sizes in grading</li> <li>• Establish grade increments between sizes</li> <li>• Constar grade rule table</li> </ul>
<b>EQUIPMENT, TOOLS AND MATERIALS:</b>	Pencil , body form, ruler, measurement chart, tape measure
<b>PRECAUTIONS:</b>	<ul style="list-style-type: none"> <li>• Read size chart</li> <li>• determine how many sizes you would like to go up or down</li> <li>• Calculate number of sizes in grading</li> <li>• Construct grade rule table</li> </ul>
<b>QUALITY CRITERIA</b>	<ol style="list-style-type: none"> <li>1.All steps were completed in the correct sequence,</li> <li>2.All safety precautions were followed during grading</li> <li>3.Read size chart</li> <li>4. prepare grading table properly</li> </ol>

### PROCEDURE

#### Steps

- Prepare tools and materials for grading
- Read and size chart
- Calculate number of sizes in grading
- Establish grade increments between sizes
- Apply grading rule

<b>LAP Test 03</b>	<b>Practical Demonstration</b>
--------------------	--------------------------------

Name of Trainee \_\_\_\_\_

Date: -----

Time started \_\_\_\_\_

Time finished -----

1. Select and prepare Tools and material needed
2. Select of base size
3. Calculate the increment number
4. Construct grade rule table

**JOB TITLE:** Develop grading specifications.

**UNITT:** Construct grade rule table

**READING:** TTLM-

**OBJECTIVES:** At the end of the job the trainee will able to prepare grading rule table from the given base size.

**WORK SHOP WORK:** Materials Required:

- Measurement chart.
- Information sheet
- Operation sheet.

**Tools, Equipment:.**

- Transparent ruler
- Calculator
- Size chart

**PROCEDURE:** Steps

- Find the true base of the size
- Calculate number of sizes in grading
- Establish grade increments between sizes
- Constructing grade rule table

**EVALUATION:** criteria

1. All steps were completed in the correct sequence
2. All safety precautions were followed constructing grade rule table
3. Select base size

## Unit Four: Grading pattern

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

- Direction , stacking or outlay requirements
- Grading Pattern.
- Stacking, stack points.
- Pattern attributes
- Labelling pattern piece
- Check pattern.piece

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

- Determine direction , stacking or outlay requirements
- Perform grading Pattern.
- Identify stacking, stack points.
- Preserve pattern attributes during grading
- Label pattern peace
- Check pattern for accuracy.



## 4.1 Determining direction, stacking or outlay requirements

### 4.1.1 Start stacking, stack points

#### A. Stacking or “0” point for grading

For grading it is important to have stack point which will define the “x” or “y” grading of pattern. It is defined as “0” point located at the centre of the pattern of a Front, back or sleeve panel. For centre front it is perpendicular to the centre of check line. For sleeve the “0” point is centre of sleeve at the bicep line.

The diagram shows three possible grading examples. This is a basic front bodice pattern piece that is folded in half. Each example is called a nest meaning each size is stacked on top of each other from smallest to largest. The stars represent the point of origin for each grade. The numbers at each point correspond to a grade rule..

**Example 1.** The point of origin is placed in the center of the pattern pieces and growth occurs in all directions. In **Example 2**, the stack point is placed at the center front waistline and growth occurs to the side and upwards to the neck. **Example 3** is the same result as 2, but placed at the center front neck

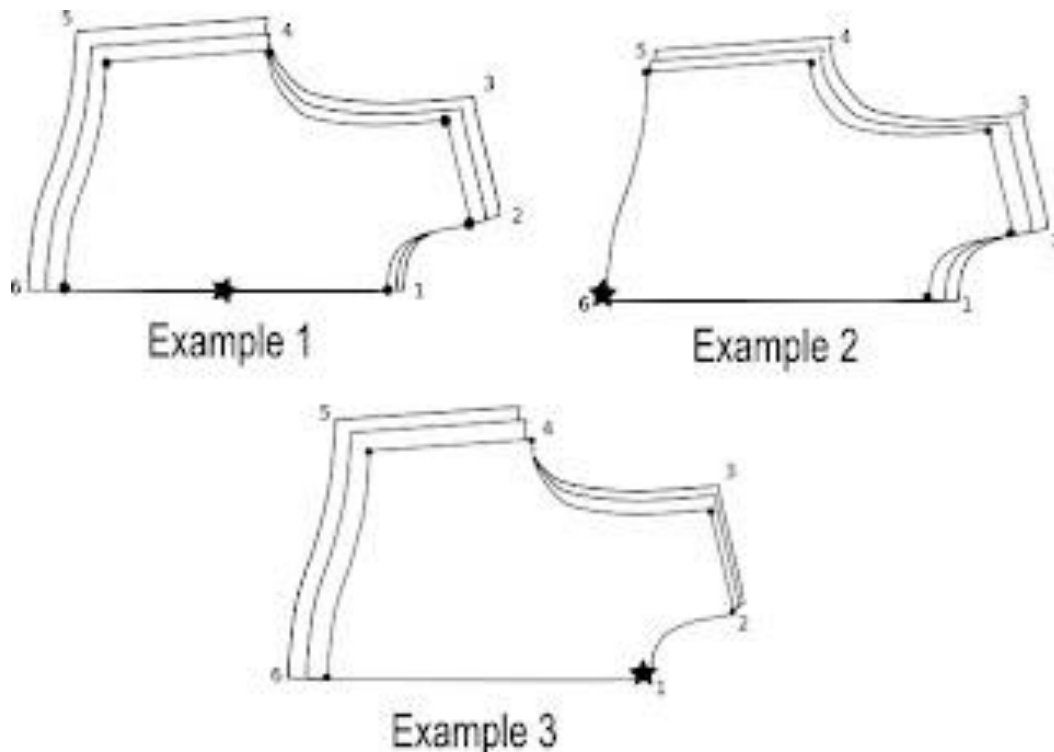


Fig 4.1: Stacking, stack points

## 4.2 Grading Pattern by using manual or computer

Pattern Grading is the process whereby patterns of different sizes are produced from the original master pattern. This process can be performed manually or automatically by a computerized system. Patterns are graded according to size charts which present the sizes and the average measurements of the population group for which the garments are intended.

### 4.2.1 Manual grading or two dimensional grading

Grading is done after adjusting the prototype and used the final pattern as a base. The desired range of sizes is created, one by one, using a pattern template. Marks are made around the master pattern at the appropriate distances and the marks the later joined up to form the enlarge pattern.

**Two basic methods of manual pattern grading:**

1. **Cut and spread:** Cut and Spread grading method are starts by the use of tracing and marking techniques from the original master pattern to a white paper. Ensure that all the marking lines like grain line, darts are visible here. In this method original patterns are cut vertically into 3 parts and spread the cutting pieces by a specific amount to grade up. Then overlap them to grade down. To do this process, only scissors, a pencil, measurement tape, and a ruler is required

To perform this method, you must cut the pattern and spread the pieces by a certain amount to grade up, or overlap the pieces to grade down. The only tools you will need for this method are a pencil, tape, ruler, and scissors.

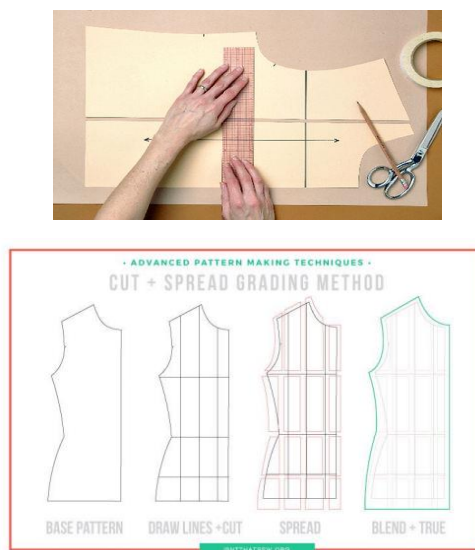


Fig 4.2 Cut and Spread grading method

**2. Pattern shifting:** Pattern shifting is another process of pattern grading. When pattern or fashion designer want to increase or decrease the overall dimensions of a pattern to get different sizes is called pattern shifting.

To make the pattern larger, transfer the original pattern onto another sheet of paper. To make it smaller, they will have to trim the edges to the desired dimensions. It is done by moving the master pattern a certain measured distance up and down and left and right using a special designed ruler. To get the same result as the cut and spread method designer redraw the outlines.

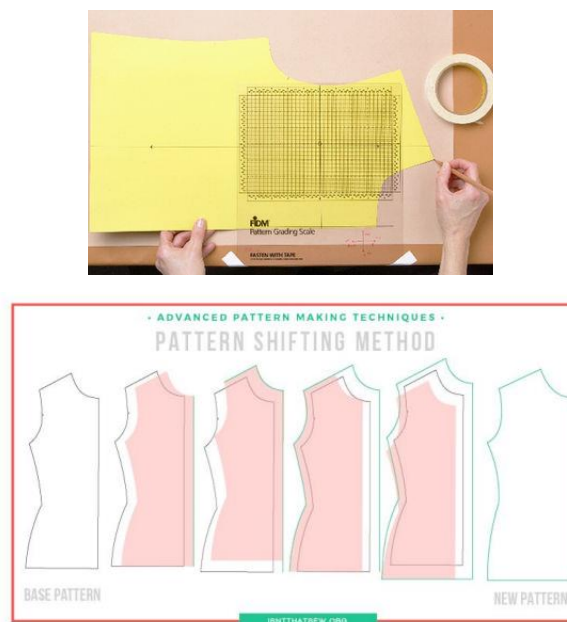


Fig 4.3 Pattern shifting

#### 4.2.2 Computer-aided pattern grading or three dimensional grading:

Computed grading (CAD) is the fastest pattern grading techniques. By this method every manufacturer's get more accurate, precise, detailed patterns in a short time.

Computer grading is the most recent development in grading technology. It is also the fastest method. Computer grading, however, is expensive and usually only large manufacturers can afford it.

Computer grading takes the processes of the two former methods and digitizes them. There is not a superior method; they are all equally capable of producing a correct garment grade.

Computer based grading systems operate in one of two ways:

- ❖ The grading increments are feed into the computer and the different sizes are generated automatically using the same methods as applied for manual grading
- ❖ The pattern for each individual size is calculated separately starting from the data in the size specification charts.

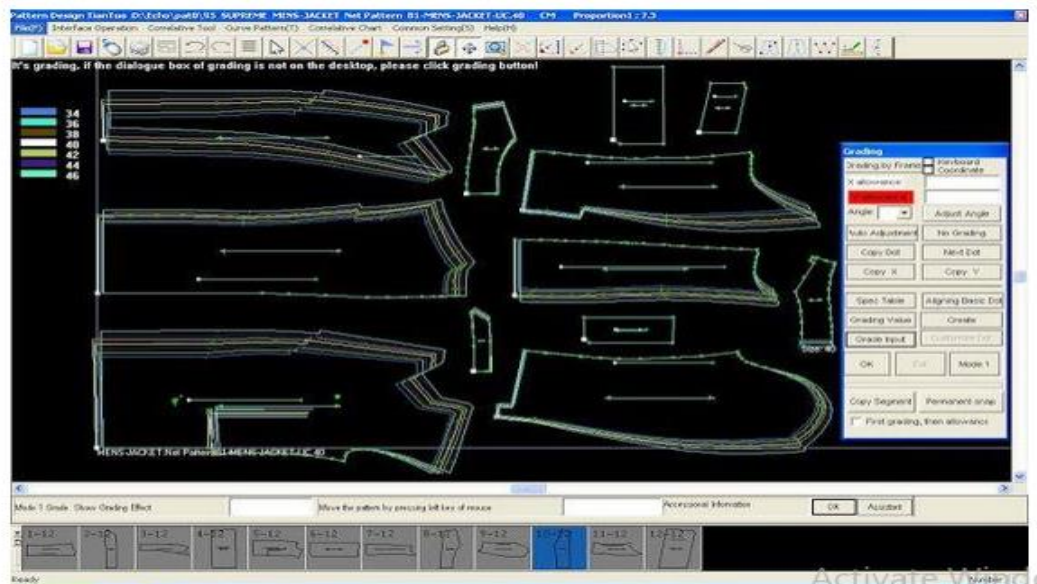


Fig 4.4 Computer-aided pattern grading

### 4.3 Preserving pattern attributes during grading

Attributes are characteristics that are used to describe an object. Remember that patterns are found everywhere, so the possibilities of finding one are in your favor. Patterns are a basic repetition of a group of object based upon their attributes. Attributes are what we use to describe an object.

### 4.4 Labelling pattern piece with pattern marking symbols

Labeling is giving information about the development pattern pieces on the final pattern.

During labeling pattern information and cutting instructions are clearly marked on all pattern pieces. This written information represent by symbols, by word & numbers. All pattern pieces must be labeled before cutting.

#### 4.4.1 Pattern markings







There are a number of markings should always add to final pattern pieces. They help to with laying patterns on the fabric correctly when cutting the fabric, and also help when sewing the garment together.


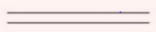
The following gives a distinct representation of the pattern symbols.

- **Cutting Line:** cut the pattern out along this line with your paper scissors then follow it again when cutting out the fabric.
- **Sewing line:** This is inside the cutting line,
- **Fold Line:** This symbol points to the fold in a piece of fabric, and means that edge of the pattern needs to be placed on the fold.
- **Darts:** Mark along lines or dot & match up when sewing.
- **Grain Line:** This shows the direction of the grain of the fabric.
- **Notches or Balance Mark:** this must be matched with corresponding notches on other pattern pieces.
- **Placement Lines:** These are used to mark the placement of things like pockets, button & buttonhole's.
- **Seam allowance:** This is the distance between the cutting & the stitching line.

#### 4.4.2 Symbols indicate information

Label the following items in the pattern.

- **Center fold (CF) & center back (CB)** is a line placed indicating that the pattern edge has been placed the fabric that is on grain.
- **Fold line** (  ) refers to where the pattern is to be folded.
- **Notch** (  ) are V-shaped symbols along the cutting line.
- **Grain line** (  ) are arrowhead symbols with instructions for placing the pattern on grain.
- **Darts** (  ) are indicated by two broken lines for stitching and a solid line at center for folding.
- **Buttons & Button holes** (  ) are indicated by a solid line having a short line at right angles to one and when horizontal or at both ends when vertical.
- **Solid lines** (  ) are used also to **Solid lines** and trimmings that go on the outside of the garment.
- **Name of pattern piece** refers to the parts of pattern —
- **Name of person** refers to the customer/client
- **Stitch line** ( lines use short dashes ) - - - - -

- **Cutting line :**  are solid lines that indicate with a scissors where to cut the fabric to match the shapes on the pattern
- **Adjustment lines :**  these are single or double lines running across pattern pieces that signify the best point to shortening or lengthen the pattern pieces depending the shape of the body
- **Zipper mark:** often illustrated with a notch or line and arrow, it marks where a zipper should be inserted.

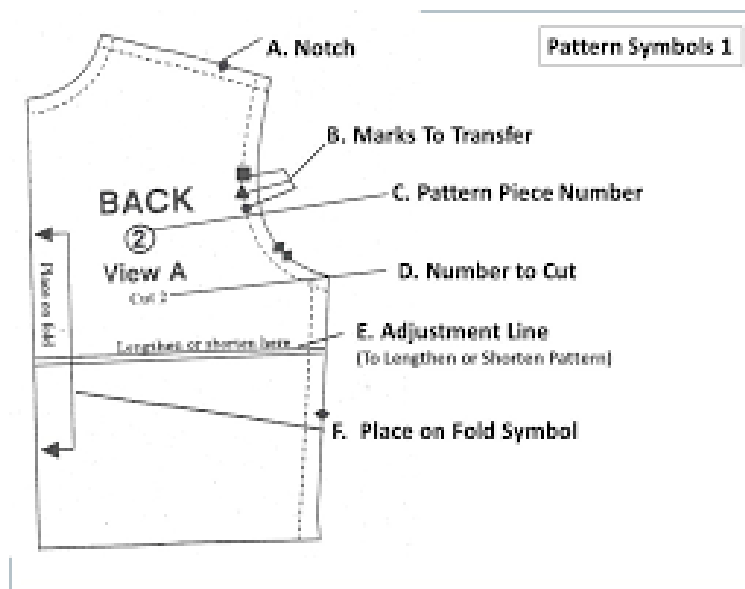


Fig 4.5: Pattern information

## 4.5 Checking pattern for accuracy

### 4.5.1 Labelling pattern peace with pattern marking

When checking a pattern the first thing is completeness. Before one even begins check pattern accuracy, a first review of form and industry standard principle is in order.

**Check that darts are marked using pencil markings, holes or notches.** Check that corners are right angles at bottom and top edges of pattern pieces – waistbands, hems and that sort of thing. If your corners are not 90 degrees, you can get an interesting scalloped effect when you sew the front and back pieces together

## Self-check-4

### Part-I : Choose the right answer

Instruction: select the correct answer for the give choice. You have given 1 Minute for each question. Each question carries 1 Point.

A	B
___ 1. Notch	A. Is giving information about the development paten
___ 2. Labeling	B. V-shaped symbols along the cutting line
___ 3. Grain line	C. Shortening or lengthen the pattern pieces
___ 4. Adjustment lines	D. Refers to where the pattern is to be folded
___ 5. Fold lines	E. Instructions for placing the pattern on grain
___ 6. Seam allowance	F. Distance between the cutting & the stitching line

### Part –II: Short answer

1. Write basic type pattern grading
2. Write types of manual grading method

Note: Satisfactory rating – above 60%      Unsatisfactory - below 60%

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

## Operation sheet- 4

<b>OPERATION TITLE:</b>	Perform Grading Pattern
<b>PURPOSE:</b>	To show the trainee how to grade sizes on the finished pattern
<b>CONDITIONS FOR THE OPERATION:</b>	<ul style="list-style-type: none"> <li>• Trainees should know the rules how a develop increase or decrease a size</li> <li>• Trainees should have know Stacking point</li> <li>• Trainees should have select base point</li> <li>• Define “x” and “y” direction</li> </ul>
<b>EQUIPMENT, TOOLS AND MATERIALS:</b>	Pencil , body form, ruler, graded chart, grading ruler , pattern paper, tracing wheel or copy carbon
<b>PRECAUTIONS:</b>	<ul style="list-style-type: none"> <li>• Copy the pattern on hard pattern paper.</li> <li>• Read size chart</li> <li>• Apply grading rule</li> <li>• Determine how many sizes you would like to go up or down</li> <li>• Calculate number of sizes in grading</li> <li>• Determine base size</li> <li>• Apply “x” and “y” direction</li> <li>• Identify Stacking or “0” point for grading</li> <li>• Grade the pattern</li> </ul>
<b>QUALITY CRITERIA</b>	<ol style="list-style-type: none"> <li>1.All steps were completed in the correct sequence,</li> <li>2.All safety precautions were followed during grading</li> <li>3.Read grading size chart</li> <li>4. select base size</li> <li>5. Grade properly the pattern with the selected size</li> </ol>

### PROCEDURE

#### Steps

- Prepare tools and materials for grading
- Read the grading rule table chart
- Copy the pattern properly
- Apply grading on the given pattern
- Establish grade increments between sizes



<b>LAP Test 04</b>	<b>Practical Demonstration</b>
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Name of Trainee \_\_\_\_\_

Date: -----

Time started \_\_\_\_\_

Time finished -----

1. Select and prepare Tools and material needed
2. Select of base size
3. Calculate the increment number
4. Select base size
5. Grade the pattern with the selected size

**JOB TITLE:** Perform Grading Pattern.

**UNITT:** Grading Pattern

**READING:** TTLM-

**OBJECTIVES:** At the end of the job the trainee will able to grade pattern from the grading rule table

**WORK SHOP WORK: Materials Required:**

- Grading rule table.
- Information sheet
- Operation sheet.

**Tools, Equipment:.**

- Transparent ruler
- Calculator
- Size chart
- Pattern
- Color panicle
- Eraser

**PROCEDURE: Steps**

1. Find the true base of the size
2. Calculate number of sizes in grading
3. Establish grade increments between sizes
4. Grade the given pattern

**EVALUATION: criteria**

- I. All steps were completed in the correct sequence
- II. All safety precautions were followed while grading the pattern
- III. Apply base size
- IV. Grade the pattern accurately

## Unit Five: Target market

This unit to provide you the necessary information regarding the following content coverage and topics:

- Target market population
- Demographics of market population
- purpose of design
- Sizing system and fit model
- Design brief with designer
- Fit model
- Communication and work schedule with fit model

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

- Obtain profile of target market population.
- Identify demographics of market population.
- Establish intended purpose of design.
- Interpret design brief and appropriate sizing system and fit model.
- Classify design brief with designer.
- Approve fit model.
- Develop communication and work schedule with fit model

## 5.1 Target market population

### 5.1.1 Definition

A target market defined as a specific group of potential buyers for which a business positions its products and services or in simpler terms, it's the group of people who are the most likely buyers of your products or services.

### 5.1.2. Profile of Target market population

A target market **population**, meanwhile, consists of the people who are most likely to purchase your product or service & they are distinguished by their demographic qualities. Put another way, their demographic profile defines them as a target market & knowing your target market should inform your marketing decisions, enabling you to make the best choices to connect with them, serve them, and learn about their wants and needs. Understanding their age and income is the first step

A **market profile** is a set of characteristics relating to a **target** population, and in business, a **target** group of buyers. These characteristics typically include demographic factors such as income, geographic factors such as region, and psychographic factors such as values.

- **Your target market is absolutely dynamic. It's always evolving and taking new shapes**

## 5.2 Demographics of market population

Demographic is a group or slice of the population, such as a gender, an ethnicity, or people born in a certain time period. People can be divided by social class or income, location, climate (like desert or tropical), language, and other features that enable people to be classified together as a group.

Demographic data is very useful for businesses to understand how to market to consumers and plan strategically for future trends in consumer demand.

Demographics help to determine whether its products and services are being targeted to that company's most important consumers. So a market demographic is a slice of the population that's likely to buy or use a product, and thus, these are the people at whom marketing efforts are directed.

## 5.3 purpose of design

The designer and the manufacturer who seize on the unique opportunities in the special size market must have an understanding of the body types of their target market

The broad purpose of the occupation is to construct garments - bringing the design to life, following specifications and quality standards. They may work on one-off products for specific

customers or garment samples to be replicated. They help determine the best production method for each design, review fit, deal with manufacturing issues and monitor resources. Garment makers know and understand the end-to-end garment making process.

Garment design requires the accurate measurement of the body in order to generate better fitting garments for consumers. Clothing anthropometrics deals with data that are used for clothing sizing and pattern development, size coding by retailers and manufacturers, and communication of sizing information to customer.

## 5.4 Sizing system and fit model

Sizing refers to the assignment of a particular body type into categories that reflect the body measurements of those in that size group. Sizing issues are common to all categories of clothing, including men's and children's, but are more fully documented in women's ready-to-wear. Women's sizing issues appear more complex because of changing fashion, arbitrary sizing classification, and evolving body types.

A fit model (sometimes fitting model) is a person who is used by a fashion designer or clothing manufacturer to check the fit, drape and visual appearance of a design on a 'real' human being, effectively acting as a live mannequin.

### 5.4.1. Design brief and appropriate sizing system

A design brief is a document that helps a designer and client align on project expectations; this makes the project much easier to manage as its being worked on. The brief identifies critical pieces of information, such as scope, that set the right expectation on what the specific project is meant to accomplish, how it will be worked on, and so on. A design brief is one of the project brief examples that are specifically made and used for creative or design-related processes.

For any sizing system, the sizes that are developed are based on measurements of the actual human body; therefore, the sizes developed must reflect the sizes of the measured bodies as closely as possible. In other words, the goal of any good sizing system is to produce sizes that are close to the wearer's actual body dimensions.

- Size of fit models must have well-proportioned bodies that meet industry-standard measurements. A fit model is a part of the fashion design process when designers see how their clothing designs hang on a live and mobile body to test for the look and feel of a garment. A fit model is not unlike a mannequin in this way, though a fit model can follow the movements of a real customer and stand, move and pose at the discretion of a team of designers.
- Size indicators the size of a particular garment is indicated by a word, letter, or number that represents general body size; proportional relationships among body parts; age, height, or weight, or dimensional sizes of body parts

**For example:** Sizes small, medium, and large (S, M, and L) represent general body size.

Sizes 10, 12, and 14 for misses or 7, 9, and 11 for juniors represent proportional relationships among body parts.

## 5.5 Classify design

A design brief defines the scope of the design hence; most important factors and elements that must be considered by the design team and the clients as well.

There are numerous benefits to using a design brief, including:

- Get an understanding of client's needs and expectations for a project
  - Improves communications and working relationships
  - Allows any misconceptions or missing information to be brought up for discussion.
- then if it is necessary design brief is clarified with designer

### 5.5.1 Sizing system written also in this form

- Infant-baby not mobile newborn and 3, 6, 9, 12, 18, 24 months
- Toddler-stocky, mobile, 2T, 3T, 4T
- Girls-preschool and elementary school-age female 4, 5, 6, 6x, 7, 8,10,12,14
- Boys-preschool and elementary school-age male 4, 6, 8,10,12,14,16,18,20
- Preteen-pre puberty female 7, 9, 11, 13
- Junior-young, fully formed female figure 1, 3,5,7,9,11,13,15
- Misses-mature female figure over 5' 4" 2,4,6,8,10,12,14,16,18,20
- Misses Petite-mature female figure under 5' 4" 2p, 4p, 6p, 8p, 10p, 12p, 14p, 16p, 18p, 20p

- Women's Petite-full-bodied female figure under 5' 4" 14~wp, 16~wp, 18~wp,20~ wp,22~, wp,24~ wp,26~ wp,28~ wp
- Women's-full-bodied female over 5' 4" 14 w, 16w, 18w, 20 w, 22 w, 24 w,26 w, 28 w, 30 w, 32 w
- Young Men's-young male 27, 28,29,30,31,32,33,34
- Men's-mature male 32,34,36,38,40,42,44,46,48,50,52

## 5.6 Approve fit model

Fit modelling is a subset of fashion modelling where fashion professionals work entirely behind the scenes to test new clothing products during the design process

Fit models must have balanced, well-proportioned and symmetrical bodies with standard size measurements for their category. A fit model must be able to clearly express the fit issues they feel in garments which is integral to creating clothing that fits properly.

During a fit session, a fit model tries on the garment and provides insight to the fit and comfort of a garment. The fit model represents the shape and size of the target customer, and is not a fashion model. However, human fit models, unlike dress forms, can vary in their measurement and may not be perfectly symmetrical.



Fig 5.6.1 fit model

### 5.6.1 Fit modeling categories and industry standards

The core characteristic of a fit model is having body proportions that match the industry standards of a given apparel category. Therefore, the two most important pieces of knowledge a fit model can have understand which category is a match and knowing your body measurements. Maintaining industry-standard measurements is crucial to the longevity of this career path.

Garment breaks out into categories for children, men and women, with each of those breaking out into further subcategories. For example, in addition to standard menswear sizes, additional men's categories include young men's or big and tall, each having different parameters. Women's sizes typically break out much further into subgroups that include misses, juniors, plus sizes, petites and maternity, among several others. Among women's sizes, the generally accepted size for a fit model is a standard US size 8 or 10.

The garment patterns will then be adjusted according to the notes taken at the meeting or the order produced if everything was approved. It's important that all Spec Sheet changes are made during every fit session and that the Tech Pack is updated as it enables the factory to keep on top of revisions and not make mistakes

### 5.7 Communication and work schedule with fit model

Fashion communication is **a domain which involves itself with the communication of fashion and lifestyle**. This can take various forms such as communication design, branding for a fashion label, public relations, fashion journalism, advertisement, styling or visual merchandising and art direction.

Garment fit on a body model is an important factor for designing comfortable, functional and well-fitting garments. Nowadays the virtual prototyping of garments provides high potential for design, product development and marketing processes. Previous examinations of garment fit to the body in a real and virtual environment were merely focused on expert evaluation by way of a descriptive comparison of proper and improper areas for fitting.

Therefore the problem area was to examine for example the fit of a skirt on a live model and on virtual models such as parametric and scanned body models in order to propose which virtual human body is the most suitable where garment fit is concerned.

A fit session is a meeting between the design and technical teams where they assess the fit of a collection. Fit samples (samples sent from the factory at various stages of development to assess the fit) are sent from the factory.

A 'fit' model who meets the customer profile in regards to size and shape is present to try the clothes on. The designer will make comments on the overall look of the garments, whether they're happy with the trims used and placement of them and whether the quality of the garment is as they expected.

At these meetings, the pattern cutter will be on hand to make adjustments to the garments and to confirm approvals. Another sample will have to be made and another session scheduled Provide a

Fit Comments' sheet for each style that is being assessed so that during the session, all modification by the designer to the garments must be registered.



## Self-check-5

### Part-I short answer

**Instruction:** Answer the following questions you have given 1 Minute for each question..

1. Write the core characteristic of a fit model (2pt)
2. What is target market mean? (5pt)
3. Accepted size for a fit model is \_\_\_\_\_.(3pt)

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

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

## Unit Six: Measuring fit model

This unit to provide you the necessary information regarding the following content coverage and topics:

- Tools and equipment
- Body reference points
- Body measurement

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

- Obtain and preparing tools and equipment and fit model for measurement
- Establish and mark body reference points.
- Take and record body measurements of fit model.
  - ✓ Circumference measurement
  - ✓ Horizontal measurement
  - ✓ Vertical measurement

## 6.1 Tools and equipment

### 6.1.1. Prepare tools and equipment for measurement

Measuring tools in sewing are very important for the perfect fit and shape of any garment

The following are the needed tools and equipment in measuring fit model.

- Manual or electronic tape measure
- Image capturing devices
- pen/pencil
- Measure chart
- Tape, cord or elastic
- Eraser

**Tape measure** Use the correct type of tape measure. When taking body measurements, you need to use the correct type of tape measure. The best are made of flexible, synthetic material or glass fiber, which will not tear or stretch. Do not use a metal measuring tape such as is used in construction (it will be inaccurate)

Measuring tapes are very essential for acute drafting and perfection. It is used to measure a figure or a model. It is 150 cm long and 1.5cm wide with metal tips on either side & and starts with the number “1” on both sides at opposite



Fig 6.1.1 tape measure



Fig 6.1.2 image capturing devices or Dress form

- **Dress Forms:** A standardized duplication of a human form, cotton padded and canvas covered, set on a movable, light adjustable stand and compressible shoulders and sloper. It is used to take measurements, develop patterns, fit garment samples, to alter garments, to establish style lines for the garment.

- Record or note book It is a permanent document where data and measurement values are recorded.
- Measurement chart/ Size charts is important in the apparel industry. It is used for standardization labeling of garments size, to create customer satisfaction as a marketing tool for clothing purposes, & aid in classifying human figure which presents in varying shapes and sizes. There are two kinds of measurement system. **Metric System, expressed in centimeter** and the **English System expressed in inches 1inch= 2.54 cm. now the next chart**
- Standard measurement chart

Table 6.1 Children size chart

Age	SIZES							
	Chest	Waist	Hip	Shoulder Width	Sleeve	Shoulder to Waist	Frock Length	Pant Length
	A	B	C	D	E	F	G	H
1 Year	18" 46 cm	18" 46 cm	18" 46 cm	8" 20 cm	10" 25 cm	7" 18 cm	15-16" 38-41 cm	16-18" 41-46 cm
2 Years	20" 51 cm	20" 51 cm	20" 51 cm	8.5" 22 cm	11" 28 cm	7.5" 19 cm	16-18" 41-46cm	18-20" 46-51cm
3-4 Years	22" 56 cm	22" 56 cm	22" 56 cm	9" 23 cm	12" 31 cm	8" 21 cm	20-22" 51-56cm	20-22" 51-56cm
5-6 Years	24" 61 cm	22" 56 cm	24" 61 cm	10" 25 cm	14" 36 cm	9" 23 cm	24" 60 cm	22-24" 56-61cm
7-8 Years	26" 66 cm	23" 58 cm	28" 71 cm	11" 28 cm	17" 43 cm	10" 25 cm	26" 66 cm	26-28" 66-71 cm
9-10 Years	27" 68 cm	24" 61 cm	30" 79 cm	12" 31 cm	19" 48 cm	11.5" 29 cm	28" 71 cm	28-30" 71-76 cm
11-12 Years	28" 71 cm	24-25" 61-64 cm	32" 81 cm	13" 33 cm	21" 54 cm	13" 33 cm	30" 77 cm	30-32" 76-81 cm

Table 6.2: Teenager's measurement chart

Age	SIZES						
	Chest	Waist	Hip	Shoulder Width	Sleeve	Shoulder to Waist	Frock Length
	A	B	C	D	E	F	G
12 - 13 Years	30	12.5	6	24	12.5	16.5	32
14- 15 Years	32	13	6.5	25	13.5	17	34
16 - 17 Years	34	13.5	7.25	25.5	14.5	17.5	36
18 - 19 Years	35	14	7.5	26	15	18	37

Table 6.1.3 ladies measurement chart

Age	SIZES						
	Chest	Waist	Hip	Shoulder Width	Sleeve	Shoulder to Waist	Frock Length
	A	B	C	D	E	F	G
32	32	12.5 - 13	7.25	25	13.5	22	36
34	34	13 - 13.5	7.5	26	14.5	22.5	38
36	36	13.5 - 14	7.5 - 7.75	28	15	23	40
38	38	14 - 14.5	8	29	15.25	23	42
40	40	15	8.5	30	15.5	23.5	44

Table 6.4: Gents measurement chart

Age	SIZES						
	Chest	Waist	Hip	Shoulder Width	Sleeve	Shoulder to Waist	Frock Length
	A	B	C	D	E	F	G
34	34	28	7.5	35	14	22	40
36	36	30	7.75	37	14.5	22	41
38	38	32	8	39	15	23	42
40	40	34	8.25	41	15.5	23	42
42	42	36	8.5	43	16	24	43
44	44	39	8.75	45	16.5	24	43

## 6.2 Body reference points

Body reference points and lines are indicating the starting point of the body proportion. It is essential to know the inserting when taking the body measurement for accuracy. One has to know the reference points of the body are help as a guide line for accurate measurement.

The reference points are indicating the starting point of while taking body measurement

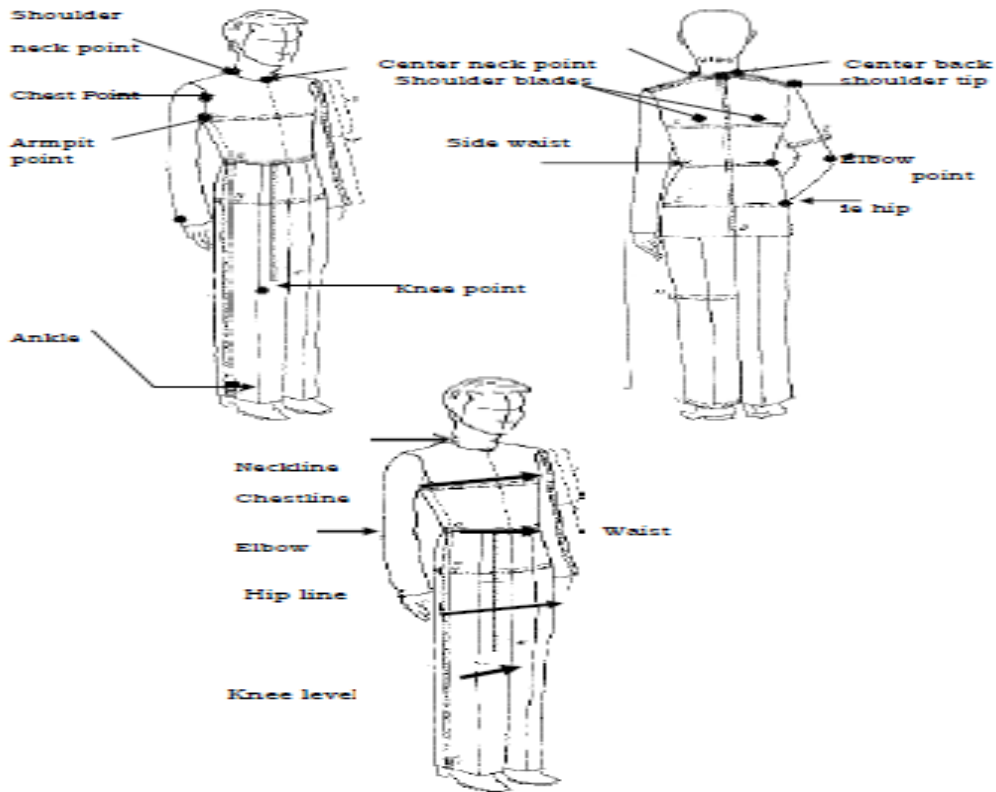
A prominent structure or feature of the human body that can be located and described by visual inspection at the body's surface; used to define movements and postures.

Before the pattern is made body measurements should be taken to determine the correct pattern size. After the pattern has be made the pattern pieces should be measured and compared with the corresponding body measurement with ease to estimate approximate quantities and material needed on job requirements.

.



#### BODY POINTS AND LINES



10

Figure 6.2: Body reference point

### 6.3 Body measurement

#### 6.3.1 Take and record body measurements of fit model.

Before proceeding to take measurements it's important to understand the body and different parts of body. It is important to identify various hallmarks in the body.

Accurate body measurements are of vital importance for obtaining best results in cloth construction. Besides good fitting, correct measurements can also contribute towards saving time in constructing a garment.

Taking body measurements is a responsible task, which should be undertaken with great care. For this purpose, it is important for a dress maker to have adequate knowledge about correct methods of taking and recording body measurements, equipment required for it and other important points to be considered in taking the measurements.



For a garment to be well tailored, the first and foremost essential requirement is to understand about the standard body measurements and to record measurements accurately.

**It is very necessary to take body measurements required for garment making for the following reasons:**

- i. Is very important in drafting of pattern if the pattern will fit the individual for whom the pattern is drafted.
- ii. Helps to produce garments that are fitted to the body because the way the measurement is taken will determine whether the garment will be tight fitted, semi fitted or oversize/loose fitted
- iii. Helps in reducing fabric or paper waste, especially when body measurements are taken accurately.
- iv. Prevents waste of time and energy that would have been used in pattern alteration and in altering or adjusting garment.

### **Things to Keep in Mind While Taking Measurement on the Body**

- ✓ Round measurement /girth measurement are to be taken by measuring over the widest point of the body with two fingers between the body and measuring tape, this will ensure that the body is neither pressed nor squeezed.
- ✓ Remember the measuring tape should not press into the body otherwise measurement may not be accurate.
- ✓ For lengthwise measurement, ensure that the customer is standing in a natural pose; a hand should be kept under the bust for ensuring that bust is taken while measuring the length otherwise the length of the garment will fall short.
- ✓ Shoulder/cross back measurements are taken from one shoulder bone to the other.

### **The following points have to be taken into account while taking body measurements**

1. Prior to taking the body measurements, it is advisable to understand the customer's requirements, concerning the shape, fit, and style of the garment
2. It is important to study the human anatomy carefully and if any variation in body proportion is noticed, it has to be recorded and should be taken into account while taking measurements and pattern making.
3. While taking the measurements, the person should stand straight in front of a mirror



4. Body measurements should be taken with tape, without keeping it too tight or loose with the body.
5. The measurements should be taken in the appropriate order and with a definite sequence
6. All girth measurements should be taken tightly, since ease allowance is incorporated in the draft
7. After taking all the measurements, they should be rechecked twice.
8. Record all measurement correctly.

The first step in order to learn to measure a dress form is to know the form. The figure given below identifies the various body parts on the front and back of a standard dress form.

### 6.3.2 Type of measurement

Circumference measurement or girth measurement: measure around the fullest part of the body

#### 1. Bust

The bust measurement is calculated by taking the circumference (front through back) of the fullest area around the bust. This is usually where the nipples are.



Figure 6.3: Bust circumference

#### 2. Waist

For the waist, you would need to take the circumference of the narrowest area around the waist



Figure 6.4: Waist circumference

### 3. Hips

The hips measurement is taken from the circumference of the fullest area around the hip section. For some people this is where the hip bones protrude while for others it is slightly below.



Figure 6.4: Hip circumference

### 4. Neck

The neck measurement is the circumference of around the neck along its height.



Figure 6.5: Neck circumference

### 5. Knee

The knee measurement is the circumference around the kneecap.



Figure 6.6: Knee circumference

## 6. Calf

The thigh measurement - occasionally referred to as the calf measurement - is the circumference around the fullest area of the leg.

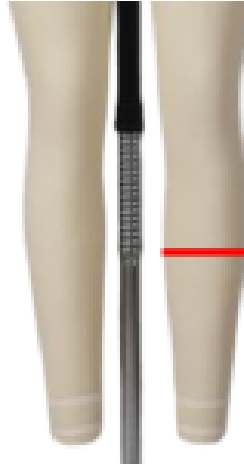


Figure 6.7: calf circumference

Horizontal measurement is measured from right to left and the tape measure must be parallel to the floor.

## 7. Bust Spread/ bust distance

The bust spread, also known as "apex to apex", is the distance between the fullest sections of one side of the bust to the other (usually nipple to nipple)



Figure 6.8: Bust distance

**Vertical measurement is measured from Top to Dawn.**

### 8. Shoulder length

The shoulder measurement is that of a single shoulder measured from the base of the neck to where the shoulder starts tapering off.



Figure 6.9: Shoulder length

### 9. Center front length

The center front length measurement is the vertical distance between the base of the neck and waist line - all on the front of the torso



Figure 6.10: Center front length

### 10. Center Back Length

Similar to the 'center front length', the center back length measurement is the vertical distance between the base of the neck and waist line - all on the back of the torso



Figure 6.11: Center back length

## 11. Crotch

The crotch measurement is taken starting from the center of the waist on the front, down through the crotch area to the back, and up to the center of the waist on the back



Figure 6.12: Crotch

## 12. Inseam

The inseam measurement is taken from the bottom of the crotch (in between the legs) down through the ankle area.

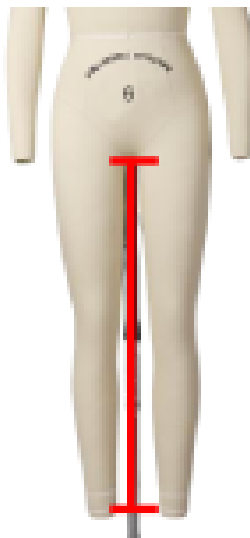


Figure 6.13: Inseam

### 13. Out seam

The out seam measurement is the distance between the waist and the ankle area. This is very similar to the 'inseam' only that it begins higher up at the waist.

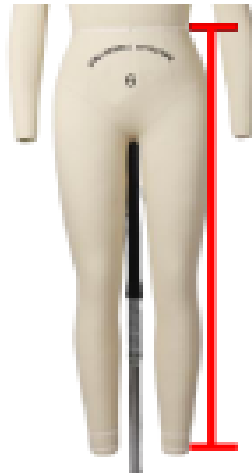


Figure 6.14: Out seam



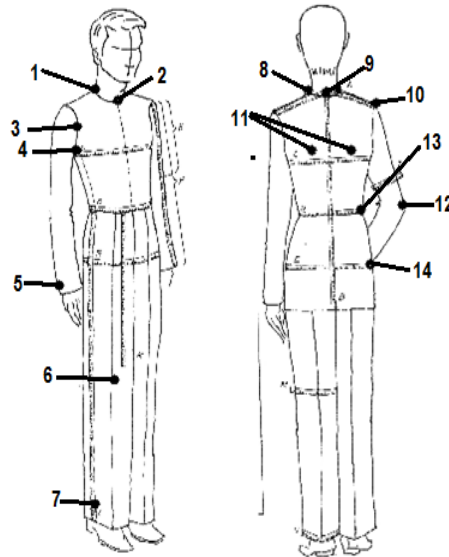
Figure 6.15: Body measurement

## Self-check-6

**Part I** short answer you have given 20 Minutes for all question. Each question carries 1 Point

Identify & write the body reference point of the given figure:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_



## Operation sheet 6

**OPERATION TITLE:** Taking and recording body measurements from the given body form.

**PURPOSE:** To show the trainee how to take & record body measurements from the given body form.

**CONDITIONS FOR THE OPERATION:**

- Trainees should know the rules how a body measurement is taken.
- Trainees should have a knowhow to understand the structure of the given body form.

**EQUIPMENT, TOOLS AND MATERIALS:** Pencil/ Fixer with eraser, record book, body form, Information sheet LO2.

### PROCEDURES:

1. Prepare a measurement value sheet;
2. Understand the structure of the given body form/ dummy;
3. Practice the rules in taking the body measurement;
4. First take & record all the necessary circumferential vertical measurements; horizontal measurements
5. Then, take & record all the necessary vertical measurements; horizontal measurements
6. Record all the necessary information about the fit model.
7. Analyze the body measurements to get the necessary help/ aid measurements.

**PRECAUTIONS:**

- Pull the tape snug, but not too tight.
- Be sure to keep the tape parallel to the floor.
- Record the information.

**QUALITY CRITERIA:**

- . All steps were completed in the correct sequence,
- . All safety precautions were followed during body measurement
- . Laying the tape measure flat against the skin, not to tight or drooping.
- . Measurements should be accurate as much as possible.



LAP Test 6	Practical Demonstration
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**JOB TITLE:** Taking and recording *body measurements* of the given body form

**UNIT:** Taking Body Measurement

**READING:** TTLM- Information sheet

**OBJECTIVES:** At the end of the job the trainee will be able to take and record the necessary body measurements accurately.

**WORK SHOP WORK: Materials Required:**

- Record book/ measurement chart.
- Information sheet.
- Operation sheet.

**Tools, Equipment & Machine Required:**

- Body form/Dummy/ Manniken,
- Pencil with eraser.
- Tape measure

**PROCEDURE: Steps:**

- Find the true base of the body;
- Record the needed body measurements on the record book

**EVALUATION: CRITERIA;**

- 1) All steps were completed in the correct sequence
- 2) All safety precautions were followed during sketching,
- 3) Laying the tape measure flat against the skin, not too tight or drooping
- 4) Tape should always be parallel to the floor for circumference measurements

## Unit Seven: physical characteristics

This unit to provide you the necessary information regarding the following content coverage and topics:

- Body characteristics
- Unique features
- Recording information

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

- Identifying and comparing body characteristics to standard body.
- Identifying and assessing unique features for potential problems in fit.
- Recording information of body characteristics

## 7.1 comparing body characteristics to standard body

### 7.1.1 Recording information of body characteristics

Body characteristics and body measurements effects on sizing .A well-fitted garment adjusts naturally to the movements of the wearer, is comfortable, presents a pleasing appearance in harmony with the figure, and may contribute to the wearer's sense of well-being, providing a positive psychological experience focusing on the individual's self-image.

When assess physical characteristics of human body have different proportions shape & Posture some are unique or out of the standard. The characteristics are may include

- posture
- shape classifications such as hourglass, rectangular, pear, inverted triangle
- shoulder slope - raised, normal, sloping
- genetic, developmental and structural influences
- anthropometric classifications
- body sway and postural asymmetry - according to lower and upper body
- proportions - high or low waist, mid-body shortness

Posture & Body shape was a major cause for mismatches between sizing standards and target consumers. An awareness of the anatomical differences among figure types helps explain why ready-to-wear garments cannot fit all figures perfectly.

To provide standard classification, size designations, and body measurements for consistent sizing of women's ready-to-wear apparel (Misses', Women's, juniors', etc.) for the guidance of those engaged in producing or preparing specifications for patterns and ready-to-wear garments. The measurements given in this standard are body, not garment, measurements; and to provide the consumer with a means of identifying her body type and size from the wide range of body types

Body form (shapes) and types fall into four major categories, with each having variations.

- Hourglass body shape
- Rectangle body shape
- Spoon body shape
- Triangle body shape

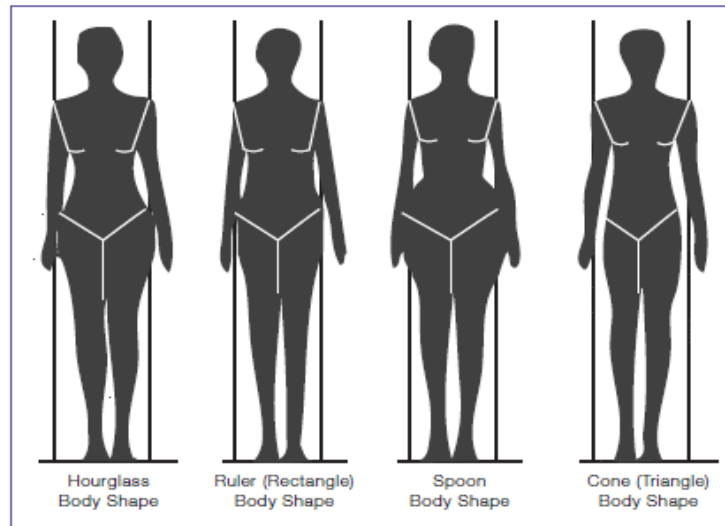


Figure 7.1 body shape

- **Rectangle shape**—bust and hips are basically the same circumference; the waist is less than 9 inches smaller than the bust.
- **Spoon shape**—hips are larger than the bust by 2 inches or more; the waist is less than 9.25 inches smaller than the bust. This shape, sometimes called pear shape.
- **Triangle**—bust is larger than the hips by 3.6 inches or more; the waist is less than 9 inches smaller than the bust.
- **Hourglass**—bust and hips is basically same circumference; the waist is smaller than the bust by 9 inches or more.

## 7.2 unique features of body shape

1. **Normal Figure:** This figure has height according to the age and the body parts are all proportional. So it is called proportional figure or normal figure.
2. **Abnormality in Figure:** Figures differ from a normal figure is called as abnormal figure. Some figures have disproportionate body part. Some abnormal figures are listed below

**a. Short & Stout:** Relative to the normal figure, this figure has less body length and is fatter in nature. Here, body shape is balanced on the behind part of the body. The shoulder length and shoulder width are less. Length of the neck is less but length of the front part is greater.

**b. Tall & Thin:** Relative to the normal figure, this body type has less chest, hip, buttocks measurements. Height of the body is higher and is less fatty. Muscles are well built and weight less and the neck portion is lengthy.

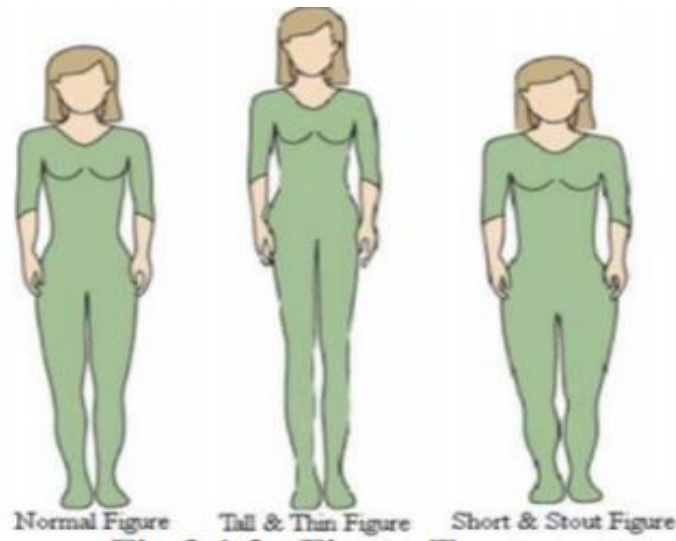


Figure 7.2 body type

### 7.2.1 Variation in posture

The posture generally determined in the way the stands. This influences both the prominence & the hollows of the contour .if the normal posture is considered fairly erect, in comparison a stooping posture would have a forward neck hollow chest & a more rounded back. The stomach more prominent but the seat flatters. A very erect stance may have the hip & waist area as the norm but more prominent bust, flatter back & a straight erect neck column.

#### A. Shoulder slope:

- **Stooping Shoulder:** Relative to the normal figure, shoulder slope is higher. Depth of the scye is greater and length of the neck is higher.
- **Square Shoulder:** Relative to the normal figure, shoulder slope is lesser. Besides, shoulder width is in a rectangular shape. For this person, length of the neck portion is less and the shoulder level is higher and length of the neck is shorter.
- **Sloping Shoulder:** Relative to the normal figure, shoulder slope is more. For this person, length of the neck portion is more and the shoulder level is lower and length of the neck is higher.



Figure 7.3: Shoulder slope

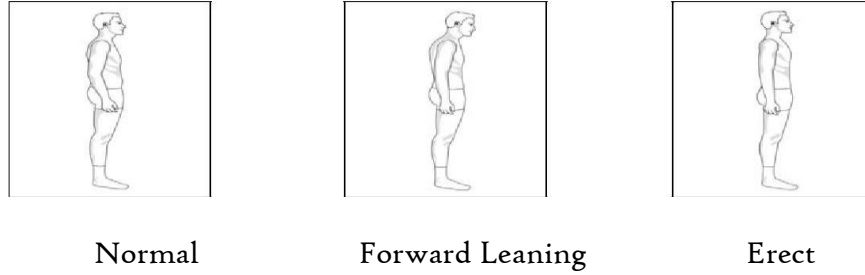


Figure 7.4: body posture

### Self-check-7

**Part-I** Matching Instruction: select the correct answer for the give choice. You have given 1 Minute for each question. Each question carries 2 Point.

A	B
___1. Rectangle shape	A. bust and hips is basically same circumference
___2. Spoon shape	B. shoulder slope is more
___3. Triangle	C. bust is larger than the hips by 3.6 inches or more
___4. Hourglass	D. shoulder slope is lesser
___5. Stooping Shoulder	E. bust and hips are basically the same circumference
___6. Sloping Shoulder	F. hips are larger than the bust by 2 inches or more
___7. Square Shoulder	G. shoulder slope is higher

Note: Satisfactory rating – above 60%      Unsatisfactory - below 60%

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

## Unit Eight: Physical characteristics

This unit to provide you the necessary information regarding the following content coverage and topics:

- Types of dress forms
- Comparisons to fit model

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

- Identify and evaluating types of dress forms or 3D avatars according to resources.
- Identify comparisons fit model with an appropriate representation



## 8.1 Evaluating types of dress forms or 3D avatars

A 3D avatar is a unique digital equivalent of a physical body proportion. It enables designers to determine desired garment lengths, and sleeve length variations, review and change seam placements, decide on detailed embellishments and logo placements, and selection of color ways

### 8.1.1 3D Avatars General Classification

- **Parametric avatars**-They are digital replicas of the proportional human body. The system allows the avatar's body measurements and shape adjustment.
- **Digital fit avatars as a digital replica of physical fit forms (a.k.a dress form, mannequin, dummy)**- Physical mannequins traditionally used for garment engineering and draping are available in digital format. This option enables accurate 3D fit and styling checks.
- **Scanned body avatars**- The availability of various scanning techniques empowers the creation of digital avatars. From laser-based 3D/4D scanning platforms, turntable scanning devices, and held scanners to mobile scanning solutions, body scanning technologies are becoming more prominent as a 3D digital solution for apparel fit.
- **Modeled 3D avatar**. Generally created with a variety of 3D modeling systems or a combination of scanned bodies and modeling. Modeled 3D avatars can be made as beautiful visuals and used for marketing, virtual runways, and other visual presentation essentials. 3D avatars generated by modeling are not suitable for fit purposes.



Figure 8.1: Digital Avatars for 3D

## 8.2 Comparisons Dress forms

Dress forms are used by fashion institutions, sampling department in a garment factory, in boutique houses, and by haute couture designers. It looks like a simple tool. But dress forms are responsible for the fit of the garment while wearing.

There are different types of dress forms and going to know about what a dress form is along with its importance.

A dress form is a three-dimensional model of a torso or an entire body, molded to take the shape of the human body. It comes in different sizes which often differ according to manufacturers. It is mostly used for fitting clothing that is being designed or sewed. These are available for male, female and kids dress forms.

### 8.2.1 Different Types of Dress Forms

#### 1. Display Dress Form

These are the most basic of them and are mostly used for displaying garments and the creation of photo shoot samples



Figure 8.1: display dress form

#### 2. Professional Dress Form

As the name suggests these are made for the sole purpose of the fitting, draping, pinning, etc. these dress forms are a must for sampling department, boutique houses, etc.



Figure 8.3: Professional Dress Form

### 3. Bifurcated dress form

It is similar to that of the above, with the only difference being included legs for fittings of shorts and pants.



Fig 8.4: bifurcated dress form

### 4. Adjustable dress form

As the name suggests, in this dress form the measurements can be changed according to various sizes. These are very similar to that of display dress-forms in size and functionality. The sizes can be changed with the dials which are placed at critical measuring points as in center back, center

front, side seam, neck. Also, they are height adjustable along the waist. It must be checked that the expansion made are uniform all-over otherwise fitting can get altered.



Figure 8.5: Adjustable dress form

## Self-check-8

### Part-I short answer

**Direction:** Give short answer to the following questions. Time allotted for each item is 30 minute and each question carry 2pts point.

1. .Adjustable dress form
2. Professional Dress Form
3. Display Dress Form
4. Bifurcated dress form
5. Professional Dress Form
6. Display Dress Form

Note: Satisfactory rating – above 60%                      Unsatisfactory - below 60%

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

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