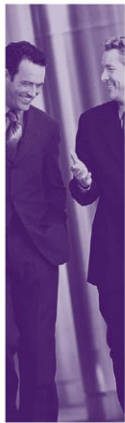


PEARSON NEW INTERNATIONAL EDITION

Patternmaking
for Fashion Design
Helen Joseph-Armstrong
Fifth Edition



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for Fashion Design
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PEARSON

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Patternmaking Essentials for the Workroom

PATTERNMAKING TOOLS

- Functions of Patternmaking Tools
- Guide to Reading Ruler Increments
- The Importance of Math

PATTERN PAPER

PATTERNMAKING TERMS

FABRIC TERMS

PATTERN GRAINLINE

DART

BLENDING, TRUEING, AND EQUALIZING

SPECIAL INFORMATION

- Balance Line Terms
- Styleline Guides

THE WAY WE WERE

PRODUCTION TERMS

BODY SCANNING

COMPUTER COMPANIES

LAST, BUT NOT LEAST

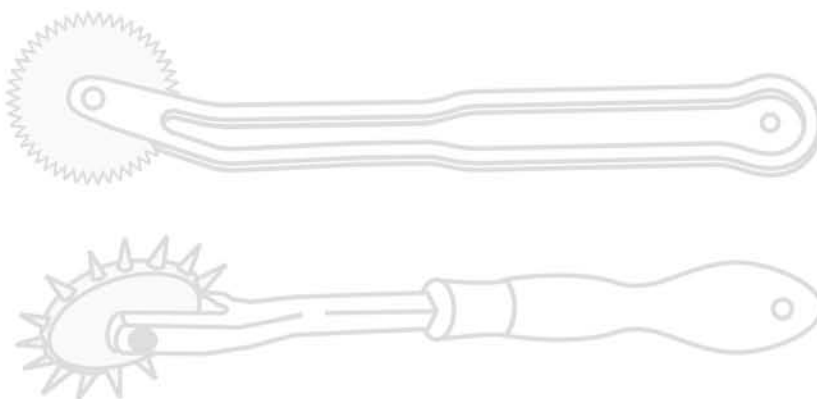
E-FIT SIMULATOR IS BORN

APPAREL PRODUCT DEVELOPMENT

COST SHEET

PATTERN CHART

DESIGN SPECIFICATIONS SHEET



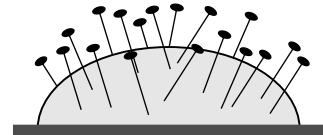
PATTERNMAKING TOOLS

To work efficiently, the patternmaker must have the proper tools and supplies. To communicate effectively in the workroom and to minimize errors due to misunderstanding, the patternmaker should know and understand terminology. This chapter introduces tools, supplies, and definitions of terms used in industry.

The professional patternmaker arrives on the job with all tools required for patternmaking. Each tool should be marked with an identity symbol and transported in a carrying case. Tools may be purchased from apparel supply houses, art stores, department stores, and yardage stores. Specialized tools, such as a rabbit punch used to punch pattern holes for hanger hooks, are generally supplied by the manufacturer.

1. *Straight pins:*

- ___ Dressmaker silk #17 for draping and fittings.



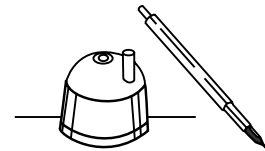
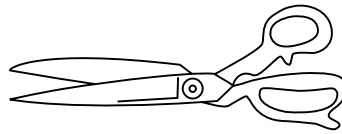
Straight pins and cushion

2. *Straight pin holder:*

- ___ Pincushion, or magnetic holder for wrist or table.

3. *Scissors:*

- ___ Paper scissors.
- ___ Fabric scissors.



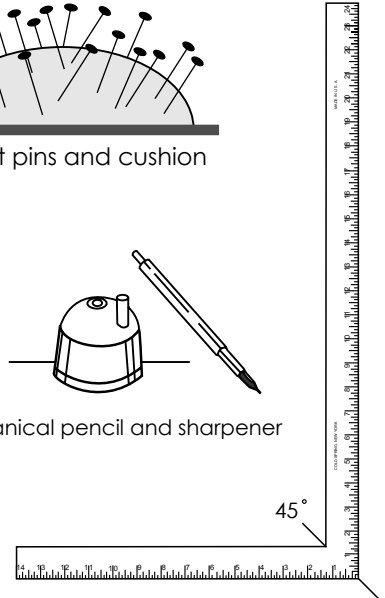
Mechanical pencil and sharpener

4. *Pencils and pens:*

- ___ Mechanical pencil and sharpener. (Use #4-H lead for pattern work.)
- ___ Red and blue colored pencils to identify pattern changes. Black, green, red, and blue felt-tip pens for pattern information.

5. *Rulers:*

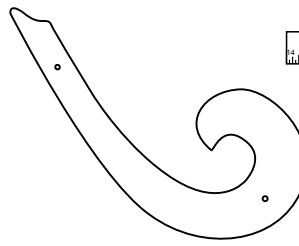
- ___ Flex general rule—1/2 × 12-inch (very accurate).
- ___ 36-inch ruler.
- ___ 18 × 2-inch plastic rule (flexible for measuring curves).
- ___ Tailor's square—24 × 14-inch metal ruler with two arms forming a 90° angle that measures, rules, and squares simultaneously.
- ___ Triangle with measurements to square lines.



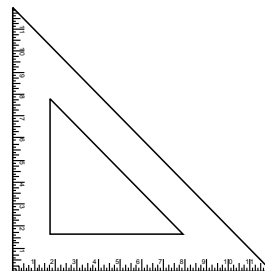
45°

6. *Curve rules:*

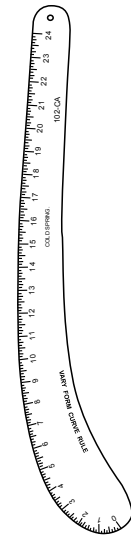
- ___ French curve, Deitzgen #17 is one of several curves used for shaping armhole and neckline.
- ___ Sleigh curve, shapes necklines, armholes and other curves, pockets, collars, and cuffs.
- ___ Hip curve rule to shape hipline, hem, lapels.
- ___ Vary form curve to blend and shape armhole necklines.



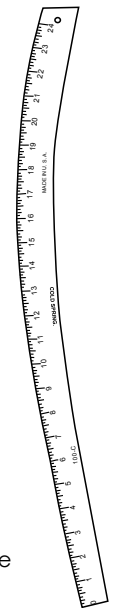
French curve



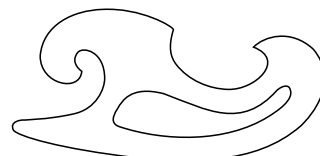
Square/triangle



Vary form curve



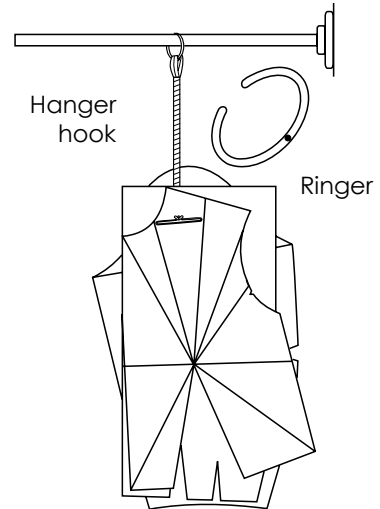
Hip curve rule



Sleigh curve

7. *Hanger hooks or ringers:*

___ To hold patterns together while hanging on rods.



8. *Push pins:*

___ For pattern manipulation and transferring muslin patterns to paper.



9. *Stapler and remover:*

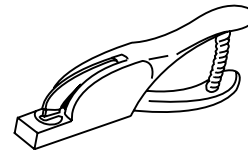
___ Prevents pattern slippage when cutting several plies of paper together.

10. *Magic mend scotch tape:*

___ To mend pattern work.

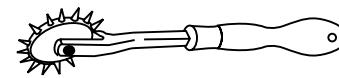
11. *Black twill tape:*

___ Placement of stylelines on form and to hold ease in place.



12. *Notcher:*

___ Cuts a 1/4 x 1/16-inch opening at the pattern's edge to indicate seam allowance, center lines, and ease notches and to identify front and back of patterns.



13. *Tracing wheels:*

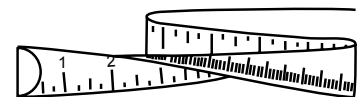
___ Pointed wheel transfers pattern shapes to paper.

___ Blunted wheel is used with carbon paper to transfer pattern shapes to muslin.



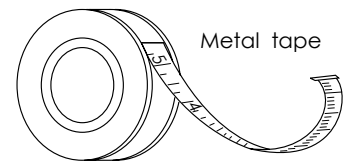
14. *Awl:*

___ Pierces 1/8-inch hole in the pattern to indicate the ending of darts, pocket, trim, and buttonhole placements.



15. *Metal weights (several):*

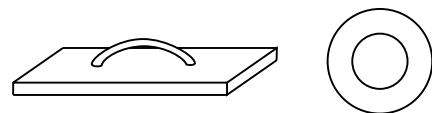
___ Hold patterns in place for tracing and marking.



16. *Measuring tape—60 inches long:*

___ Metal-tipped, linen or plastic to measure the form. Metric is on the other side.

___ Metal tape 1/4 inch wide inside a dispenser. It is convenient, flexible, and very accurate.

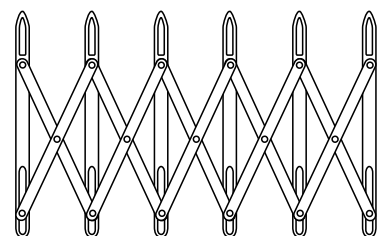


17. *Tailor's chalk:*

___ Clay, chalk, chalk wheel, or chalk marking pencils in black and white. Use for marking adjusted seams and stylelines.

18. *Simflex folding measure:*

___ Spaces button/button holes, pleats, tucks.



Functions of Patternmaking Tools

Tools provide the symbols used in marking fabric and patterns in the production of garments. Symbols are like a silent language that are understood among the designer, seamstress, grader, marker maker, and production personnel. Without these symbols, garments would not be cut or stitched with accuracy. Missing or misplaced symbols disrupt the flow of production.

Notch Tool

The notch tool has a cutting blade that slips into the pattern's edge, leaving an 1/8- to 1/4-inch cut-out. As the patterns are traced, the notch cut-outs are marked on the fabric. The cutter slashes the fabric at these locations. The seamstress assembles and stitches the garment parts following the notches (Figure 1).

The notch is used to indicate:

- Seam allowance (Figure 2).*
- Center lines.
- Identification of front and back patterns.
- Correct assembling of similar pattern parts (Figure 3).
- Correct location of joining parts.
- Gather and ease control (Figure 2).
- Dart intake (Figure 1).
- Shoulder tip of extended shoulders.
- Waistline of one-piece garments.
- Zipper stopping point.
- Fold-back for hems and facings.
- Placement for inserts.
- Tension release (acute curves).
- Inverse corners (Figure 2).

*Unless instructed otherwise, 1/4-inch seams are not notched. Overlocked seams are generally not notched.

Figure 1

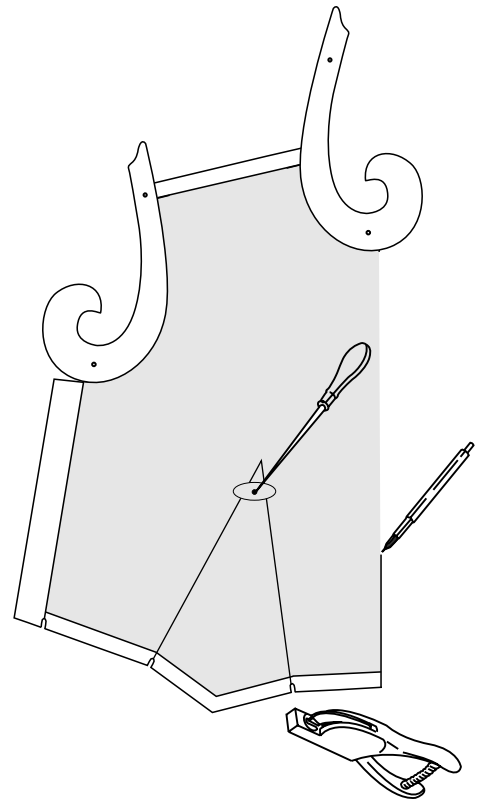


Figure 2

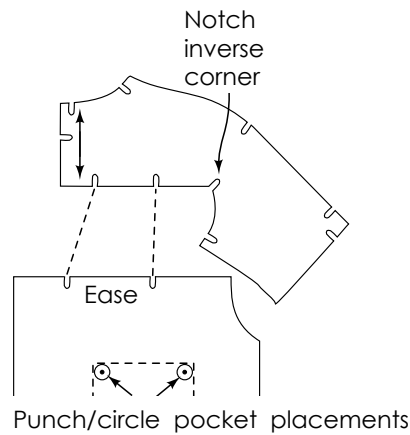
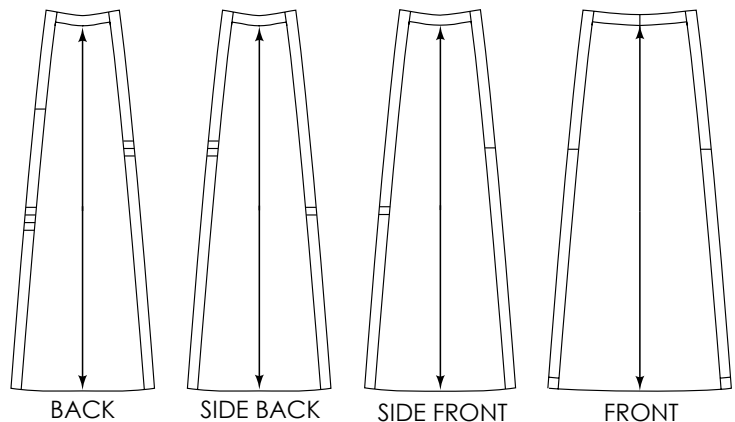


Figure 3

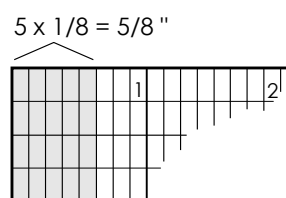
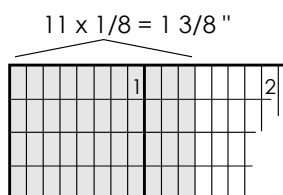
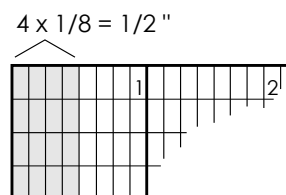
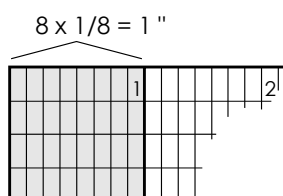
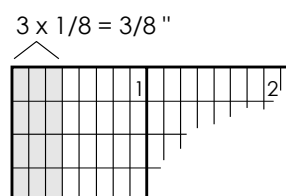
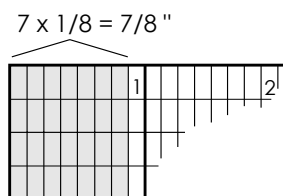
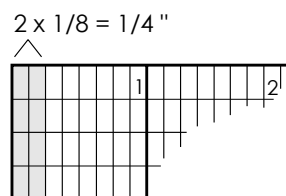
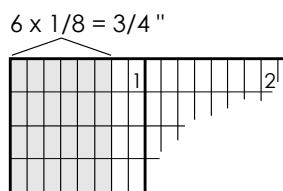
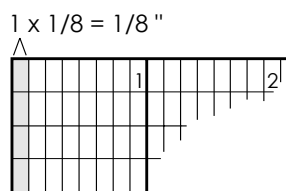
Awl Punch and Circle

The awl puts a hole (or mark) on the pattern. The hole is circled to notify the marker maker that a drill is needed to burn a hole in the fabric, which damages the garment. That is why the placement of the drill hole is always inside the finished seam (to cover the damage in the fabric).

- Dart back-off point (Figure 1).
- 1/8 inch in from corners.
- Buttonholes and buttons.
- Trimming.
- Pocket placements.



Guide to Reading Ruler Increments (based on 1/8 inch*)



YARDAGE IN INCHES
 9" = a quarter yard (1/4)
 12" = a third yard (1/3)
 18" = a half a yard (1/2)
 24" = 2/3 of a yard
 36" = 1 yard
 * 1/16" = one-half of 1/8"

Decimal and Fraction Conversion

.063 = 1/16	.438 = 7/16
.125 = 1/8	.5 = 1/2
.188 = 3/16	.563 = 9/16
.25 = 1/4	.625 = 5/8
.313 = 5/16	.750 = 3/4
.375 = 3/8	.875 = 7/8

The Importance of Math

Why should you have sufficient math skills to read measuring devices: rulers, measuring tape, fractions, and percentages? The answer is, to be eligible for hire! In the fashion business, every phase of production relies on the math skills of the associates to stay in business.

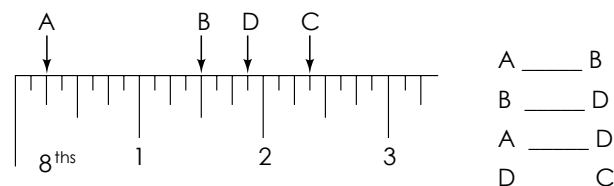
For hire, you should be able to:

- Take and record measurements of the form to the exact 1/16 inch.
- Compute yardage for single and mass-produced garments.
- Provide the exact measurements on spec sheets for the production of garments.
- Apply math instructions from a work sheet to the developing project.
- Operate a computer.

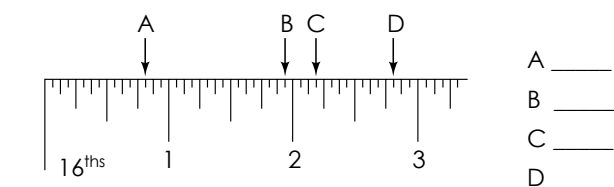
Test Your Math Skills

Write answers in the spaces provided. Also give common denominators. Check answers at the end of the chapter.

Test 1 Measure the distance between letters given, starting from A; use 1/8-inch increments.



Test 2 Measure from the start of the ruler to A. A to B, B to C, and C to D, at 1/6-inch increments.



PATTERN PAPER

Pattern paper has code numbers to indicate its weight from heavy to light:

Heavy-weight Paper—Weight Code

IX Granite Tag (.007) to 5X Granite Tag (.019)

- Heavyweight pattern paper is called *tag board*, *manila*, or *hard paper* and is used primarily for production patterns.

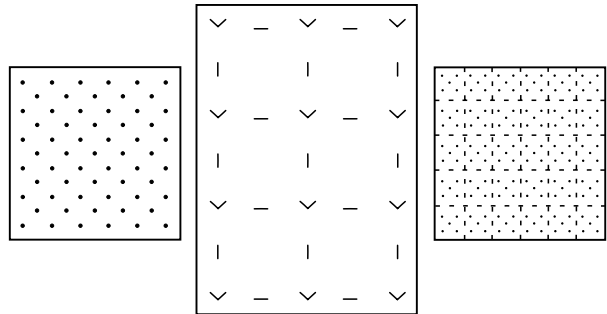
Light-weight Paper—Weight Code

1 to 5 Double-Duty Marking Paper

- Lightweight paper is called *marking paper*.
- Marking paper is used for making markers and to develop first patterns.
- The paper is marked with a choice of symbols: numbers, letters, short lines, and/or dots. The symbols help when aligning the grainlines of the

patterns for tracing, and the numbers give an account of inches of the finished marker.

- Color-coded paper (color on one side only) has two functions: to indicate right-side-up of the pattern pieces and/or to indicate the design division to which the patterns belong.



PATTERNMAKING TERMS

The following terms and definitions are related to the workroom.

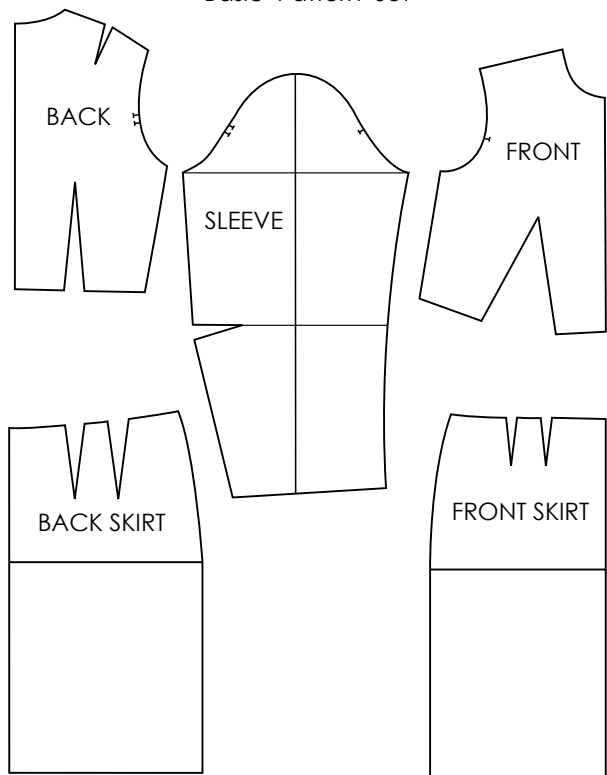
Pattern drafting. A system of patternmaking that depends on measurements taken from a form or model to create basic, foundation, or design patterns. An example is the draft of the basic pattern set.

Flat patternmaking. A system of patternmaking that depends on previously developed patterns. The working pattern is manipulated by using the slash or pivotal method to create design patterns.

Basic pattern set. A five-piece pattern set, consisting of front and back bodice and skirt and a long sleeve, which represents the dimensions of a specific form or figure. It is developed without design features. The traced copy is referred to as a *working pattern*.

Working pattern. Any pattern used as a base for manipulation when generating design patterns. In this text the basic pattern set is the base for design projects.

Basic Pattern Set



FABRIC TERMS

Muslin. A plain-woven cotton made from bleached or unbleached corded yarns in a variety of weights:

- *Coarse-weave:* Used for draping and testing basic patterns.
- *Light-weight:* Used for softly draped garments.
- *Heavy-weight:* Firmly woven, used for testing tailored garments, jackets, and coats.

Grain. The direction in which the yarn is woven or knitted (lengthwise grain, or *warp*; crosswise grain, or *weft*).

Lengthwise grain (warp). Yarns parallel with selvage and at right angles to the crosswise grain. It is the most stable grain.

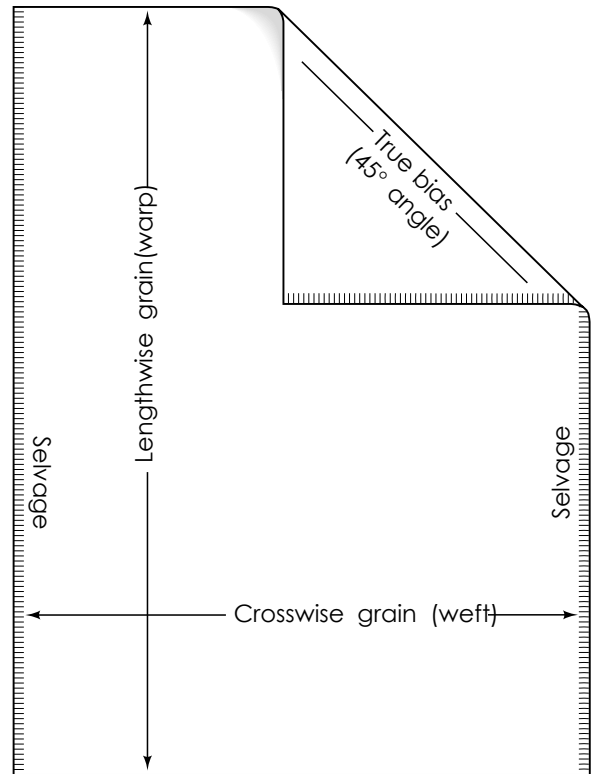
Crosswise grain (weft). Yarns woven across the fabric from selvage to selvage. It is the filling yarn of woven fabrics. Crosswise grain yields to tension.

Selvage. The narrow, firmly woven, and finished strip on both lengthwise grain edges of the woven fabric. Clipping selvage releases tension.

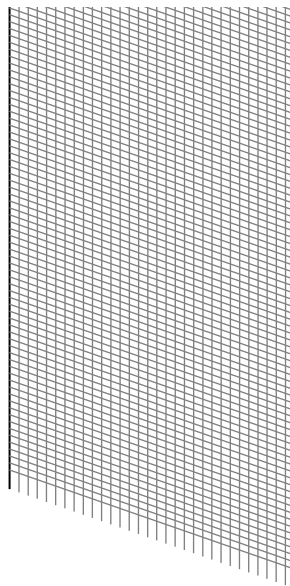
Bias. A slanting or diagonal line cut or sewn across the weave of the cloth.

True bias. The angle line that intersects with the lengthwise and crosswise grains at a 45° angle. True bias has maximum give and stretch, easily conforming to the figure's contours. Flares, cowls, and drapes work best when cut on true bias.

Bowing and skewing. When filler threads do not interlace with the straight grains at 90°, bowing and skewing, or a one-sided combination occurs and is often sent to industry in that condition unless otherwise instructed.



Skewing



Bowing

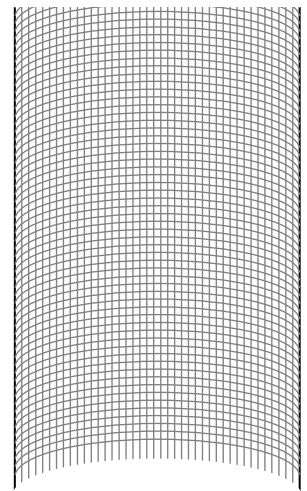


Figure 1: Controlling the Grain

Finding the grainline. Pull a filler thread (weft) on the cross-grain selvage to selvage. Cut through the channel in preparation for stretching. Do not trim the other end.

Figure 1

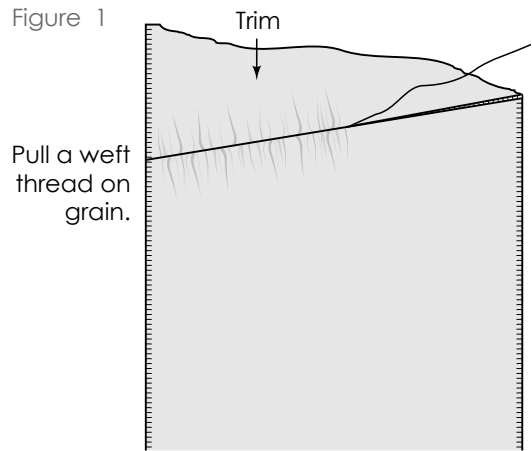


Figure 2: Aligning the Grainline

To correct bowing or skewing. Pull the fabric diagonally at opposite ends of the fabric. Repeat at the other ends. This process helps to align the straight grain (warp) and crosswise grain (weft); then press to a perfect square.

This process can be done for individual garments but is impractical for mass-produced designs. However, the manufacturer can request, at a cost, to have the problem corrected by the fabric company. Computer-controlled weaving can correct the problem.

Figure 2

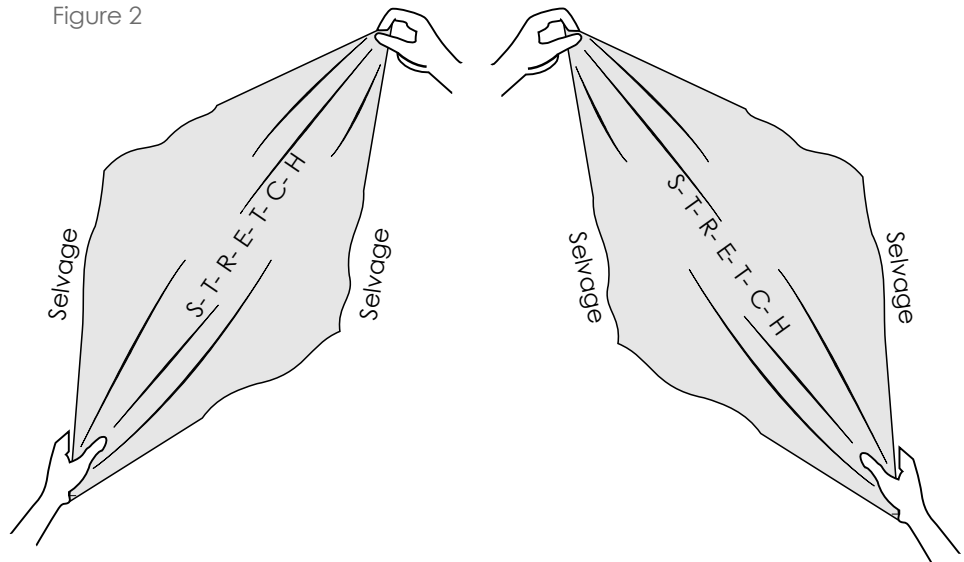


Figure 3: Thread-Marking Grains

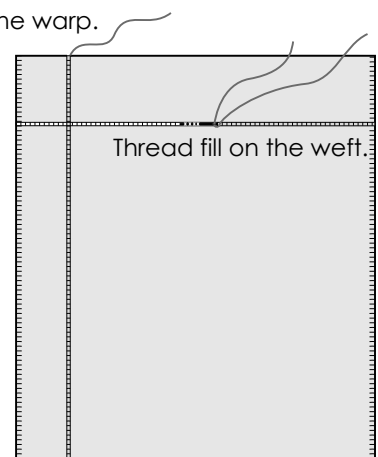
Pull straight and filler threads through the squared fabric and with colored threaded needle, slip through the channels for marking.

Couture salons prepare toile in a similar manner, as do some fashion schools, in preparing muslin for draping projects. It is also an excellent way to introduce beginning students to the straight and cross grains that make up woven fabrics.

Thread lines allow the draper to view the grainline as the design is being created.

Figure 3

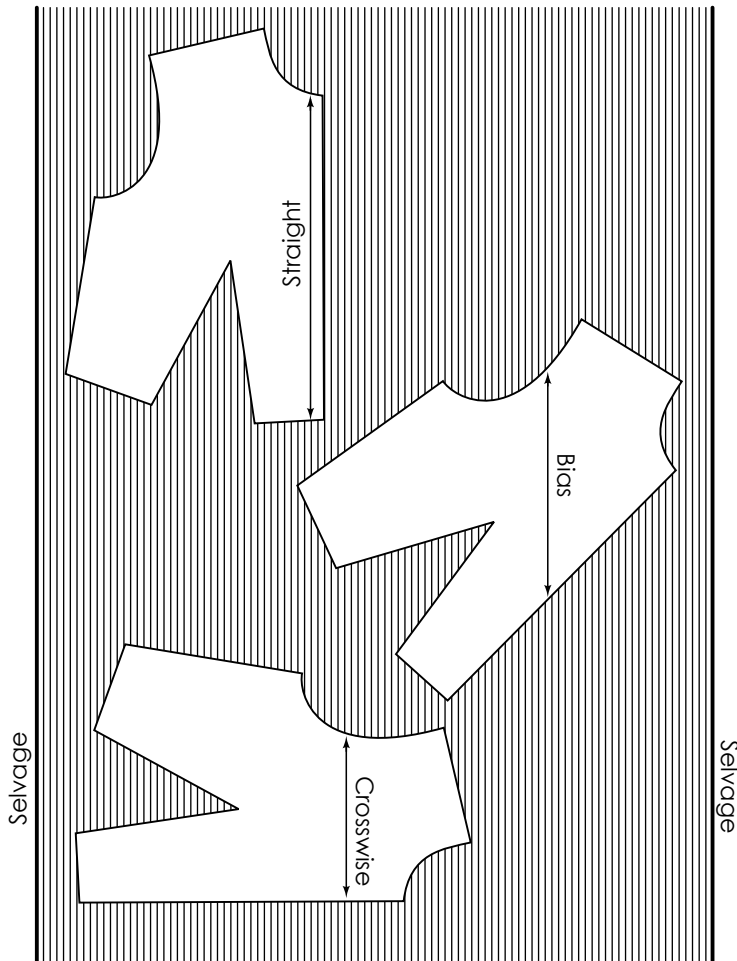
Thread fill on the warp.



PATTERN GRAINLINE

The pattern grainline is a line drawn on each pattern piece (from end to end) to indicate how the pattern should align with the lengthwise grain of the fabric. Regardless of where the grainline is drawn on the pattern, it will always be placed on the fabric so that the grainline is parallel to the selvage edge. Pattern placement is illustrated in Figure 1. The effect of grainline on garments is shown in Figures 2, 3, and 4.

Figure 1



Grainline Arrows

- Arrows placed at both ends of the grainline indicate that the top of the pattern may be placed in either direction along the lengthwise grainline of the fabric (for fabrics without a nap).
- An arrow placed at the top *or* the bottom of the grainline indicates that the pattern must be placed in one direction only (for fabrics with a nap).

Direction of Grainline

- Vertical grainlines are drawn parallel to center for garments cut on straight grain (Figure 2).
- Bias grainlines are drawn at an angle to center (45° angle for true bias) for garments cut on the bias (Figure 3).
- Horizontal grainlines are drawn at right angles to center for garments cut on crosswise grain (Figure 4).

Figure 2 Straight Grainline

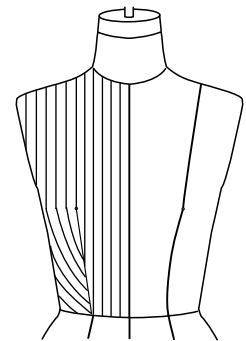


Figure 3 Bias Grainline

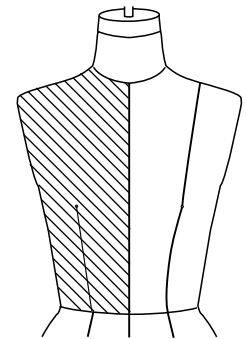
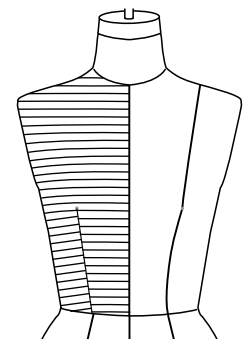


Figure 4 Crosswise grainline



DART

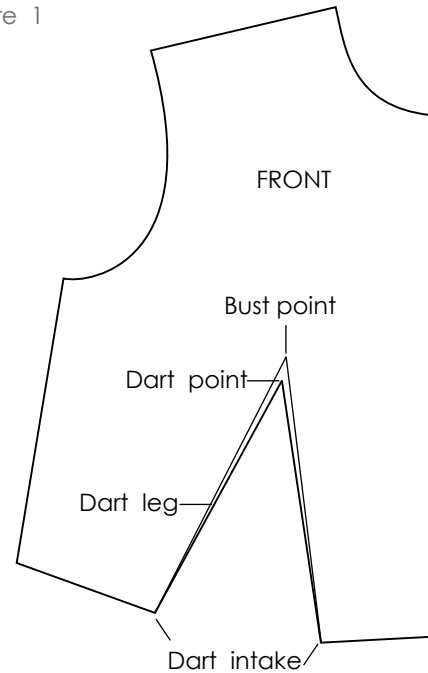
Bust point. A designated place on the bust and pattern and referred to in flat patternmaking as the pivotal point or apex (Figure 1).

Dart. A wedge-shaped cut-out in a pattern to control the fit of a garment when stitched.

Dart legs. The two lines that converge at a predetermined point on the pattern.

Dart intake. The amount of excess (or space) confined between dart legs. Its purposes are to take up excess where it is not needed and to gradually release fabric where it is needed to control the fit of the garment.

Figure 1



Trueing. The blending and straightening of pencil lines, crossmarks, and dot marks for the purpose of establishing correct seam lengths—for example, trueing a side seam having a side dart.

- Fold dart and draw side seam (Figure 2a).
- Trace the side seamline (Figure 2b).
- Unfold dart and pencil in the dart (Figure 2c).

Figure 2a

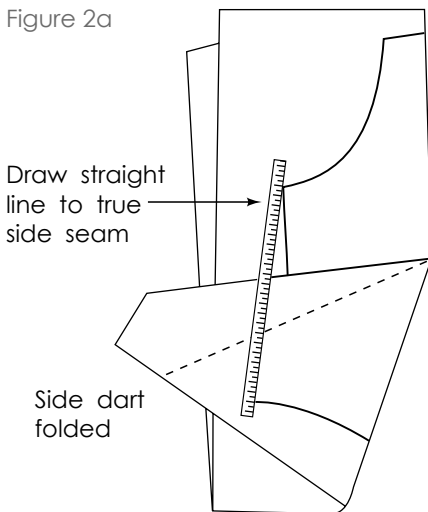


Figure 2b

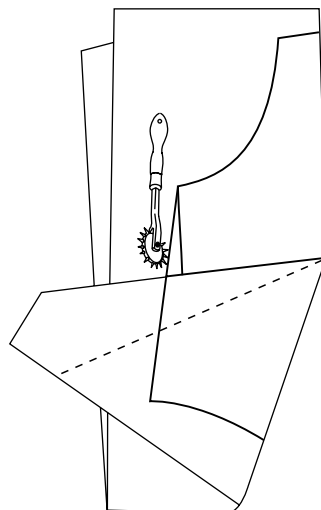
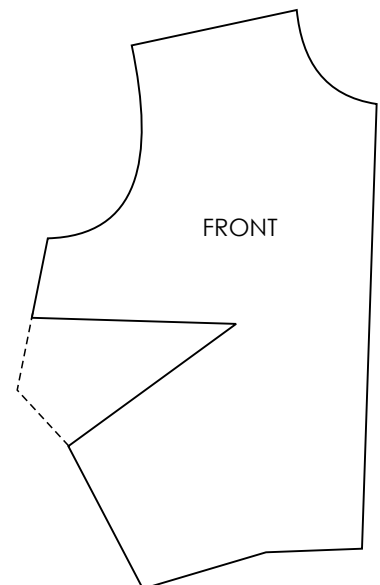


Figure 2c



BLENDING, TRUEING, AND EQUALIZING

Uneven curves of joining seams can be blended by equalizing the differences. The adjusted seamlines are blended smoothly along the seamline, especially hiplines and leglines. Figure 1.

Blending. A process of smoothing, shaping, and rounding angular lines along a seam for a smooth transition from one point to the next and for blending marks made on the pattern or muslin. (Blending includes trueing.) Figures 2a, 2b.

SPECIAL INFORMATION

Right-side-up (when sides differ). Instruction applies to asymmetrical designs (right side differs from the left side) and for patterns cut from engineered fabrics such as border prints, randomly spaced flowers, geometric forms, and multiple colors. Such fabrics require specific pattern placement so that the fabric design can be arranged in the same location for all garments cut from that fabric. *Right-side-up (RSUP)* indicates to the marker maker that the pattern is to be placed face up on the marker.

Detail location. Mark the location in which a detail is to be placed on the pattern. This will ensure that the flower, abstract detail, or stripes will always be on the correct side and in the correct place on the garment.

Figure 1

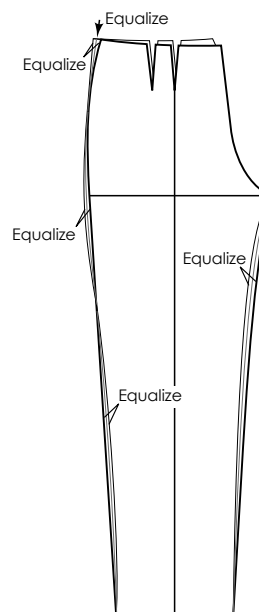
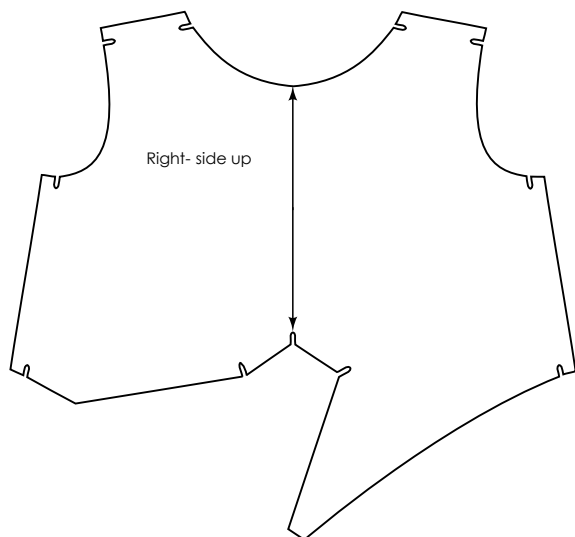
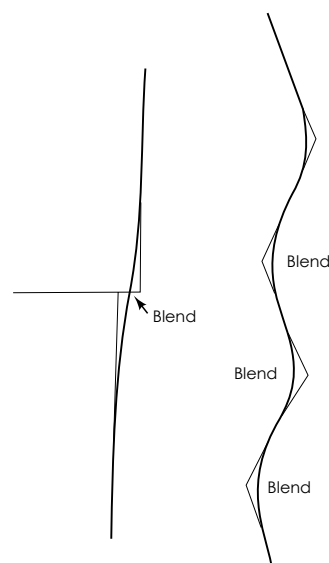
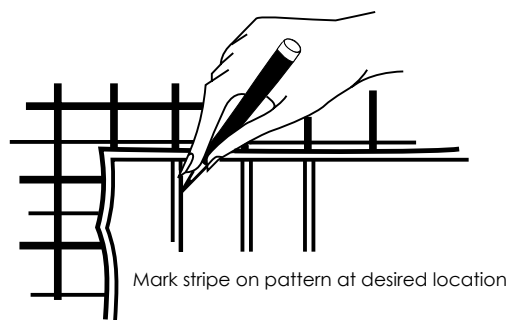


Figure 2a

Figure 2b



Stripe placement.



Balance Line Terms

Plumb line. A vertical line that is at right angles with the floor. Used to determine the balance of the figure.

Perpendicular line. A straight line at right angles to another line. (See right angle.)

Vertical line. A line that is straight up and down.

Horizontal line. A line parallel with the floor.

Right angle. The 90° angle formed by two intersecting lines, referred to as a *squared* line.

Asymmetrical line. A center line with unequal proportions on either side of it.

Symmetrical line. A center line with equal proportions on either side of it.

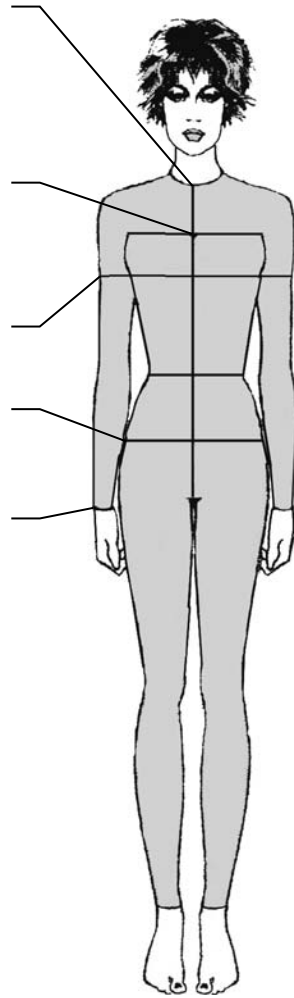


Figure 5a

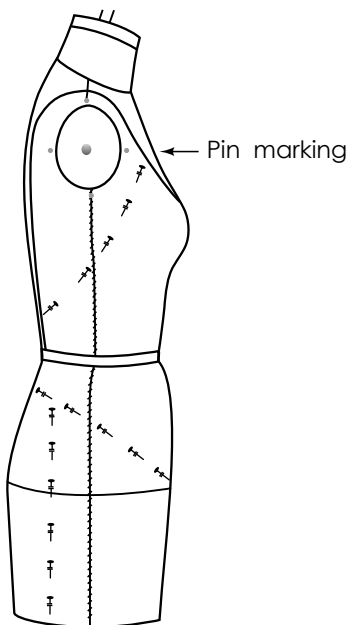
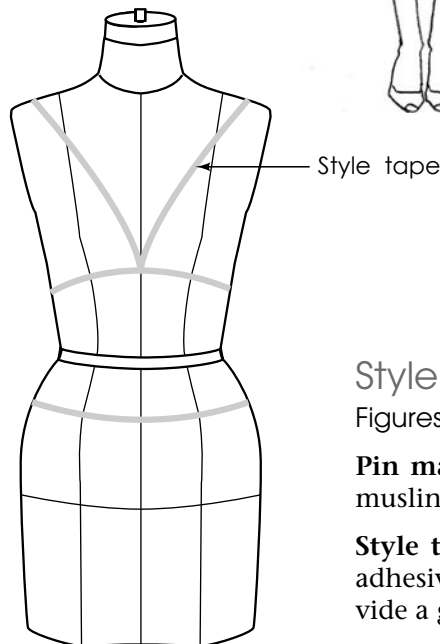


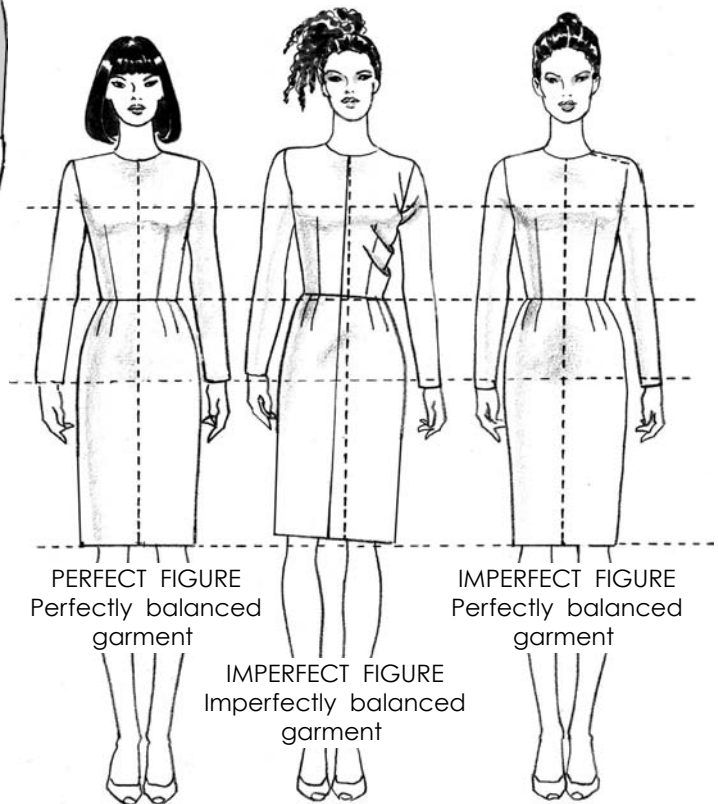
Figure 5 b



Balance. The perfect relationship between parts that, when combined, form a unit (or whole) in which each part is in exact proportion and harmony with all others.

Balancing a pattern. Finding and adjusting the differences between joining pattern parts to improve the hang and fit of the garment.

Horizontal balance line (HBL). A reference to any line marked around the form that is parallel with the floor. Patterns are also marked with horizontal balance lines squared from the center lines representing the crosswise grain when the garment is cut in fabric. The HBL lines help when balancing the patterns.



Styleline Guides

Figures 5a, b

Pin marking. Placing a series of pins through the muslin or form to evaluate styleline placement.

Style tape marking. Styleline placement by color adhesive tape to evaluate design features and to provide a guide when developing design patterns.

The Way We Were

Clothing has been manufactured in essentially the same way since the invention of the sewing machine in the mid-nineteenth century. Old-fashioned, labor-intensive methods are still used by some small manufacturers and designers of custom-made apparel because they cannot afford technical upgrades. Personal computers and inexpensive software are changing apparel design, and even small manufacturers can afford computer-assisted apparel production applications.

Today, more than 90 percent of apparel sold in America is manufactured off-shore. This reality has accelerated use of computer-assisted apparel production methods and the Internet.

In the 1970s, grading and marker making was computerized, followed in the 1990s by large computer-aided design (CAD) systems taking over patternmaking, fabric design, and design graphics.

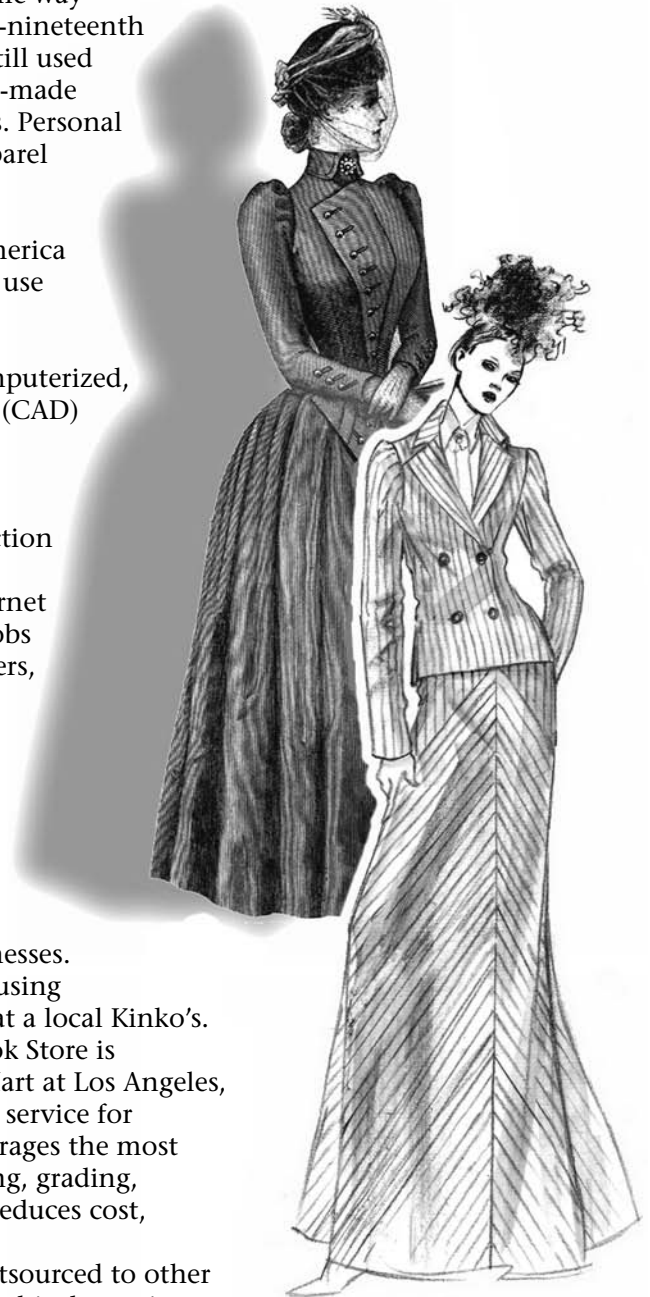
Today, even the smallest manufacturer can rent hardware and software to assist the design and production processes. Computer-generated patterns, markers, specifications, and cost sheets can be sent via the Internet to factories located around the world. Though some jobs have been lost, designers, patternmakers, marker makers, graders, and cutters are still needed in this fast-paced business.

Computer companies offer seminars for students and current manufacturing employees to keep them updated on new technology. Fashion schools have added computer-assisted technology courses to their curriculum.

TukaTech set up Tukacenters in America as an innovation for students and those owning small businesses. They can produce patterns and samples from designs using TukaTech software and have the patterns printed out at a local Kinko's. Another innovation by TukaTech and the Fashion Book Store is *Fashion Project Café*, which is housed in the Fashion Mart at Los Angeles, California. The project was conceived as an associated service for manufacturers large and small. The service center leverages the most advanced technology in computer aided patternmaking, grading, and 3-D sewing that streamlines apparel production, reduces cost, and increases speed and quality to the market.

Even though American manufacturing is being outsourced to other countries, the entrepreneur can always find a niche in this dynamic industry that values change. Fashion-savvy youth and innovative fashion leaders still demand innovative apparel. The mature customer searches for attractive garments that fit his or her changing figure.

Flexibility, research, and knowledge of a customer's needs are the requirements of a successful apparel manufacturer of any size.



Now that you have read the introduction, you are one step closer to reaching your goals. Go for it!

PRODUCTION TERMS

First pattern. A first pattern is the original pattern developed for designs. The first pattern is generally made on marking paper and requires fitting and pattern corrections. Half a pattern is developed in the workroom (unless instructed otherwise). An asymmetrical design always requires a full pattern. Unless the garment is dropped from the line, it will be tested for fit until perfect.

Production pattern. A production pattern is the final corrected and error-free copy. The pattern contains every pattern piece required to complete the garment. The pattern is used by the grader for sizing and by the marker maker for fabric layout. See Figure 1c. A pattern chart is placed in front of the pattern set and a design tag is stitched to the garment for tracking.

Marker. A marker is the arrangement of pattern pieces, either manually traced on marking paper or patterns laid on a special paper and photographed, or patterns are digitized for computer application in laying out the marker. All pattern symbols are marked on the patterns. Patterns are interlocked; sizes are mixed to eliminate fabric waste. Grainlines on the patterns lay parallel with the selvage, with one exception; small patterns are fit into available space without regard to the grainline. The printout paper marker is laid on top of many layers of fabric. Patterns are cut either manually or by computer.

Traced Marker

Figure 1a

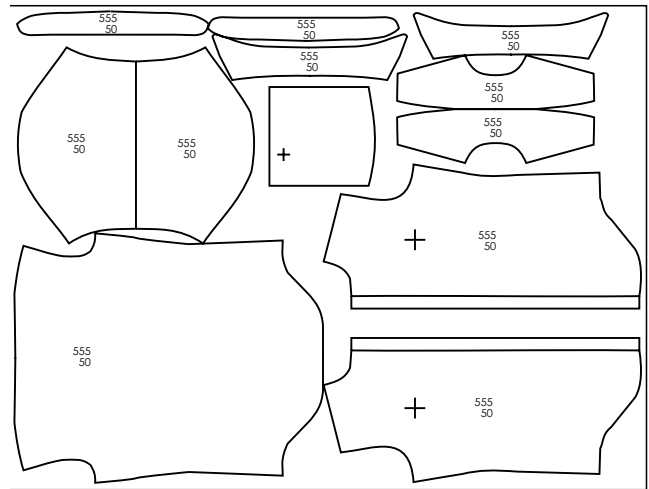
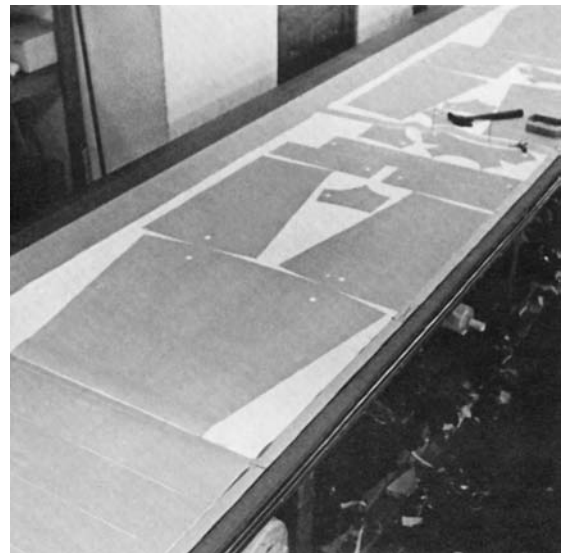


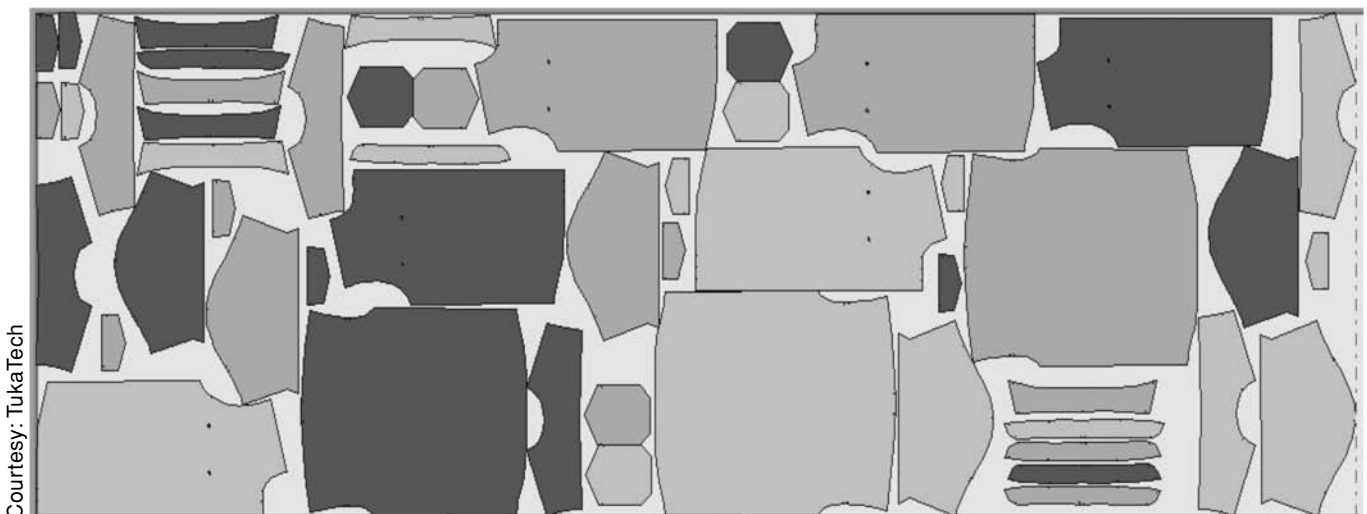
Photo Marker

Figure 1b



Digitized Marker

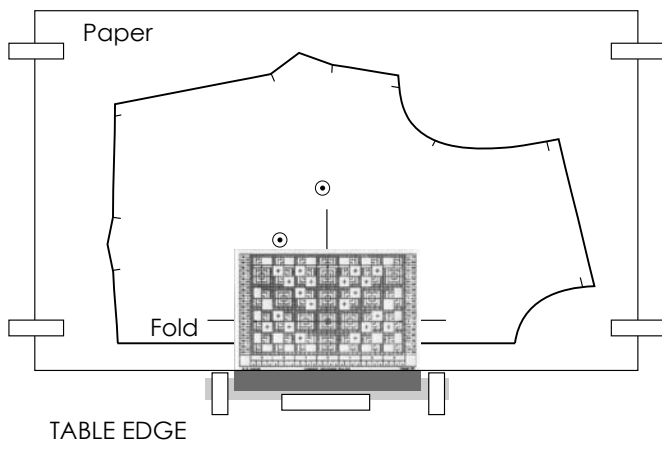
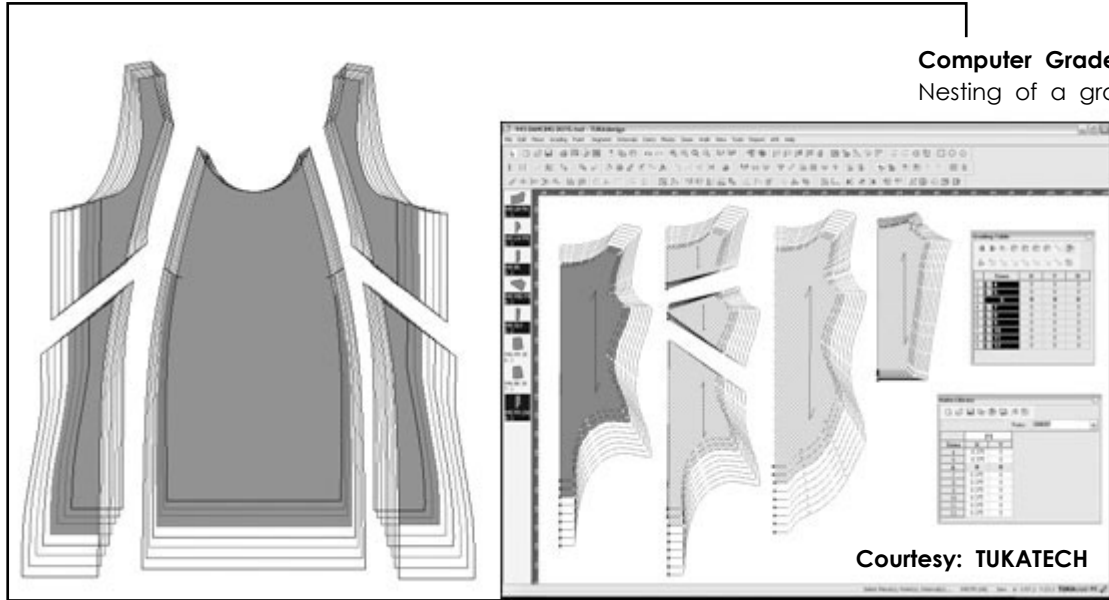
Figure 1c



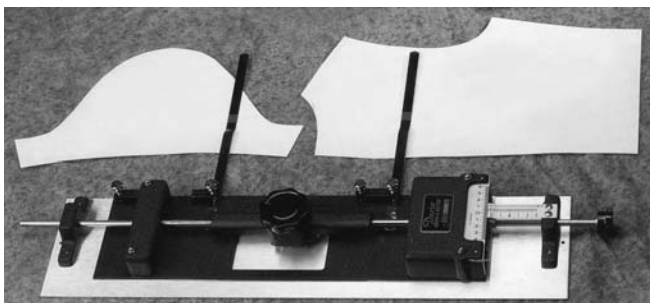
Courtesy: TukaTech

Grader. A grader increases and decreases the size of patterns based on the company's perfected sample (example: model size 10). The company sets its requirements for grade length, circumference, and width. Grade sizing differs from company to company. Graded patterns are done singularly, or graded

one on top of the other (nesting). Today most grading is done by computer; however, grading can be done using the Dario grading machine, or manually with the Hinge ruler or its equivalent. The graded patterns go to the marker maker as the next step toward production.



Hinge ruler. The Hinge ruler was originally created by Kay Cleverly, who gave the ruler to Eleanor Davis, who wrote the instructions. A version of this ruler may be purchased through Vecchiarelli Bros, Inc.



Dario grading machine. Purchase through Vecchiarelli Bros., Inc., 121 W. 15th Street, Los Angeles, CA 90015. Website: www.vebros.com; telephone: 213-749-5944.

Digitizer. Converts data to digital form for use in a computer. A handheld mouselike device that, when activated, transfers pattern shapes electronically to the electronic work table. Pattern grading can also be done without the table with greater speed. Knocking off garments is another use of the digitizer, as is two-dimensional pattern correcting.

Cutter. Cutting is done by hand using an electric cutting machine. A skilled cutter's hand secures and moves the many plies of cut fabric away while the other hand controls the cutting machine.

Computer cutting. The cutting blade is secured by a safety cover as the blade penetrates plies of fabric. The cutting blade is controlled by a digitized measurement card.



Courtesy: TukaTech

BODY SCANNING

Body scanning is another tool that helps industry in devising the best set of measurements for its customers. The body scanner is a light-emitting device that can produce scans accurate to 1/16 inch. Body scanning takes place in a boxlike cube and replicates the body measurements in three-dimensional (3D) format. Several individuals, as well as large research labs, have been working on this concept for years. It has come of age, even though its full potential has yet to be realized.



COMPUTER COMPANIES

Computer companies offer automated systems that include fabric and garment design; pattern design, grading, and marking; high-speed jet plotters; single-ply cutters; spreading and cutting; unit-production system; and electronic tracking in sewing, warehousing, distribution, and manufacturing.

Service to manufacturers by computer companies varies. Company websites are given below if you would like additional information.

TukaTech: www.tukatech.com

Gerber: www.gerberetechnology.com

Lectra: www.lectra.com

Pad: www.padsystem.com

Investronica: www.investronica.com

Optitex: www.optitex.com



LAST, BUT NOT LEAST

Fitter. The fitter is indispensable in finalizing the fit of garments for the next phase in production. A good fitter examines inside the garment for correctly stitched seams before analyzing the fit. Fitting sessions include the designer, assistant, and patternmaker in real time, or fitting is done by E-Fit simulation. A garment often requires several cycles before a perfect fit is achieved.

Sample sewer. The designer and patternmaker depend on the expertise of the sample sewer for information about the garment. Do seams match? Are there too many notches, or not enough? Are the notches placed correctly? Are there difficulties in sewing the garment together?

E-FIT SIMULATOR IS BORN

In 2004, E-Fit Simulator software was developed by the innovative mind of Iva Sareen, president of

TukaTech, who thought that fit approval, though down to a week, was not good enough for fast fashion developers who wanted their samples digitally on the same body in electronic form.* E-Fit Simulator software allows the entire garment to be sewn electronically on a digital model, all in 3D CAD, exactly the same as a Fit Model or fit form. Apply the fabric print or color and properties to see in motion if the garment fits on that model.

The *tension map* shows where the garment is tight or loose, or has too much material at every movement, exactly the way a live fit model would give feedback. The X-ray mode allows the patternmaker to see in 3D exactly where to make the adjustment on a 2D flat pattern, just like being in a fit session with a live model. Once patterns are corrected, a final garment can be sent electronically as a picture or Windows media movie, showing how the garment looks and fits. The designer can do e-fitting sessions on his or her laptop anywhere and get approval within hours, sometimes without making a physical sample.

E-Fit Simulation



Courtesy: Tuka Tech

* The 3D model is a scan of a live body (male, female, and children of any size). The model is transferred to the E-Fit Simulator; a bone structure is added; then animation is applied for real-time motion: walking, sitting, bending, and, yes, dancing.

APPAREL PRODUCT DEVELOPMENT

A commercial apparel designer is responsible for product development, though specific duties vary from company to company. The important elements needed to create a successful commercial line are:

- *Knowledge of the consumer.* A garment should be suitable for the person's age, image, and lifestyle.
- *Price.* Consumers evaluate the cost of a garment by anticipating use and pleasure received by wearing it.
- *Aesthetics.* The design, color, and decoration of a garment should enhance the face and figure of the consumer.


A designer starts a new line by researching color trends and fabric lines. Styling is determined by the designer's taste level, price of the line, the season, degree of fashion taste of the manufacturer, and past performance of specific styles.

The designer, assisted by design room personnel, may sketch, drape, or use a computer or flat patterns to create the first samples. A typical design room is staffed by an assistant designer, first patternmaker, sample cutter, and sample makers. Larger manufacturers add sketchers, fit models, and other assistants.

Merchandising the line is important to weed out the styles that do not sell well. The final line is shown to store buyers in the showroom, taken to retailers by traveling sales representatives, sent via computer images to buyers, and promoted through trade advertisements and buying office networks.

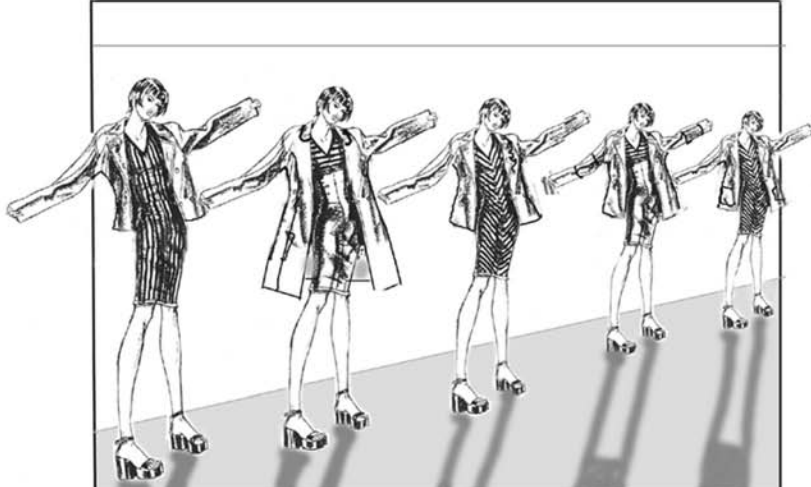
Production pattern development follows sales and prepares the first sample to be sewn efficiently in a factory and to fit an average customer. The designer is usually involved in sales presentations and all decisions that affect the product's aesthetics.

For in-depth information about product development, read *Inside Fashion Design*, Fifth Edition, written by Sharon Lee Tate, and published by Pearson/Prentice Hall.








THE ULTIMATE JACKET
2002

JACKET FEVER

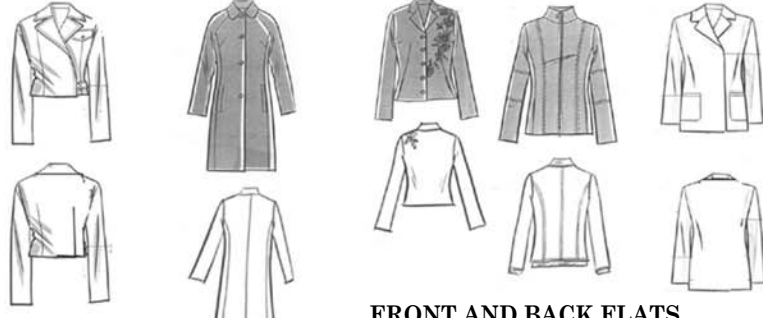


FABRICS

-  Bauhaus Brown Leather
-  Golden Grape Alpaca Wool
-  Surly Brown 100% Wool Tweed
-  London Gray Suede
-  Clockwork Orange Mohair Plaid

CUSTOMER

MY CUSTOMER is a modern woman who loves to wear different hip jackets as an expression of her moods and youthful cool.



FRONT AND BACK FLATS

Courtesy: Fashion Illustration for Designers by Kathryn Hagen

COST SHEET

A cost sheet is a complete record of each design and is used to *cost* the garment and establish the wholesale price. The top part of the form (items 1 and 2) is completed in the design room. It should include the names and telephone numbers of the salesperson and the fabric and trim companies, as well as fabric swatches, a sketch, and special pattern

information or instructions. A blank copy is included in the back of the book for duplicating.

The original copy is for the manufacturer or production person, who completes the lower part (items 3 and 4) and marks yardage. This provides the manufacturer with information required for production. A duplicate kept in the design room for quick reference makes for fewer interruptions in the design department.

COST SHEET

GENERAL INFORMATION			FABRIC INFORMATION		STYLE INFORMATION	
MARKER	Length	Yards	RESOURCE	<i>Cone Fabrics</i>	DIVISION	<i>Jr. Div.</i>
FABRIC			PATTERN	<i>6354</i>	STYLE	<i>1003</i>
			WIDTH	<i>45"</i>	PRICE	<i>62.50</i>
			PRICE	<i>2.75</i>	SEASON	<i>Spring</i>
LINING			CONTENT	<i>Poly/viscose</i>	REFER. NO.	<i>16165</i>
			COLORS	<i>Blk/white Green/Bl</i>	DATE	<i>5-5-09</i>
INTER			SALESMAN	<i>Mr. Tabing</i>	ITEM	<i>Blouse comb bikini</i>
			TELE. NO.	<i>216-322-6542</i>	SIZES	<i>6-18</i>
TRIM			MISC.		COLORS	<i>Blk/white Green/Bl</i>
					MISC.	

FORM 71 ADAMS PRESS, 830 SO. BROADWAY, L.A. 14, CA. 7-2151

1. MATERIAL	Estimate	Actual	Price	Amount
<i>Poly/cotton</i>	<i>2 1/2</i>	<i>2 1/4</i>	<i>3.50</i>	<i>8.75</i>
LINING				
INTER				

TOTAL MATERIAL COST

2. TRIMMINGS	Estimate	Actual	Quantity	Amount
BUTTONS		<i>6</i>	<i>4.00g</i>	<i>.15</i>
ZIPPERS		<i>1</i>		<i>.12</i>
<i>Elastic</i>		<i>23 3/4"</i>		<i>.25</i>
BELTS		<i>2</i>		<i>.35</i>
PLEATING				
TUCKING				

TOTAL TRIMMINGS COST

3. LABOR	Estimate	Actual	Dozen
CUTTING	<i>1.15</i>	<i>1.00</i>	<i>12.00</i>
LABOR	<i>2.75</i>	<i>3.00</i>	<i>36.00</i>

TOTAL LABOR COST

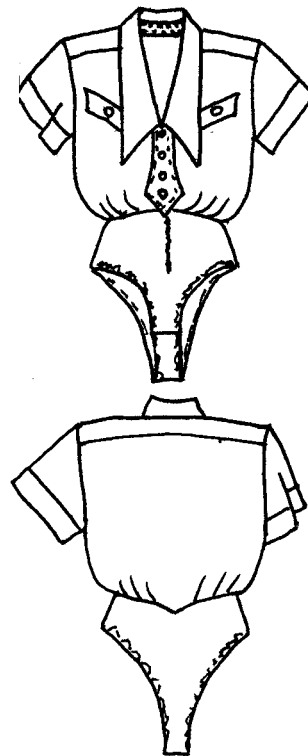
13.62

4. TOTAL COST

A. % OF MARKUP	<i>45%</i>
B. TOTAL WHOLESALE	<i>(round out) 62.50</i>

5. REMARKS:

SKETCH



Swatch here

PATTERN CHART

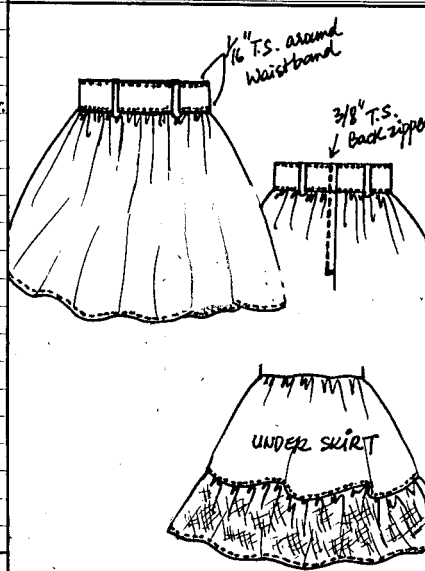
The pattern chart is a complete record of all pattern pieces within the pattern set. It also includes swatches and special pattern information. Each pattern shape is identified by name and number of pieces to be cut.

A color code is used to distinguish linings and interlinings from other pattern pieces. When completed, the chart is placed in front of the production pattern and given to the production manager. Some charts require sewing guides, as shown.

PATTERN PIECES:

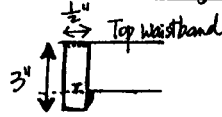
SELL	
1	Large piece skirt R.S.11.
1	Small piece skirt R.S.11.
1	Waistband
1	Belt block of 2 1/2" BELT S/D
1	Buckle cover S/D
	S/D self fabric for straight loop cut open 15/8" x 18" Pcs.
	CONTRAST (1) LINING # 88 (WHITE)
1	under skirt
	CONTRAST (2) SOLID TULLE # 30 (WHITE)
1	Bottom Ruffle
	PELLON: REGULAR NON-FUSIBLE PELLON #150
1	Waistband

STYLE: **3363**
 SIZE: **3-5-7-9-11**
 GRADE:



SEWING INSTRUCTIONS:

- DO NOT SEW LOT UNTIL 1st GARMENT IS OK'ED
- Sew overlock 1/2" all seams.
- 1/8" Baby hem bottom skirt x Ruffle.
- 1/6" T.S. around waist, under skirt lining seam.
- Set zipper center back 3/8" T.S.
- set loop at waistband notch (at center).
- set hanger tape at sides.



C.B.: 17" waist: 28" INSEAM:
 BUTTONS:
 ELASTIC:
 SHOULDER PADS:
 ZIPPER: ① 9" Nylon D.T.M.
 HANGER TAPE: 10" x 2

① ACME 2 1/2" SELF-COVERED RECTANGULAR BUCKLE BELT W/ SELF EYELETS.

CARE INSTRUCTIONS: # 9

FABRIC: self #	WIDTH	68"	MARKER	.69
cont ① #88 lining		44"		.36
cont ② #30 Tulle		54"		.47

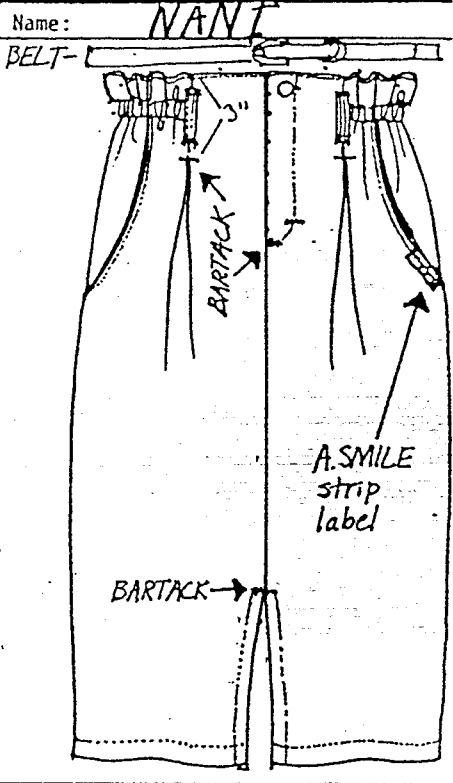
SIZES									
-------	--	--	--	--	--	--	--	--	--

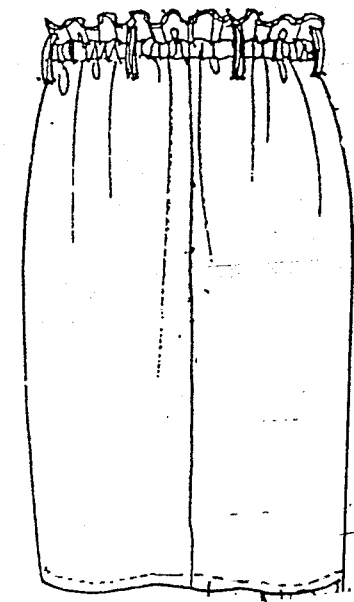
SPECIAL INSTRUCTIONS: SEND OUT
 S/D self loops, straight grain cut 15/8" to finish 1/2" x 4 1/2" cut each loop. Total (4) pcs.
 S/D ACME 2 1/2" self-covered Belt.

PATTERN MARKER: Betty DATE: 9-26-09

DESIGN SPECIFICATIONS SHEET

The design specifications sheet is a record of the finishing requirements for each design. It is used by those responsible for finishing to ensure that the garment meets company standards. Study the chart and compare the information to the design it represents.

Design Specifications	
Juniors	Womens
Date <u>8-4-09</u> Fit Base <u>NEW</u> Style <u>5J04507B</u>	
Name: <u>NANT</u>	
Belt- 	
Facing, <u>set</u> <u>2pc</u> 1pc _____ Width <u>2 1/2"</u> Lining _____ Bander: 2 needle _____ 4 needle _____ Finish: fold back _____ clean end _____ Other: <u>edgestitch top waist</u>	
Belt Loops: _____ Tunnel _____ Reg. Jean <u>(6)</u> Width _____ Other: _____ <u>1/2"</u> , to finish at <u>2"</u> , <u>1/2"</u> from top, <u>OVER FOR BARTACK PLACEMENT</u>	
Front: Plain _____ Inverted <u>(2)</u> Pleat Depth <u>1/2"</u> Other: <u>length - 3" - BARTACK</u>	
Front Pockets: <u>set to front 1/4"</u> , <u>edgestitch</u> Finished Opening <u>8 1/4"</u> Western _____ Reese _____ Welt _____ Trim _____ Button Hole: Vertical _____ Horizontal <u>X</u> Rivets _____ Other: _____ <u>Pockets - BARTACK - below elastic + at bottom</u>	
Belt: Self _____ Width <u>3/4"</u> Special _____ Other: <u>bonded</u>	
Side Seam: Felled _____ Open _____ Safety <u>1/2"</u> Cord _____ Other: _____	
Inseam: Felled _____ Open _____ Safety _____ Cord _____ Other: _____	
<u>ELASTIC: 1/2" x 17" cut length, 1/4" from top edge, start at inverted pleat</u>	
Seatseam: Felled _____ Open _____ Safety <u>1/2"</u> Cord _____	
Back Pocket: Button Thru _____ Welt _____ Double _____ Single _____ Patch _____ None _____ Flap _____ Trim: _____ Rivets _____ Other _____ Buttonhole: Vert. _____ Horizontal _____ <u>NONE</u>	
Fly: 2 pc. <u>(1) fly extension</u> other <u>+ 1/2 turnback</u> Fly Stitch: 1 needle <u>X</u> 2 needle _____ Cord _____ Bottom: _____ <u>6" nylon</u>	
Bottoms: <u>SPLIT - 1/2" clean finish</u> Hem <u>1" clean finish</u> <u>BARTACK</u> Width _____ Snap _____ Button _____ Elastic _____	
Pocket Lining: Self <u>X</u> + Lining <u>A SMILE logo</u>	
Buttons Type _____ Ligne <u>24</u> Mfg. _____ Color <u>DTM</u> or Snaps: Finish _____	
Fabrics Model Will Be Made In: <u>09</u>	



FORM MEASUREMENT CHART

Circumference Measurements

1. Bust: _____, plus 2" ease _____
2. Waist: _____, plus 1" ease _____
3. Abdomen: _____
4. Hip: _____, plus 2" ease _____

Upper Torso (Bodice)

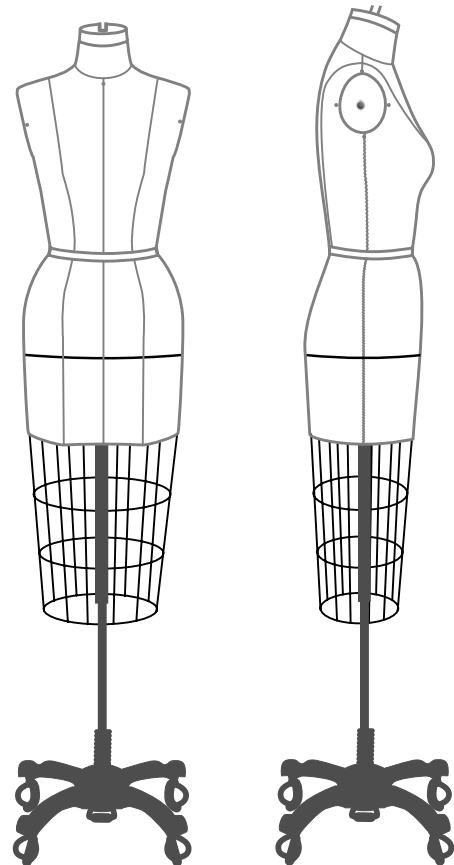
5. Center length: F _____, B _____
6. Full length: F _____, B _____
7. Shoulder slope: F _____, B _____
8. Strap: F _____, B _____
9. Bust depth: _____, radius _____
10. Bust span: _____
11. Side length: _____
12. Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____, B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____, B _____
20. Dart placement: F _____, B _____

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____, B _____
23. Hip arc: F _____, B _____
24. Crotch depth: _____
25. Hip depth: C.F. _____ C.B. _____
26. Side hip depth: _____
27. Waist to ankle: _____
Waist to knee: _____
Waist to floor: _____
28. Crotch length: _____
Vertical trunk: _____
29. Upper thigh: _____
Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____
Foot entry: _____

Form

Form make and type _____
Size _____ Year _____



Special Information

Set form to desired height and measure the following:

- C.F. waist to floor _____
C.B. waist to floor _____
C.B. neck to floor _____

PERSONAL MEASUREMENT CHART

Circumference Measurements

1. Bust: _____
2. Waist: _____
3. Abdomen: _____
4. Hip: _____

Upper Torso (Bodice)

5. Center length: F _____ B _____
6. Full length: F _____ B _____
7. Shoulder slope: F/R _____ F/L _____
B/L _____ B/L _____
8. Strap: F/R _____ F/L _____
9. Bust depth: F _____ Radius _____
10. Bust span: _____
11. Side length: F/R _____ F/L _____
12. *Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____ B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____ B _____
20. Dart placement: F _____ B _____
21. Standard dart intake:
Front = $1''$ (2 darts $1/2$ to $5/8''$)
Back = $2''$ (2 darts 1 to $1\ 1/4''$)

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____ B _____
23. Hip arc: F _____ B _____
24. Crotch depth: _____
25. Hip depth: CF _____ CB _____
26. Side hip depth: R/S _____ L/S _____
27. Waist to knee _____ ankle _____ floor _____
28. Crotch length _____ Vertical trunk: _____
29. Upper thigh: _____ Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____

*Measuring the Arm

Use your measurements (shown by asterisks) for the draft of the basic sleeve. Read the instructions. Use the *cap height* from the sleeve measurement chart, or use the formula to determine cap height.

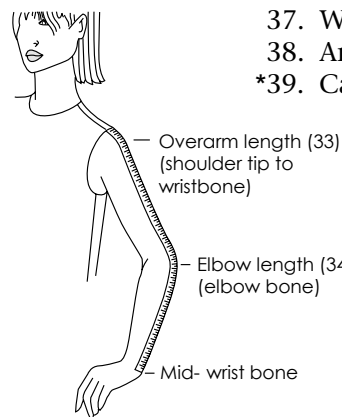
Personal Figure Variations

- A. Head height relationship:
Bust _____ Waist _____
Crotch _____ Knee _____
- B. Bust/back/chest relationship:
Bust _____ Back _____
- C. Hip types: _____
- D. Arm types: _____
- E. Abdominal/thigh relationship:
Abdominal _____ Thigh _____
- F. Shoulder type _____
- G. Shoulder/hip relationship:
Shoulder _____ Hip _____
- H. Leg types _____
- I. Leg types _____
- J. Figure stance: _____
- K. Asymmetric figure. Record high side, right and left.
Shoulder: _____ Hip: _____
- L. Tilting waistline. Record high and low.
Front: _____ Back: _____
- M. Bust/waist = _____
Waist/hip = _____
Bust/hip = _____
- N. Other variations: _____

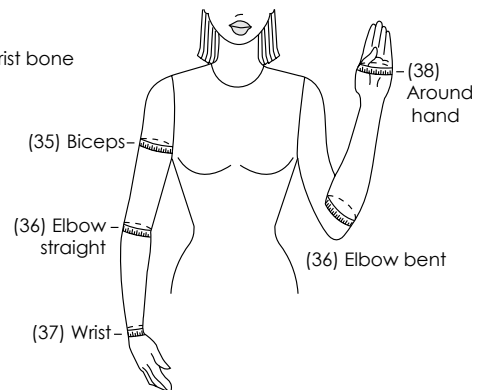
Personal Arm Measurements

33. Overarm length:* _____
34. Elbow length:* _____
35. Biceps plus 2":* _____
36. Elbow bent (reference) _____
37. Wrist (reference) _____
38. Around hand (reference) _____
- *39. Cap height _____

Length



Circumference



ANSWERS TO SELF-EVALUATION TESTS

Test 1: A to B = 10 (8ths), or 1-1/4"; B to D = 3/8";
A to D = 13 (8ths) or 1-5/8"; D to C = 4/8", or 1/2"

Test 2: A = 13/16"; A to B = 18/16ths, or 1-1/8";
B to C = 4/16ths, or 1/4"; C to D = 9/16ths, or 5/8"

Form Measurements and Figure Analysis

Form Measurements and Figure Analysis

WHO IS THE STANDARD IDEAL FIGURE?

Who Needs Her?

Does This Elusive Figure Have Standards?

Do Perfect Ratio Measurements Mean
Perfect Proportions?

Forms: Willow-Caned to Humanlike

PATTERN INDUSTRY STANDARDS

DEPARTMENT STORE STANDARDS

OTHER ATTEMPTS AT STANDARDIZATION

ASTM STANDARDS

Figure Analysis for Personal Use or
for Client

LANDMARK TERMS

MEASURING FORM AND MODEL

Preparing the Form for Measuring

Preparing the Model for Measuring

Taking Measurements

HORIZONTAL BALANCE LINE (HBL)

CIRCUMFERENCE FOR FORM AND MODEL MEASUREMENTS

HORIZONTAL ARC FOR FORM AND MODEL MEASUREMENTS

Front

Back

Model for Personal Fit

Neck Circumference

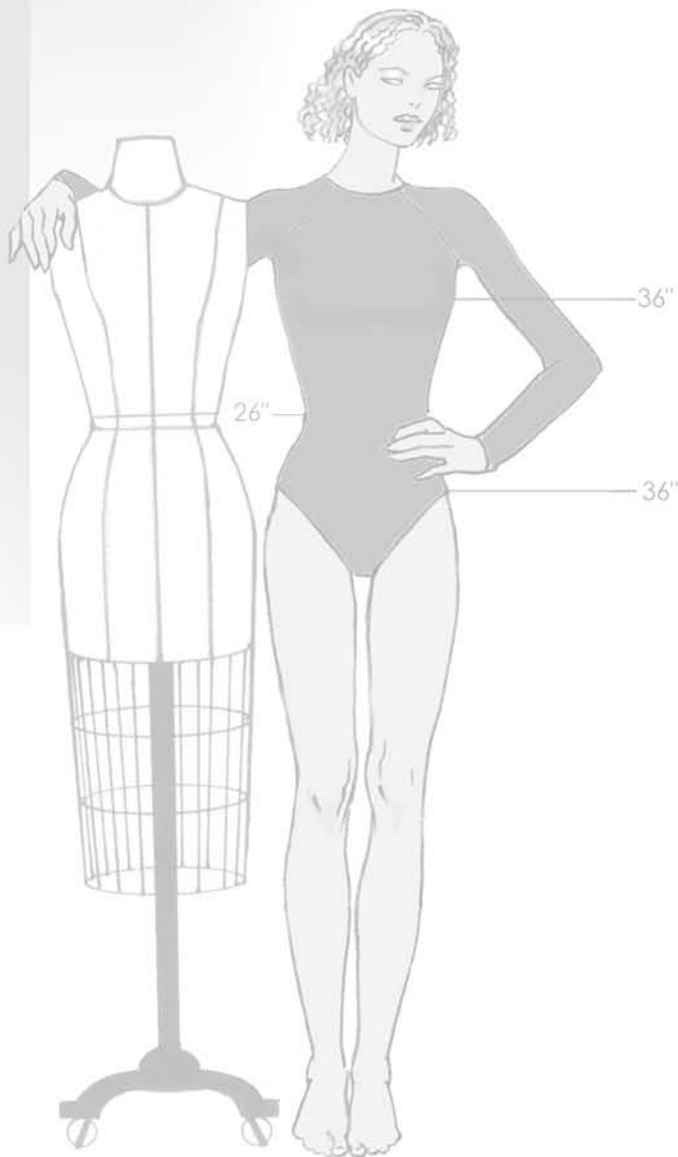
VERTICAL MEASUREMENTS FOR FORM AND MODEL

Front and Back—Form and Model

Personal Fit: Asymmetric Verification

New Strap Measurement

STANDARD MEASUREMENT CHART



WHO IS THE STANDARD IDEAL FIGURE?

She is a composite figure whose measurement standards are based upon who is listening to whom. She evolved from consumer feedback to buyer, buyer to manufacturer, and manufacturer to model form company. Her standards are whatever successful manufacturers, commercial pattern companies, chain and department stores, and industrial form companies say they are. She is a form; she is a figure; she is a set of measurements. And her silhouette changes at the slightest whim of fashion. She is considered “ideal” only when her measurements satisfy a majority of consumers.

Who Needs Her?

Technicians need her dimensions for patternmaking and fittings; designers need her silhouette for creating new designs; manufacturers need her for showings; models need to have her dimensions to be hired; and consumers need her for their representation.

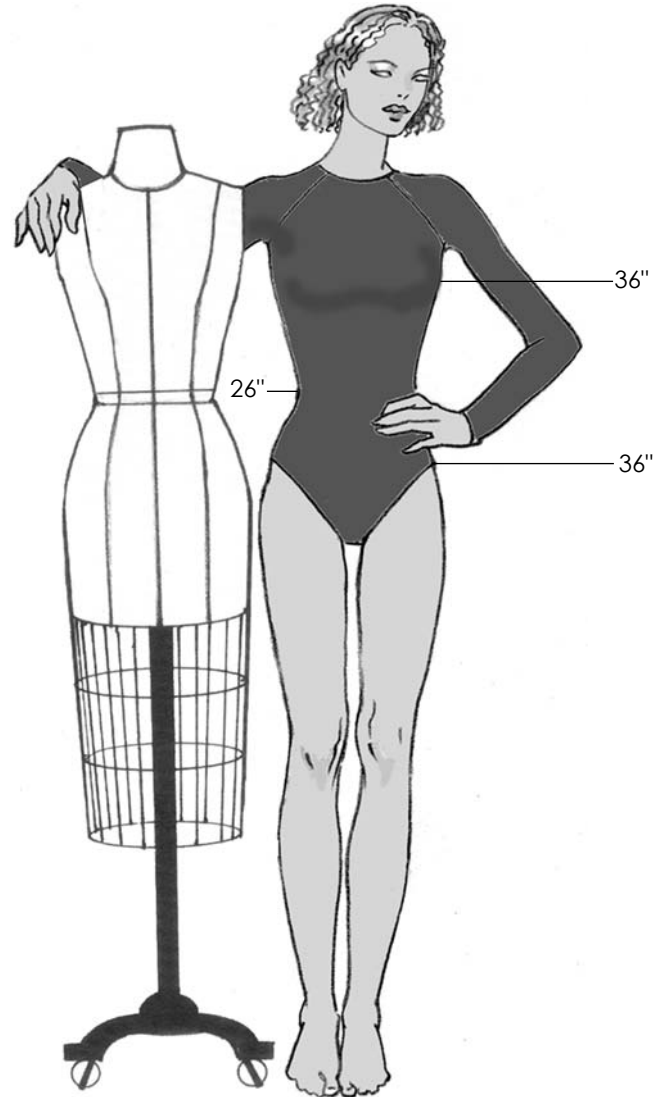
Does This Elusive Figure Have Standards?

Even though her dimensions vary, she does have standards. She is symmetrical, with an upright stance and aesthetically pleasing body proportions, with a ratio of 10- to 12 1/2-inch differences among bust, waist, and hips. These standards are based strictly on Western concepts of what is ideal. There will never be a universally acceptable standard because of the variety of anatomical figure types. Other countries set their own standards based on their own regional concept of the ideal figure.

Some manufacturers prefer not to use standardized measurements. They want the flexibility to change measurements quickly to suit customer needs. Increasing world trade has created a need for a central database that contains regional measurements for non-Western trading partners. Computer technology may ultimately provide ready access to such information.

Do Perfect Ratio Measurements Mean Perfect Proportions?

Not necessarily so. Bulk (flesh) distribution around the skeletal frame must be considered—for example, large back and small bust; large bust and small back; wide, flat front waist; and rounded, protruding back waist; large hip and flat stomach; protruding stomach and flat buttocks.



Forms: Willow-Caned to Humanlike

For the past 140 years, forms have adapted to the whims of fashion by constantly being modified in shape and measurements to satisfy the needs of changing silhouettes. Original forms were shapeless, willow-caned models with woven mounds that were padded to individual specifications. Today's forms are partially made by hand. They are framed in metal, molded with papier-mâché, laid over with canvas, and covered in a princess garment of linen. The seam lines and princess stylelines of the cover garment set the boundaries between the front and back bodice. The waistline seam defines the upper and lower torso. In the manufacturing process, human errors can and do occur. Before measuring, examine the form for possible errors. Make adjustments by following the instructions in the Measuring Form and Model Section later in this chapter. Forms of today represent the most common dimension within each size group of males and females, children to adults. Forms come with detachable arms and legs and collapsible shoulders for ease of use.

to the form company. Forms can be ordered to the specific measurements of a private client; and companies can order forms with special measurements reflecting their consumer.

Cloning Fit Models

There are a number of new innovations in the development of forms. Material used in humanlike forms use a liquid-type substance instead of canvas and metal. I am familiar with TUKAforms and have seen them being developed. The forms are an exact replica of the company's fit model. The model is scanned in a cube with a light-emitting device that produces a perfect replica of the model. Forms are made with a liquid substance that, when solidified, feels like skin and flesh and can be penetrated with pins without harm to the form. The model form helps patternmakers and designers to develop garments with more accuracy in less time and without a live model.

Who Sets Form Measurements?

Form measurements are determined by the consumer's feedback to the buyers and buyer feedback



PATTERN INDUSTRY STANDARDS

In response to national standards and consumers' needs, the pattern industry established the Measurement Standard Committee, which devised its own standard set of figure types and sizes. The examples below are composites of the pattern industry designated figure types by age and height categories. The measurements are listed on the pattern envelope. Their standards may already be influenced by the American Society for Testing and Materials (ASTM) and Textile Clothing Technology Corp's [TC²] USA National Size Survey measurements.

DEPARTMENT STORE STANDARDS

Department stores and catalog merchants such as Sears, Montgomery Ward, and Spiegel have developed their own strict specifications to satisfy the needs of their customers. Some use or have used National Bureau of Standards measurements. Others conduct surveys and samplings of the population by sending survey forms to their consumers, requesting their measurements. This information is compiled, and specification sheets are given to the manufacturer to use in developing patterns for their consumers. JCPenney, Victoria's Secret, and Jockey now use ASTM [TC]² USA National Size Survey for their measurements.

OTHER ATTEMPTS AT STANDARDIZATION

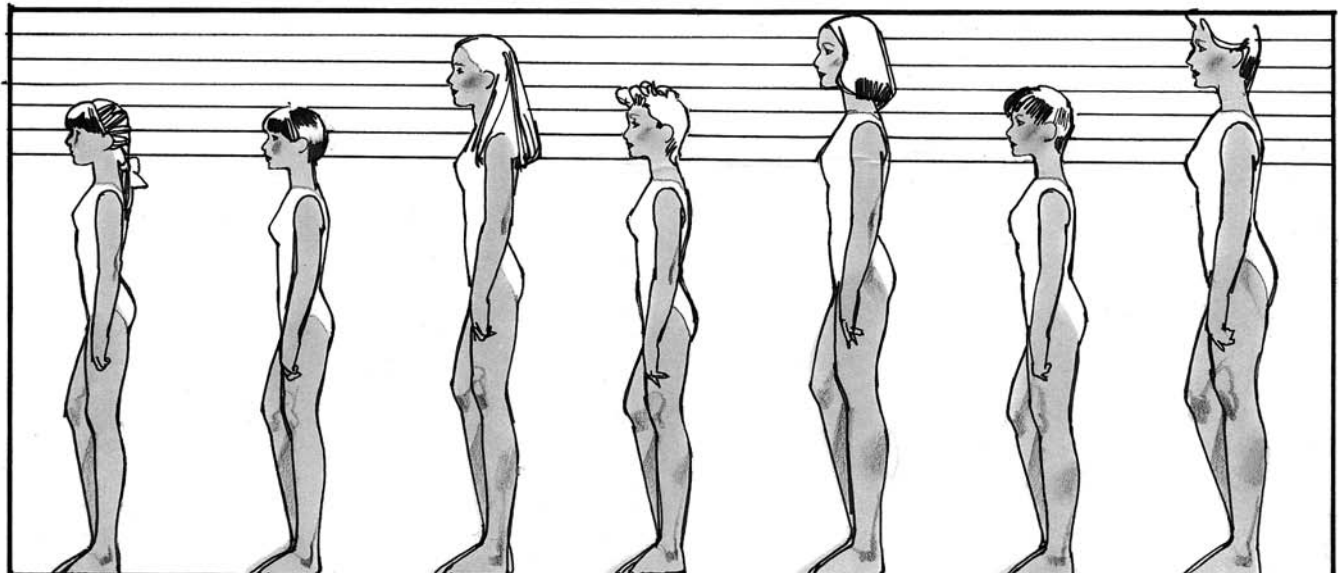
Attempts to standardize sizes in America originally began in the late 1800s, when manufacturers mass-produced farm labor uniforms in small, medium, and large sizes—which proved less than ideal. The next effort was made by the military in its attempt to mass-produce well-fitting uniforms. In 1901, the federal government created the National Bureau of Standards, a nonregulatory agency for the purpose of standardizing measurements. By 1970, NBS had developed a complete size range standard based on frequency measurements from large segments of the population.

ASTM STANDARDS

The American Society for Testing and Materials partnered with [TC]² USA National Size Survey for the purpose of standardizing body measurements for better fitting apparel. The research was intensive, measuring 10,000 subjects whose bodies were scanned. Two hundred points were chosen for accurate body measurements. For additional information or to order size standards, contact ASTM at 100 Barr Harbor Dr., West Conshohocken, PA 19428; phone: (610) 832-9585. The following tables of measurement are available:

- Children: Sizes 2 to 6X/7, order # (D5826)
- Adult Female Misses: Sizes 2 to 20, order # (D5585)
- Women age 55 and older, order # (D5586)
- Menswear: order #(D6240-98) 2006

Composite of Figure Types



5'1" to 5'3"	5' to 5'1"	5'4" to 5'5"	5'2" to 5'3"	5'5" to 5'6"	5'2" to 5'3"	5'5" to 5'6"
Young junior/Teen	Junior petite	Junior	Miss petite	Miss	Half-size	Woman
5/6-15/16	3jp-13jp	5-15	6mp-16mp	6-20	10 1/2-24 1/2	38-50

Figure Analysis for Personal Use or for Client

If your figure is less than perfect, remember it's the pattern that must be perfect, not your figure.

To begin the process, it will be necessary to assess the unique characteristics of the body being measured. The model should wear a leotard over regularly worn foundation garments for taking measurements. See the Personal Measurement Chart later in this chapter.

Each group of figure variations is alphabetized (A through J), and each figure within the group is given a number. Circle the number that applies to your figure, then record it under the appropriate letter on the Personal Measurement Chart.

A: Head Height—A Measuring Device for Comparison

- Measure the length of your head from the top of the crown to chin level. Use the head measurement to mark each head length down from the chin.
- The blue lines behind the sample models indicate head levels. The broken lines crossing the sample models indicate where the bust point, hip, crotch, and knee are in relation to the standard head marks of the perfect model with the blue leotard.
- Compare your head locations with the model. Record if the locations are above or below head levels at: bust __, waist __, hip __, knee __.

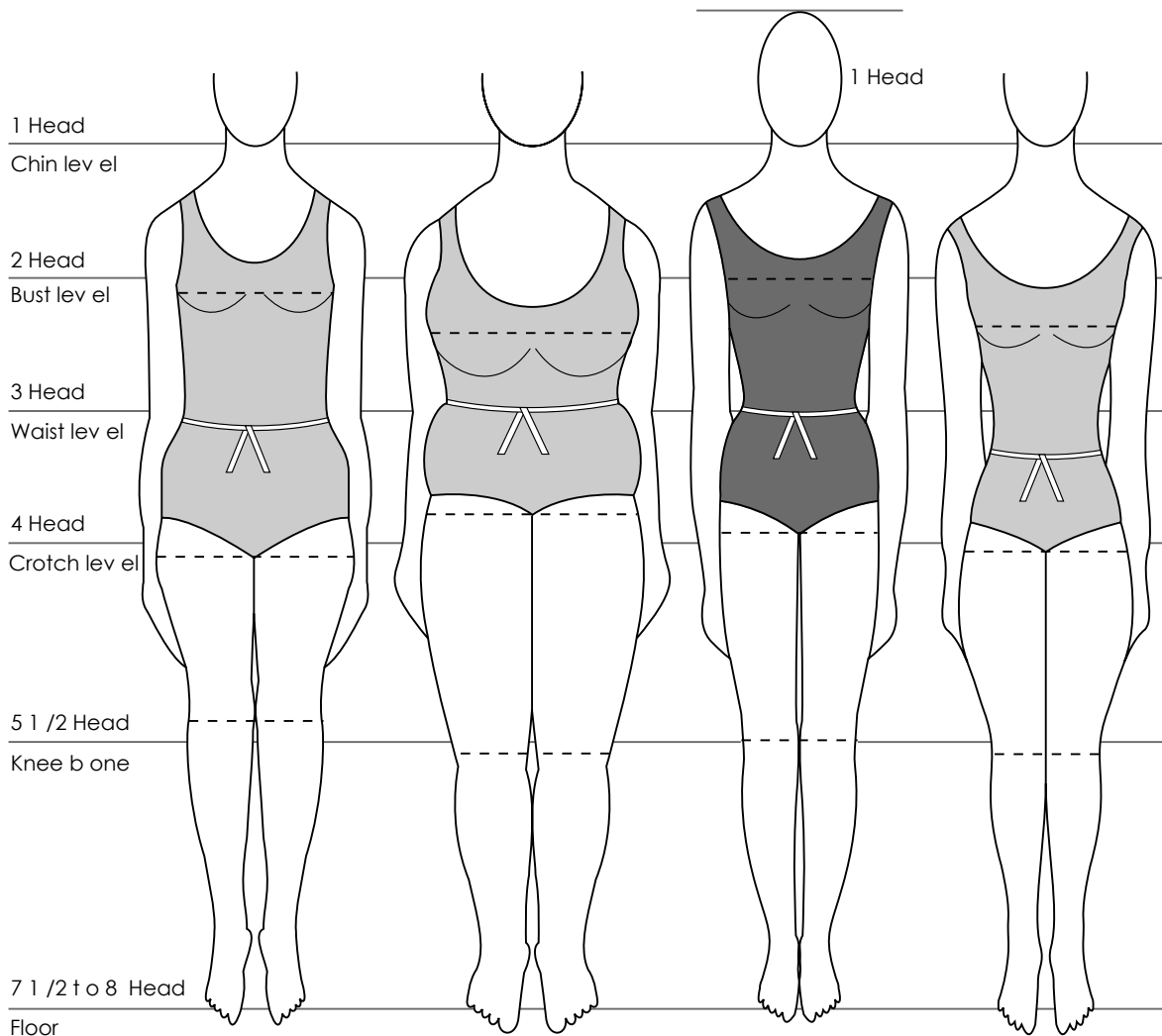


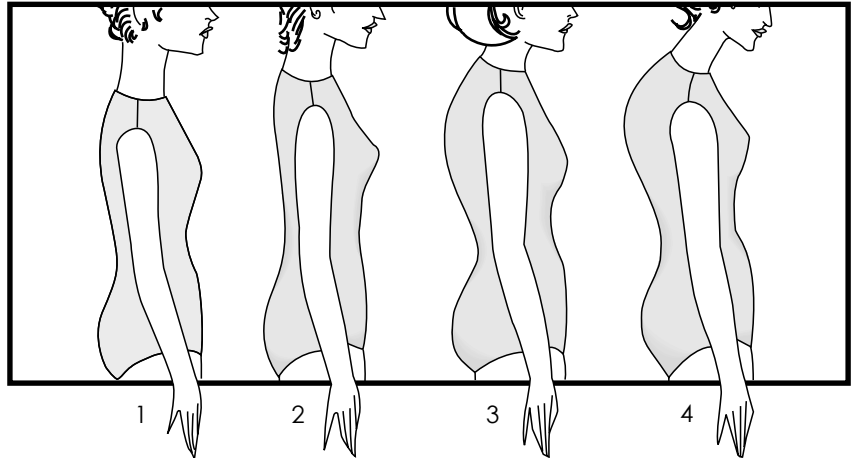
Figure Analysis Continued

The following discussion illustrates anatomical variations. Circle the number(s) that apply to your figure. Record your figure in spaces A through N. This information is helpful in developing your personalized basic pattern set.

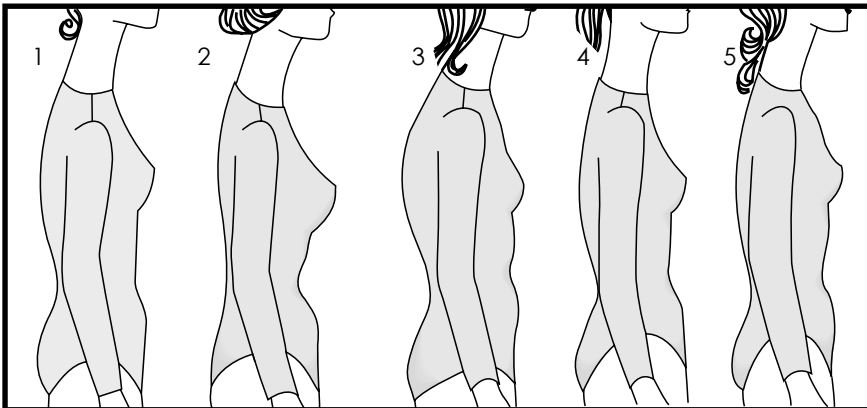
B: Back Types

1. *Ideal*: Spine has a soft curve and slight protruding buttock.
2. *Flat*: Straight back causes buttocks to be prominent.
3. *Rounded*: Dominant spine curve and prominent buttock.
4. *Dowager's hump*: Shoulders fall forward in the extreme.

Back types



Back/Bust Relationship



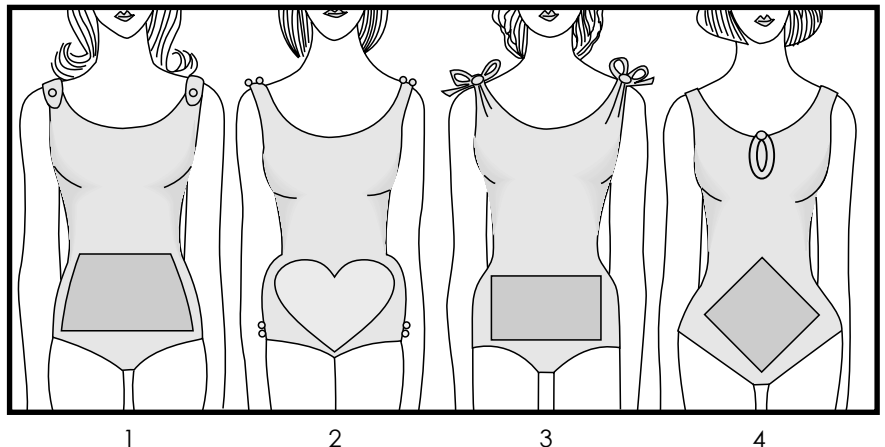
C: Back/Bust/Chest Relationship

1. *Ideal*: Bust/buttocks protrude in a harmonious relationship.
2. *Narrow back/large bust*.
3. *Full back/small bust*.
4. *Hollow inward chest*.
5. *Pigeon, a dominant chest bone*.

D: Hip Types

1. *Ideal*: Pleasing proportion among waist/shoulders/hips.
2. *Heart shape*: Protruding roundness from waist. Legs tend to meet at crotch.
3. *Square shape*: Square out from side seams.
4. *Diamond shape*: Widest part of the hip bone emphasized by a smaller waist and shoulder.

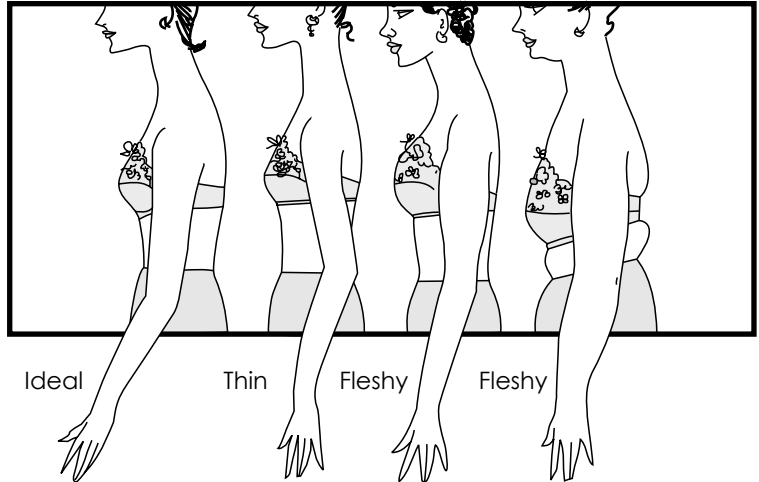
Hip type



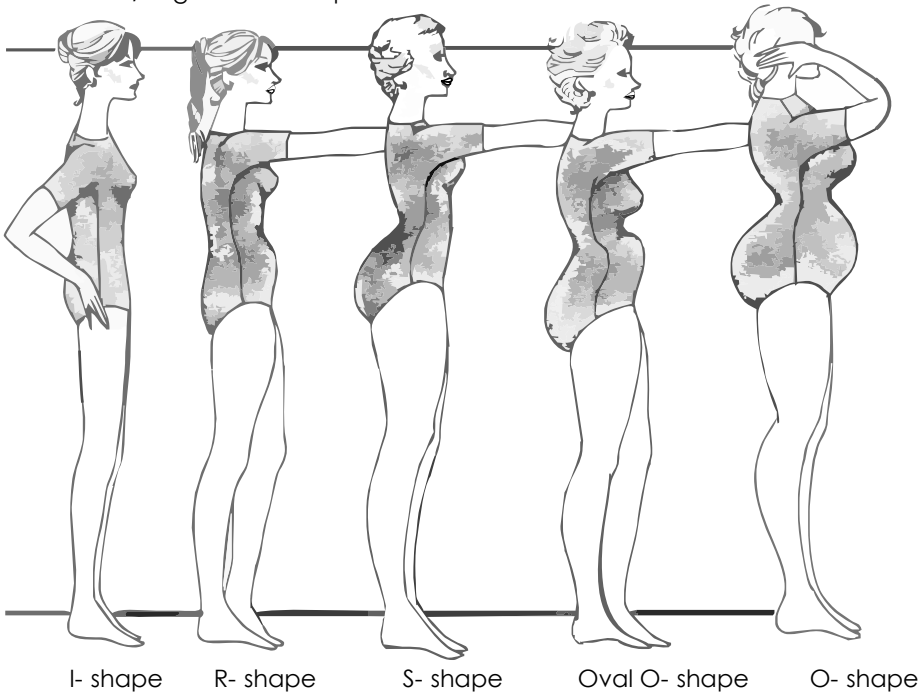
E: Arm Types

1. *Ideal*: Flesh and bone in perfect harmony.
2. *Thin*: Boney appearance, with prominent wrist, elbow, and shoulder bones.
3. *Full arms*: Flesh starting to fall from top of the arm.
4. *Fleishiness*: Bone structure covered with flesh. Flesh has fallen from top of the arm.

Arm Types



Abdominal/Thigh Relationship

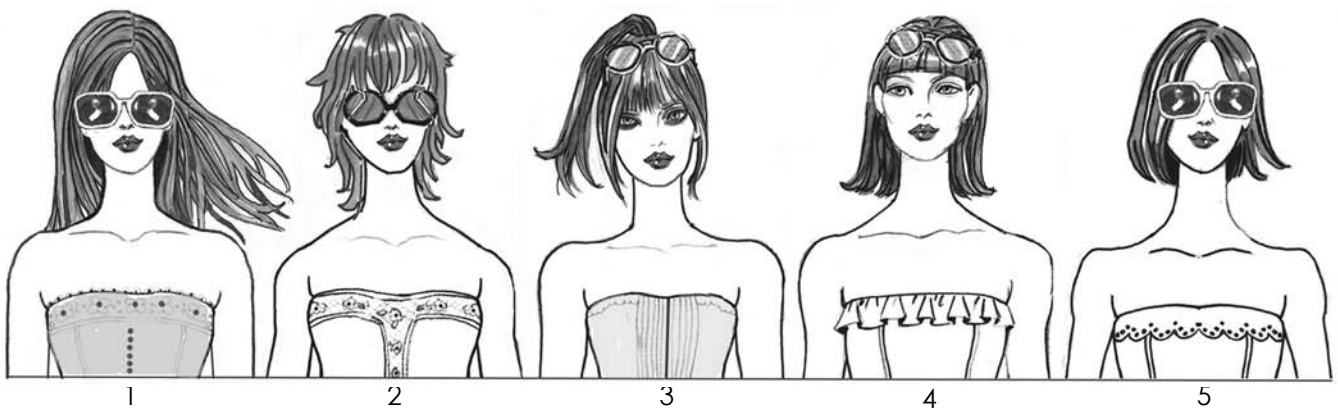


F: Abdominal/Thigh

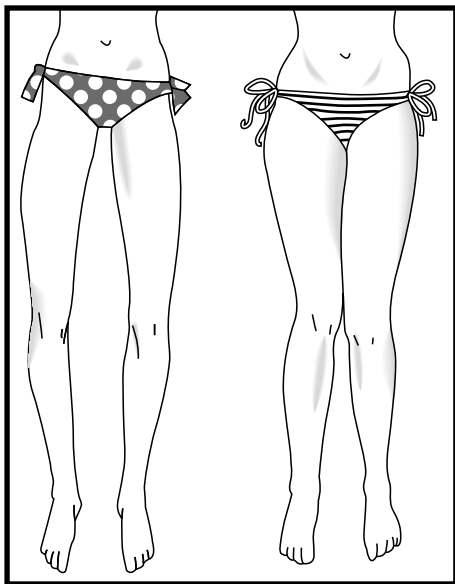
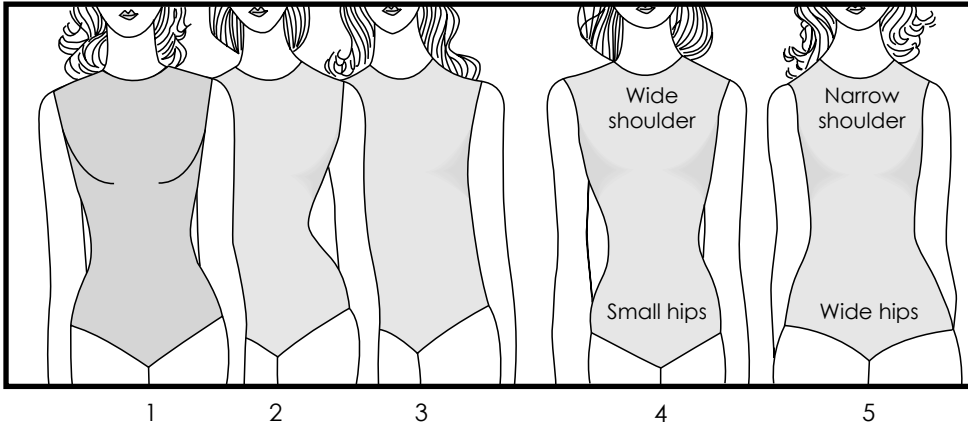
To compare, have the assistant view your profile. If your shape differs from the examples, record on the Personal Measurement Chart under "Deviation."

G: Shoulder Types

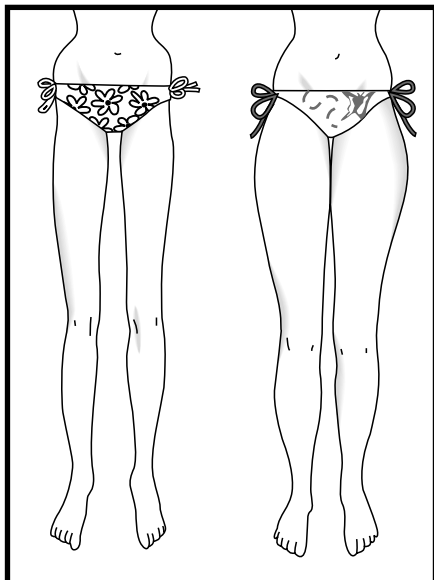
1. *Ideal*: Shoulder slope is approximately 25°.
2. *Slopped shoulder*: More than 25°.
3. *Square shoulder*: Near 90° angle with neck.
4. *Muscular*: Neck to shoulder.
5. *Bony*: Dominant clavicle.



Shoulder/Hip relationship



1- Bowlegs 2- Knock- knees



3- Thin 4- Full thigh

H: Shoulder/Waist/Hip

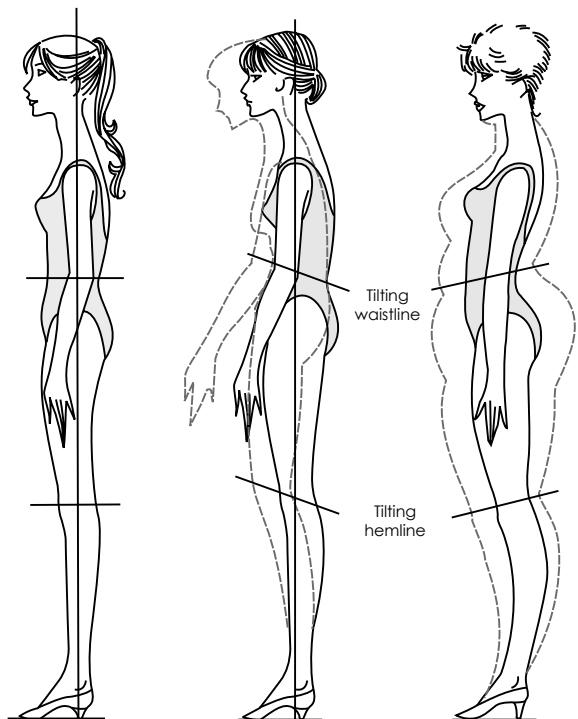
1. *Ideal:* Shoulder/waist/hip in harmony.
2. *Hourglass:* Created by a small waist.
3. *Straight line:* Slight waist definition.
4. *Wide shoulder/narrow waist.*
5. *Narrow shoulder/wide hips.*

I: Leg Types

1 through 4. Identified by their names.

J: Figure Stance

The model's stance affects the hang and balance of garments. Pattern adjustment will be required.



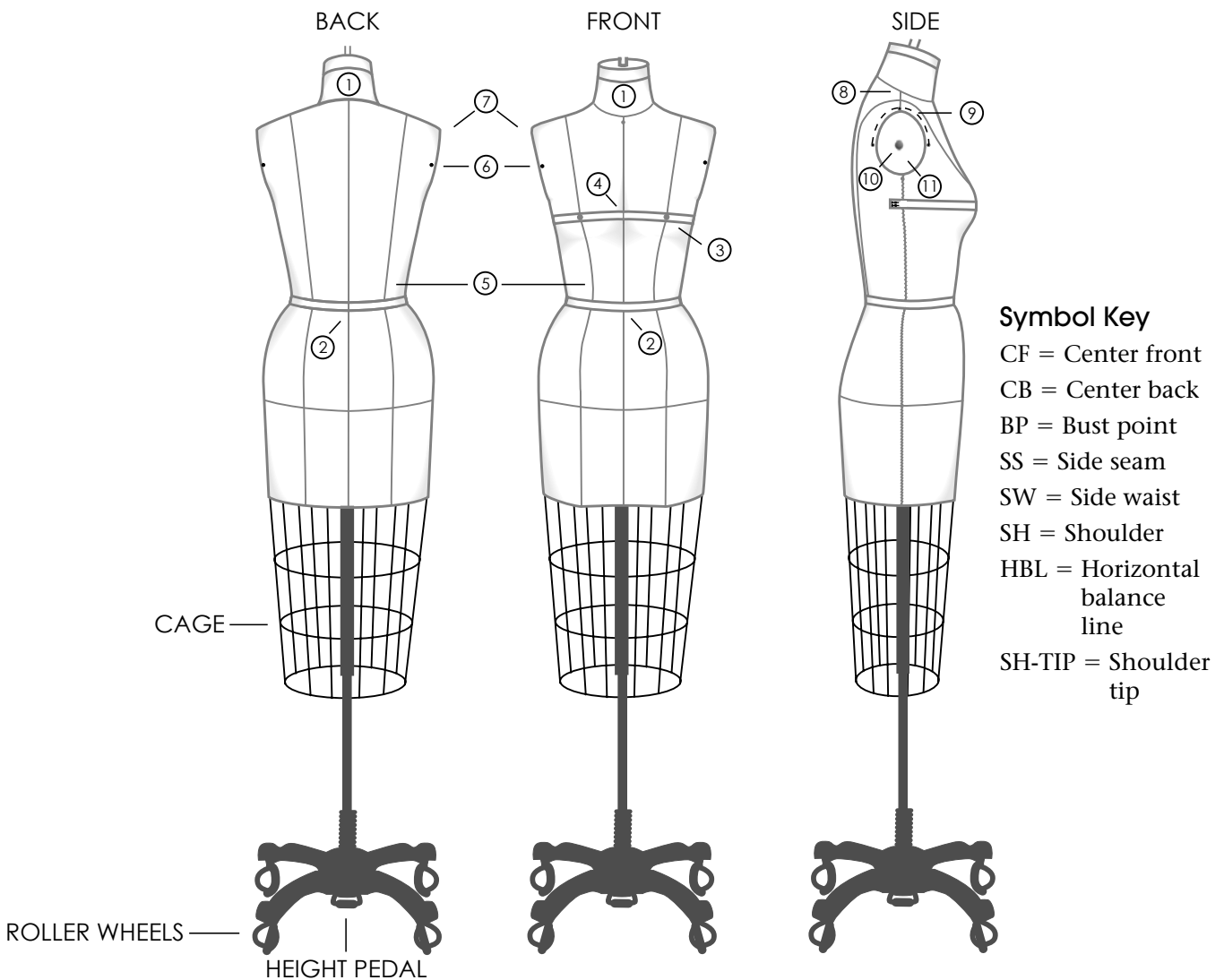
1- Perfect 2- Bent 3- Upright

LANDMARK TERMS

To measure accurately, you must know where the landmarks are and identify them point to point for specific locations. The following landmarks identify the parts of the form that are referred to when measuring from one landmark to another. Numbers refer to both the front and back wherever indicated.

Personal fit. The instruction applies to models that will be measured for drafting the basic patterns.

1. Center front neck
Center back neck
2. Center front waist
Center back waist
3. Bust points
4. Center front bust level (between bust points)
5. Side front (princess)
Side back (princess)
6. Mid-armhole front
Mid-armhole back (at level with plate screw)
7. Shoulder tip
8. Shoulder at neck (shoulder/neck)
9. Armhole ridge or roll line
10. Plate screw
11. Armhole plate



MEASURING FORM AND MODEL

Forms are sometimes imperfect, with measurements not always equal on each side of the center. Check and remark the side seams if necessary. The shoulder line may be misplaced, causing a sleeve to hang out of alignment. (This problem is corrected at the time of the fitting.)

Drafting depends on measurements taken from a form or model. Measurement must be taken carefully to avoid fitting problems.

Personal measurements. Reference to personal fit (*shown in italics*) will accompany some of the instructions.

Preparing the Form for Measuring

Figure 1

- **Bust bridge:** Cut a strip of cloth $1\frac{1}{2} \times 26$ inches. Fold edges to center and fold again. Place across bust points, ending 1 inch past the side seam. Push pins through to secure. Trim unneeded length. Thrust pins through bust points. Mark center line.
- **Waistline:** Replace waistline tape, if damaged.

Figure 2

- **Pinhead guides:** Thrust pins through shoulder tip at the ridge, or roll line, mid-armhole at level with the plate screw, and $\frac{3}{8}$ inch below the center front neck.

Figure 3

- **Armhole depth chart:** To locate armhole depth, choose the measurement from the Armhole Depth Chart below that corresponds to the form size. Measure down from the armhole plate and thrust a pin head at the location. Grade up or down by $\frac{1}{8}$ inch for smaller or larger sizes. As with establishing a set of measurements, they are to be test fitted with sleeve attached. Make adjustments if necessary.

Size $\frac{3}{4}$ — $\frac{3}{8}$ "	Size $\frac{11}{12}$ — $\frac{3}{4}$ "
Size $\frac{5}{6}$ — $\frac{3}{8}$ "	Size $\frac{13}{14}$ — 1 "
Size $\frac{7}{8}$ — $1\frac{1}{2}$ "	Size $\frac{15}{16}$ — $1\frac{1}{8}$ "
Size $\frac{9}{10}$ — $\frac{5}{8}$ "	Size 18— $1\frac{1}{4}$ "

- To determine cap height, measure up from armhole depth to shoulder tip and add $\frac{3}{8}$ inch.

Figure 1

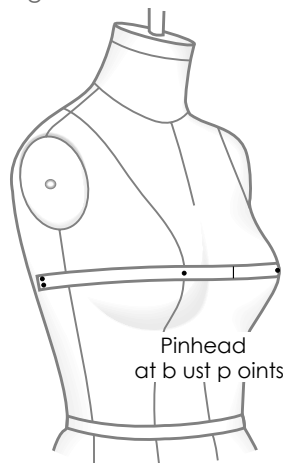


Figure 2

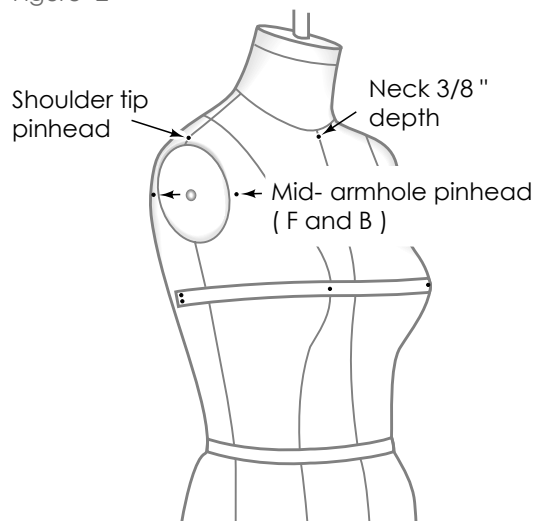
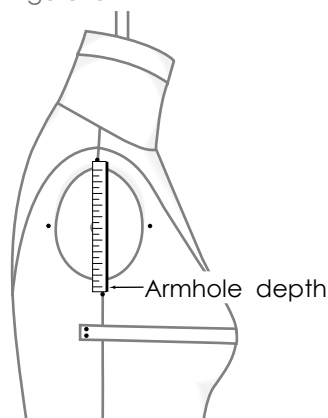


Figure 3



Preparing the Model for Measuring

Have a friend assist in measuring and recording on a copy of the Personal Measurement Chart later in this chapter.

The model should wear a *bodysuit* or *leotard* with regular foundation garments worn underneath.

Figures 1a, b

Marking the garment: Lay garment flat. Draw a line down the center front and back with tailor's chalk, or fine-point washable pen.

Figures 2c, d, e

Neckline: Dot mark center of the clavicle bone at center front and the dominant bone (nape) at center back neck. To complete the neckline shape, place a delicate chain necklace around the model's neck, touching dot marks. Carefully draw neckline curve with a fine-point washable pen.

Figures 3f, g, h, i

Dressing the model: The front chalk line is placed between the busts, navel, and crotch. The back chalk line is centered along the spine line, crease of the buttocks, and between the legs. The front and back models (f and g) are marked, as follows:

Completing neckline: With ruler placed at the center lines and to the dot marks of clavicle and nape, draw center lines to neck.

With ruler on shoulder seam, draw line to neck (c).

Mid-armholes: With arms to the sides, mark the ends of crease line with dots, or with straight pins crossed.

Armhole depth: Place finger under the arm where back muscle and arm articulate. Chalk-mark at bottom of the finger at side seam (i).

Bust bridge: See Figure 1 on previous page for instructions.

Waistline band: Place a belt, elastic, or band comfortably (not too tight) around the waist.

Figure 1 FRONT BACK

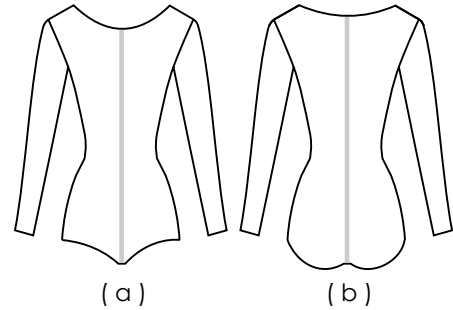


Figure 2

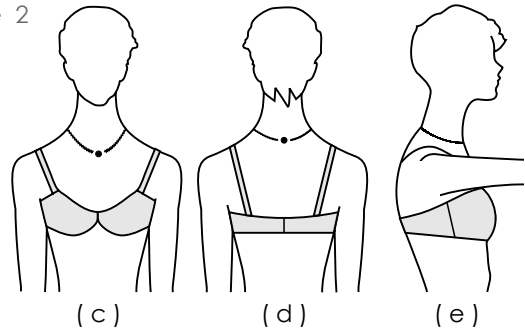


Figure 3

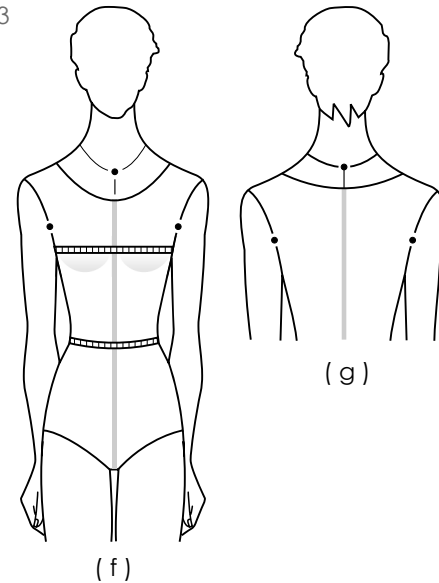
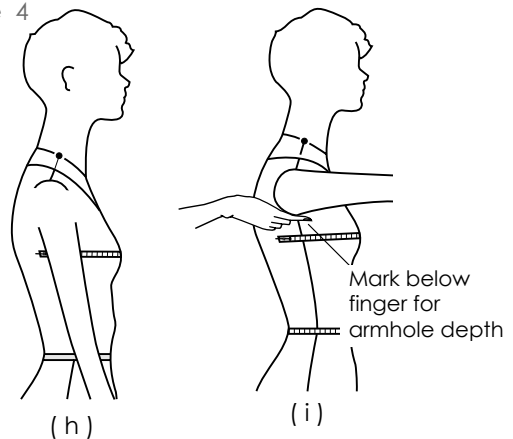


Figure 4



Taking Measurements

- Place the metal tip end of the tape measure at one reference point and extend to the next reference point when taking measurements.
- Record measurements on the Model Measurement (Form or Chart or the Personal Measurement Chart found at the end of the chapter).
- Numbers in parentheses correspond with those on the chart.
- Arc measurements are taken from center lines to the side seam.
- The same half of the front and back of the form is measured.

HORIZONTAL BALANCE LINE (HBL)

Figures 1, 2, and 3

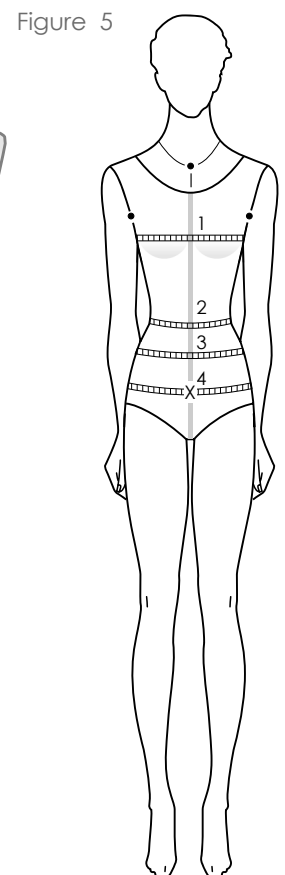
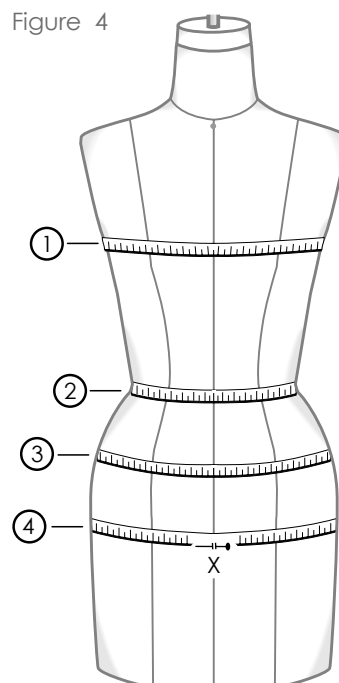
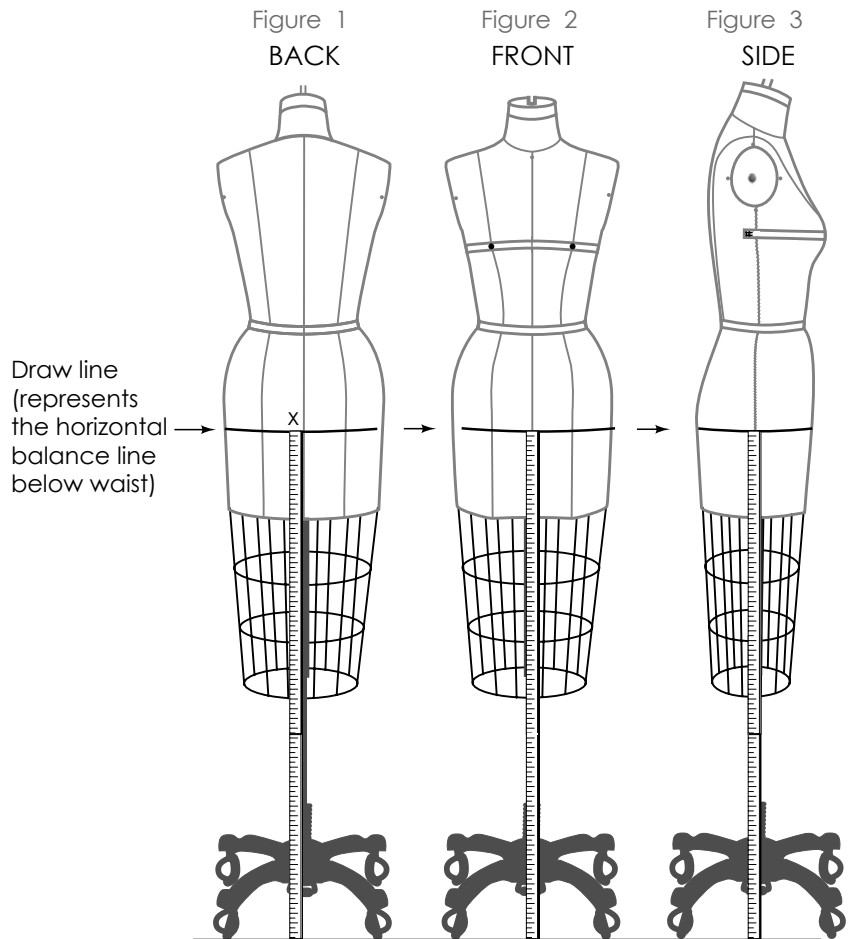
- Measure up from the floor to the pin mark (X) at center front (Figure 1).
- Use this measurement to measure up from the floor and pin mark center back and side seams. Pin mark at princess lines. Recheck measurements (Figures 1 and 3).
- Draw a line around the hip touching each of the pin marks, or use adhesive tape to mark the hipline. The standard hip depth is 6 to 7 inches down from the center front waist for juniors and petites, 8 to 9 inches down for missy size.

Personal fit. Follow the instructions very carefully and double check. If incorrect, the hemline of the skirt will not hang parallel with the floor.

CIRCUMFERENCE FOR FORM AND MODEL MEASUREMENTS

Figures 4 and 5

- *Bust (1).* Across bust points and back.
- *Waist (2).* Around waist.
- *Abdomen (3).* Three inches below waist.
- *Hip (4).* Measure widest area with tape parallel with floor. Pin to mark hip level at center front (referred to as X-point).



HORIZONTAL ARC FOR FORM AND MODEL MEASUREMENTS

Front

Figure 6

- *Across shoulder (14)*. Shoulder tip to center front neck.
- *Across chest (15)*. Center front to 1 inch above mid-armhole (pinhead mark).
- *Bust arc (17)*. Center front, over bust point, ending 2 inches below armplate at side seam.
- *Bust span (10)*. Place tape across bust points; divide in half for measurement.
- *Waist arc (19)*. Center front waist to side waist seam.
- *Dart placement (20)*. Center front to side front (princess line).
- *Abdomen arc (22)*. Center front to side seam, starting 3 inches down from waist.
- *Hip arc (23)*. Center front to side seam on HBL line.
- *Hip depth (25)*. Center front to HBL line.

Figure 6

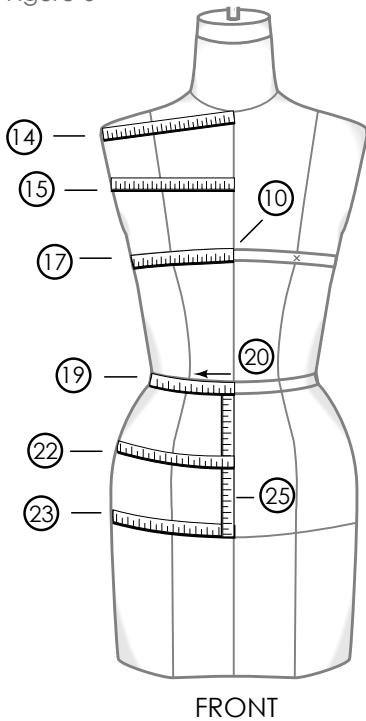
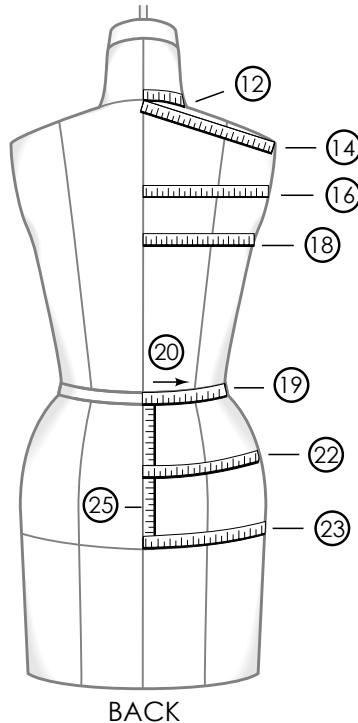


Figure 7



Back

Figure 7

- *Back neck (12)*. Center back neck to shoulder at neck.
- *Across shoulder (14)*. Shoulder tip to center back neck.
- *Across back (16)*. Center back to 1 inch above the mid-armhole at ridge of pinhead.
- *Back arc (18)*. Center back to bottom of arm plate.
- *Waist arc (19)*. Center back waist to side waist seam.
- *Dart placement (20)*. Center back waist to side back (princess line).
- *Abdomen arc (22)*. Center back to side seam, starting 3 inches down from waist.
- *Hip arc (23)*. Center back to side seam on HBL line.
- *Hip depth (25)*. Center back waist to HBL line.

Model for Personal Fit

Figures 8a, b

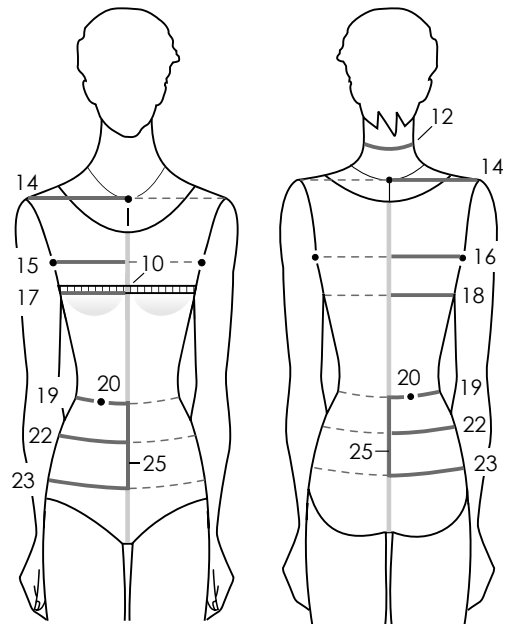


Figure 8a

Figure 8b

Measurements can be taken across the model from one landmark to the other, then divided in half and recorded. If the center lines of the front and back are definitely centered, measure from the center line to the side seams of the front and back bodice.

Neck Circumference

Measure around the upper neck, divide by 5, and record in space #12.

VERTICAL MEASUREMENTS FOR FORM AND MODEL

Figures 9 and 10

- *Side length (11)*. Pin mark below armplate at side seam to side waist.
- *Shoulder length (13)*. Shoulder tip to neck.
- *Side hip depth (26)*. Side waist to HBL, on side of form being measured.
- *Bust radius (9)*. Measure from bust point ending under bust mound to rib above.

Front and Back—Form and Model

Figures 11, 12, 13, 14

- *Center length (5)*. Mark neck to waist (over bridge).
- *Full length (6)*. Waist to shoulder at neck, parallel with center lines.
- *Shoulder slope (7)*. Center line at waist to the shoulder tip (mark).
- *Bust depth (9)*. Shoulder tip to bust point.

Figure 11

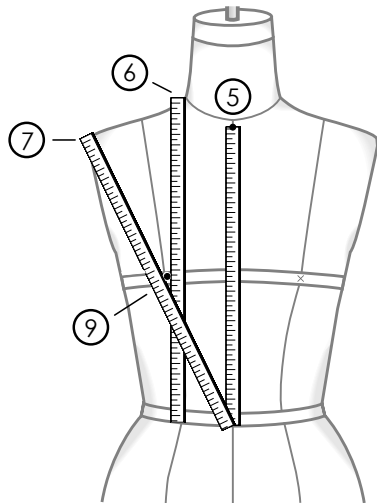


Figure 13

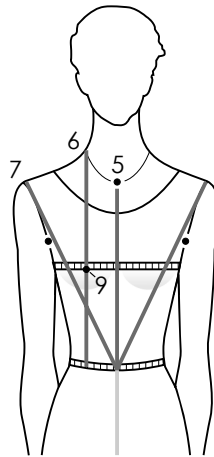


Figure 12

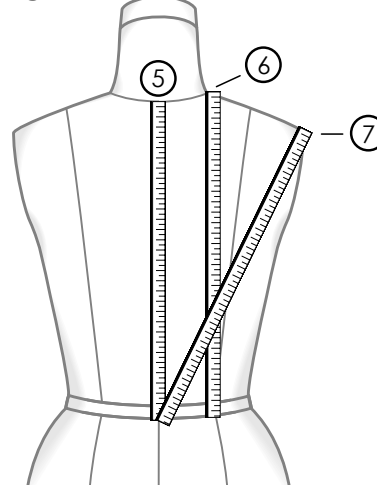


Figure 14

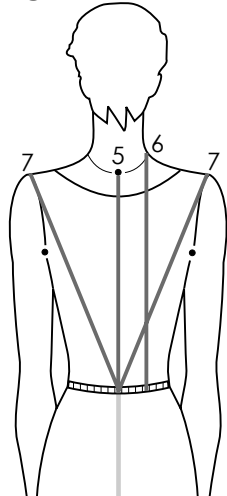


Figure 9

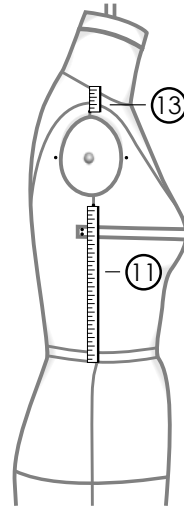
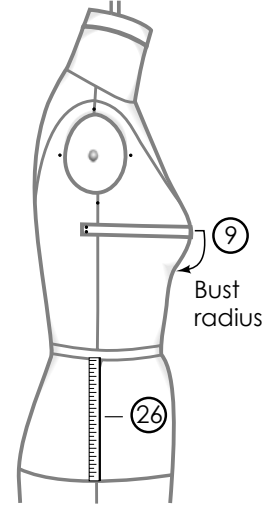


Figure 10



Personal Fit: Asymmetric Verification

Shoulder slope: Measure on right and left sides. If the slope measurements differ more than an 1/8 inch, the shoulders are asymmetric.

Side hip: Measure both side (see #26), if measurements differ more that 1/8 inch, the hip is asymmetric. The patterns will be drafted on folded paper and discussed later.

Figure 15 and 16: New Strap Measurement

Place metal tip of the measuring tape at corner of shoulder/neck to bottom of the waist band at the side seam and record.

Figure 15

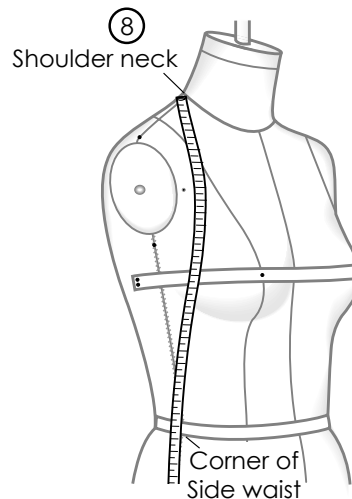
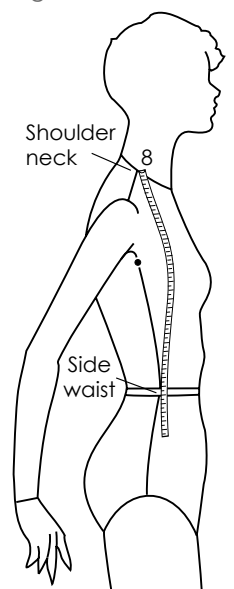


Figure 16



Standard Measurement Chart

CIRCUMFERENCE

MEASUREMENTS

(Ease not included)

	Grade:	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	2"
	Size:	6	8	10	12	14	16	18
1. Bust:		34	35	36	37-1/2	39	40-1/2	42-1/2
2. Waist:		25-1/2	26-1/2	27-1/2	29	30-1/2	32	34
3. Abdomen:		32	33	34	35-1/2	37	38-1/2	40-1/2
4. Hip:		35-1/2	36-1/2	37-1/2	39	40-1/2	42	44

UPPER TORSO

5. Center length:								
Front		14-1/8	14-3/8	14-5/8	14-7/8	15-1/8	15-3/8	15-5/8
Back		16-1/4	16-1/2	16-3/4	17	17-1/4	17-1/2	17-3/4
6. Full length:								
Front		16-7/8	17-1/4	17-5/8	18	18-3/8	18-3/4	19-1/8
Back		16-3/4	17-1/8	17-1/2	17-7/8	18-1/4	18-5/8	19
7. Shoulder slope:								
Front		17-1/16	17-3/8	17-3/4	18-1/8	18-1/2	18-7/8	19-1/4
Back		16-5/16	16-5/8	17	17-3/8	17-3/4	18-1/8	18-1/2
8. New Strap:		17	17-3/8	17-3/4	18-3/16	18-5/8	19-1/16	19-9/16
9. Bust depth:		9-1/8	9-5/16	9-1/2	9-11/16	9-7/8	10-1/16	10-1/4
Radius:		3	3	3	3	3	3	3
10. Bust span:		3-5/8	3-3/4	3-7/8	4-1/16	4-1/4	4-7/16	4-11/16
11. Side length:		8-1/8	8-1/4	8-3/8	8-1/2	8-5/8	8-3/4	8-7/8
12. Back neck:		2-5/8	2-7/8	3	3-1/8	3-1/4	3-3/8	3-1/2
13. Shoulder length:		5-1/8	5-3/16	5-1/4	5-5/8	5-1/2	5-5/8	5-13/16
14. Across shoulder:								
Front		7-1/2	7-5/8	7-3/4	7-15/16	8-1/8	8-5/16	8-9/16
Back		7-3/4	7-7/8	8	8-3/16	8-3/8	8-9/16	8-13/16
15. Across chest:		6-1/2	6-5/8	6-3/4	6-15/16	7-1/8	7-5/16	7-9/16
16. Across back:		6-3/4	6-7/8	7	7-3/16	7-3/8	7-9/16	7-13/16
17. Bust arc:		9-1/2	9-3/4	10	10-3/8	10-3/4	11-1/8	11-5/8
18. Back arc:		8-1/8	8-3/8	8-5/8	9	9-3/8	9-3/4	10-1/4
19. Waist arc:								
Front		6-1/2	6-3/4	7	7-3/8	7-3/4	8-1/8	8-5/8
Back		6-1/8	6-3/8	6-5/8	7	7-3/8	7-3/4	8-1/4
20. Dart Placement:								
Front		3	3-1/8	3-1/4	3-7/16	3-5/8	3-13/16	4-1/16
Back		3	3-1/8	3-1/4	3-7/16	3-5/8	3-13/16	4-1/16
21. Number not used								

LOWER TORSO

22. Abdomen:								
Front		7-3/4	8	8-1/4	8-5/8	9	9-3/8	9-7/8
Back		8	8-1/4	8-1/2	8-7/8	9-1/4	9-5/8	10-1/8
23. Hip arc:								
Front		8-5/8	8-7/8	9-1/8	9-1/2	9-7/8	10-1/4	10-3/4
Back		9-1/8	9-3/8	9-5/8	10	10-3/8	10-3/4	11-1/4
24. Crotch depth:		9-1/2	9-3/4	10	10-1/4	10-1/2	10-3/4	11
25. Hip depth:								
Center front		7-1/2	7-3/4	8	8-1/4	8-1/2	8-3/4	9
Center back		7-3/8	7-5/8	7-7/8	8-1/8	8-3/8	8-5/8	8-7/8
26. Side hip depth:		7-5/8	7-7/8	8-1/8	8-3/8	8-5/8	8-7/8	9-1/8
27. Waist to knee:		22	22-1/2	23	23-1/2	24	24-1/2	25
Waist to ankle:		37	37-1/2	38	38-1/2	39	39-1/2	40
Waist to floor:		39	39-1/2	40	40-1/2	41	41-1/2	42
28. Crotch length:		24-1/2	25-1/4	26	26-3/4	27-1/2	28-1/4	29
Vertical trunk		59	60-1/2	62	63-1/2	65	66-1/2	68
29. Upper thigh:		20	20-3/4	21-1/2	22-1/2	23-1/2	24-1/2	25-3/4
Mid thigh:		18-1/2	19	19-1/2	20-1/4	21	21-3/4	22-3/4
30. Knee:		13	13-1/2	14	14-1/2	15	15-1/2	16
31. Calf:		12-1/4	12-5/8	13	13-3/8	13-3/4	14-1/8	14-1/2
32. Ankle:		8-1/2	8-3/4	9	9-1/4	9-1/2	9-3/4	10
Foot entry:		12	12-1/4	12-1/2	12-3/4	13	13-1/4	13-1/2

Missy patterns are available for purchase. Send requests to patterns4sale.com

FORM MEASUREMENT CHART

Circumference Measurements

1. Bust: _____, plus 2" ease _____
2. Waist: _____, plus 1" ease _____
3. Abdomen: _____
4. Hip: _____, plus 2" ease _____

Upper Torso (Bodice)

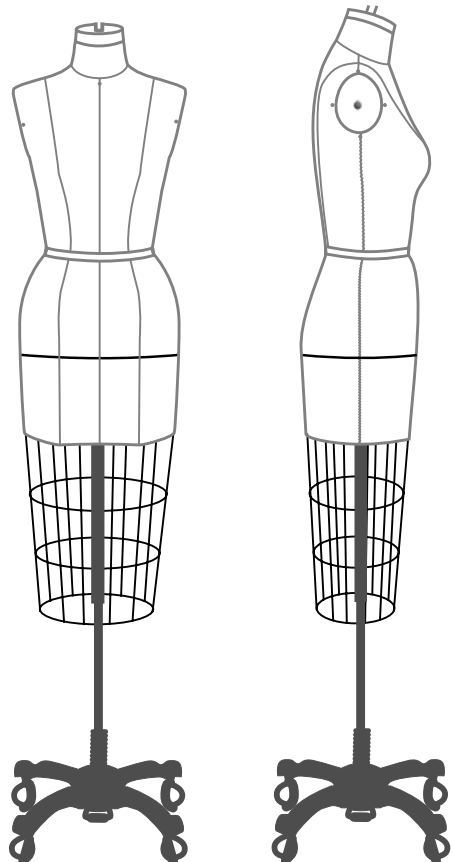
5. Center length: F _____, B _____
6. Full length: F _____, B _____
7. Shoulder slope: F _____, B _____
8. Strap: F _____, B _____
9. Bust depth: _____, radius _____
10. Bust span: _____
11. Side length: _____
12. Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____, B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____, B _____
20. Dart placement: F _____, B _____

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____, B _____
23. Hip arc: F _____, B _____
24. Crotch depth: _____
25. Hip depth: C.F. _____ C.B. _____
26. Side hip depth: _____
27. Waist to ankle: _____
Waist to knee: _____
Waist to floor: _____
28. Crotch length: _____
Vertical trunk: _____
29. Upper thigh: _____
Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____
Foot entry: _____

Form

Form make and type _____
Size _____ Year _____



Special Information

Set form to desired height and measure the following:

- C.F. waist to floor _____
C.B. waist to floor _____
C.B. neck to floor _____

PERSONAL MEASUREMENT CHART

Circumference Measurements

1. Bust: _____
2. Waist: _____
3. Abdomen: _____
4. Hip: _____

Upper Torso (Bodice)

5. Center length: F _____ B _____
6. Full length: F _____ B _____
7. Shoulder slope: F/R _____ F/L _____
B/L _____ B/L _____
8. Strap: F/R _____ F/L _____
9. Bust depth: F _____ Radius _____
10. Bust span: _____
11. Side length: F/R _____ F/L _____
12. *Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____ B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____ B _____
20. Dart placement: F _____ B _____
21. Standard dart intake:
Front = $1''$ (2 darts $1/2$ to $5/8''$)
Back = $2''$ (2 darts 1 to $1 1/4''$)

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____ B _____
23. Hip arc: F _____ B _____
24. Crotch depth: _____
25. Hip depth: CF _____ CB _____
26. Side hip depth: R/S _____ L/S _____
27. Waist to knee _____ ankle _____ floor _____
28. Crotch length _____ Vertical trunk: _____
29. Upper thigh: _____ Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____

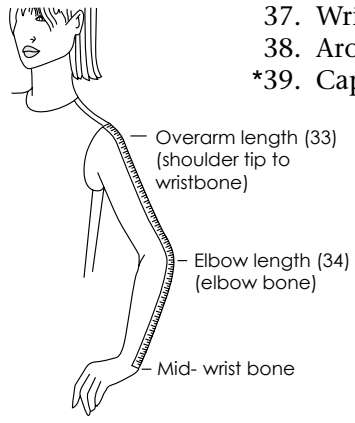
Personal Figure Variations

- A. Head height relationship:
Bust _____ Waist _____
Crotch _____ Knee _____
- B. Bust/back/chest relationship:
Bust _____ Back _____
- C. Hip types: _____
- D. Arm types: _____
- E. Abdominal/thigh relationship:
Abdominal _____ Thigh _____
- F. Shoulder type _____
- G. Shoulder/hip relationship:
Shoulder _____ Hip _____
- H. Leg types _____
- I. Leg types _____
- J. Figure stance: _____
- K. Asymmetric figure. Record high side, right and left.
Shoulder: _____ Hip: _____
- L. Tilting waistline. Record high and low.
Front: _____ Back: _____
- M. Bust/waist = _____
Waist/hip = _____
Bust/hip = _____
- N. Other variations: _____

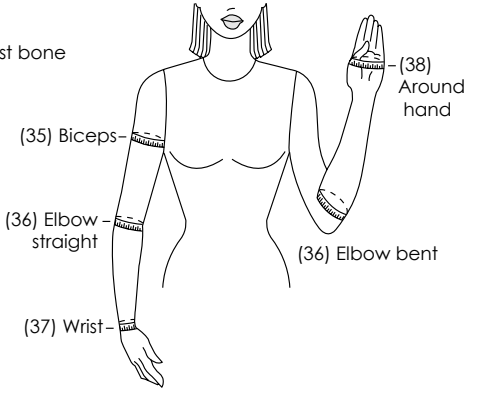
Personal Arm Measurements

33. Overarm length:* _____
34. Elbow length:* _____
35. Biceps plus 2":* _____
36. Elbow bent (reference) _____
37. Wrist (reference) _____
38. Around hand (reference) _____
- *39. Cap height _____

Length



Circumference



*Measuring the Arm

Use your measurements (shown by asterisks) for the draft of the basic sleeve. Read the instructions. Use the *cap height* from the sleeve measurement chart, or use the formula to determine cap height.

Drafting the Basic Pattern Set

THE BASIC DRESS FOUNDATION

- Measurement
- Creating Basic Patterns
- Pattern Shapes Described
- Why Darts?
- Manual and Computer Drafting

FRONT BODICE DRAFT

BACK BODICE DRAFT

- Increasing and Decreasing Bust

FITTING THE BODICE

- Pattern Correction for Asymmetrical Models
- Imperfect Alignment

FITTING THE NECKLINE

FITTING THE ARMHOLE

SKIRT DRAFT

- Skirt Front and Back
- Skirt Back (for Suits and Separates)
- Fitting the Skirt

SELF-EVALUATION TRUE AND FALSE TEST

PREPARING PATTERNS FOR TEST FIT

- Matching Joining Seams

THE BASIC SLEEVE

- Sleeve Terminology

SLEEVE CAP EASE

- Armhole Measurement

SLEEVE MEASUREMENT CHART

SLEEVE DRAFT

ADJUSTING SLEEVE TO ARMHOLE OF BODICE

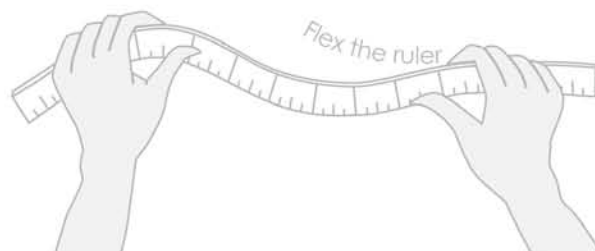
- Determining Cap Ease
- Adjusting the Armhole to Accommodate Cap Ease
- Increase or Decrease the Biceps
- Increase or Decrease Cap Ease
- Setting the Sleeve into the Armhole
- Evaluate the Hang and Fit of the Sleeve

SEAMLESS WORKING PATTERNS

SELF-EVALUATION TEST

COMPLETING THE PATTERN

- Pattern Information
- Seam Allowance
- Basic Pattern Set—Seamed



THE BASIC DRESS FOUNDATION

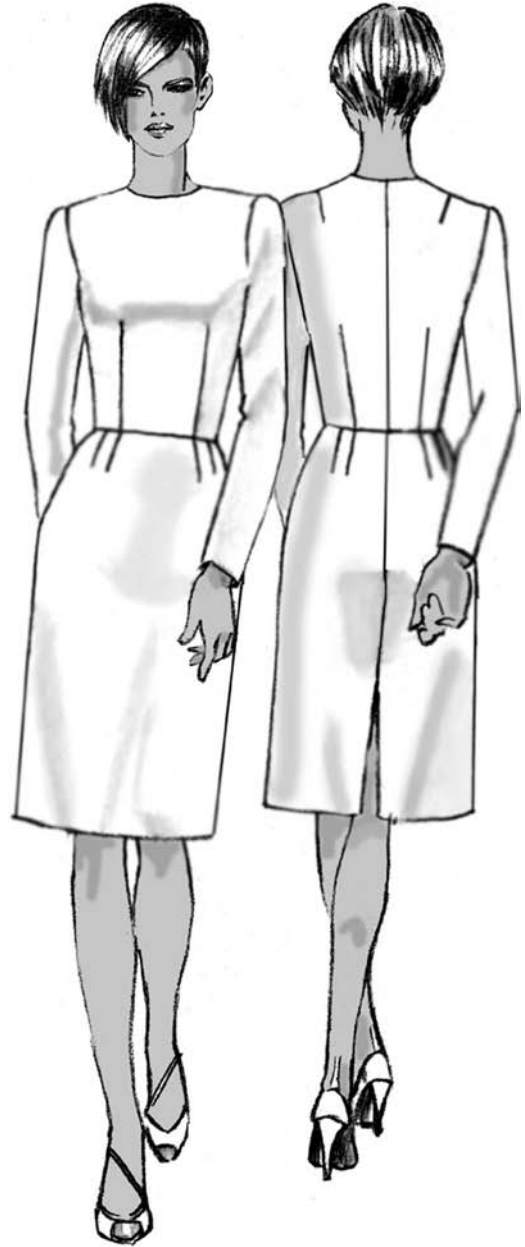
Introduction to patternmaking begins with the draft of the basic dress foundation. The dress has all the key dimensions of the form and is represented by the basic pattern set. The basic dress is the very foundation upon which patternmaking, fit, and design are based. The basic dress is made up of five distinct parts: a front and back bodice, a front and back skirt that hang straight from the hip, and slim full-length sleeves. The dress follows the model's outermost parts without contouring the hollow areas. The dress has a series of seams that are directed toward the figure's bulges—the bust, abdomen, buttocks, shoulder blades, and elbows. These seams are the wedge shapes in the draft of the basic pattern set that, when stitched, support the fit of the garment and bridge the hollow areas. The perfect garment will fit comfortably with sufficient ease and in perfect balance and harmony with the balance of the model's stance.

Measurement

The draft can be developed from measurements taken of the form and recorded on the Model Measurement Chart, or measurements can be taken from the Standard Measurement Chart or from personal fit measurements.

For easy reference, record (in the spaces provided in the chart) the measurements by the number in parentheses given in the instructions. Numbers correspond with those of the charts. Letters used in the instructions give the direction that each line is to be drawn. For example, B to C means that the line is drawn from point B to point C, in the amount indicated by the instructions. A shaded outline of the pattern illustrates the purpose of each line drawn on the draft.

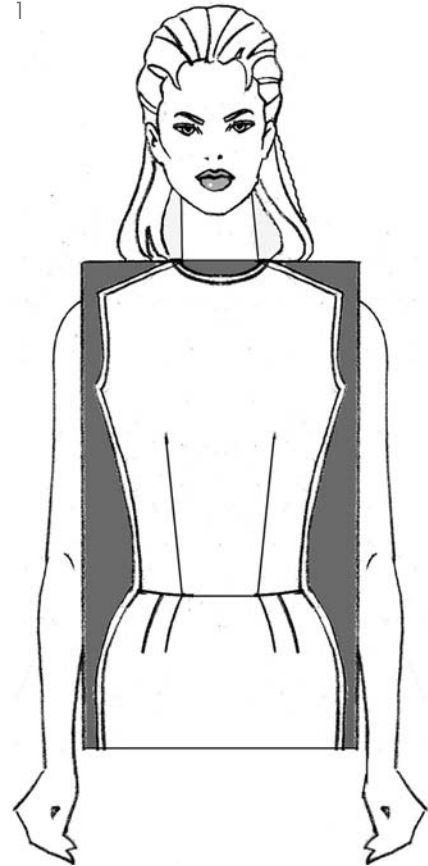
Suggestions for correcting fitting problems follow the instructions for drafting the bodice, the skirt, and the sleeve.



Creating Basic Patterns

Creating basic patterns begins with a two-dimensional piece of paper (for drafting) or muslin (for draping). The dimensions of the form or model takes up the necessary space within the paper or muslin, giving shape to the basic patterns. The remaining paper or cloth is cut away (Figure 1).

Figure 1



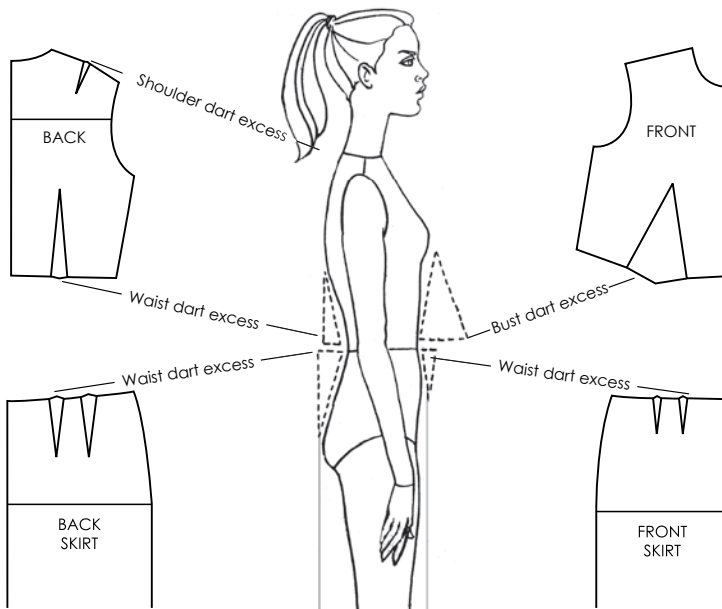
Pattern Shapes Described

Patterns confine the dimensions of the figure by a series of straight lines (shoulder, side seams, skirt—below hip) and curved lines (necklines, armholes, skirt—above hip). Wedges that appear at the pattern's edge are directed to the apex of the bust, shoulder blade, abdomen, and buttock. Wedges are called *darts* (Figure 2). The basic sleeve will be discussed later.

Why Darts?

Darts retain form or model measurements by confining unneeded fullness at the pattern's edge. The dart gradually releases fullness and terminates at or near the apex of the bust, shoulder blades, buttocks, and abdomen. The dart also has creative value. *It is the dart that converts a two-dimensional pattern into a three-dimensional garment.*

Figure 2



Manual and Computer Drafting

Both manual and computer drafting methods are offered for developing the basic pattern set. Knowing both methods gives the patternmaker more options in generating patterns.

FRONT BODICE DRAFT

Record chosen measurements in the spaces provided below. For models with asymmetric shoulders and/or hips, draft on folded paper using measurements for the high side. After the draft, the pattern is cut and the low side is corrected.

Note: All pattern sizes can be purchased. Send request to patterns4sale@yahoo.com.

The standard draft is based on a missy dress form with about a 10-inch difference between the waist and bust (B cup) for all sizes. For a personal fit, subtract the waist from bust, if more or less than 10 inches (tolerance 1/4 inch), follow the formula suggestion.

Figure 1

- **A to B = Full length (6), plus 1/8"** _____
Draw the line and label.
- **A to C = Across shoulder, less 1/8"** (14) _____
Square 3" line down from C line.
- **B to D = Center front length (5)** _____
Mark and square out 4".
- **B to E = Bust arc (17), plus 1/4"*** _____
Square out from B, and then square up 11" from E.*

Figure 1

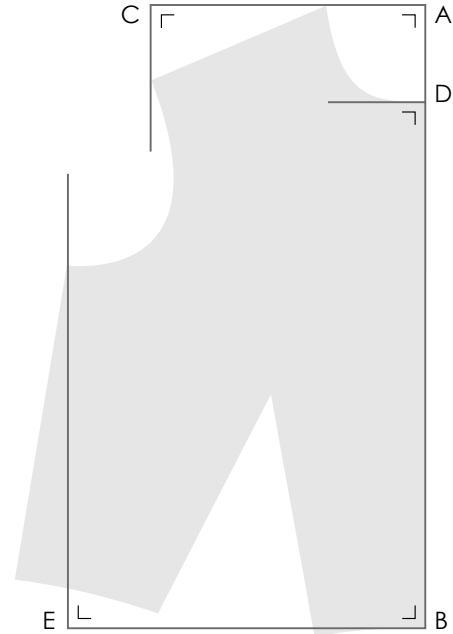
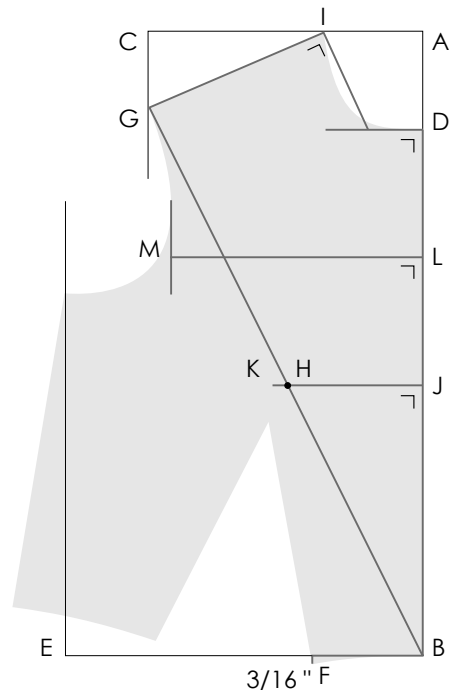


Figure 2

- **B to G = Shoulder slope (7), plus 1/8"** _____.
G touches C line.
- **G to H = Bust depth (9)**. _____.
Mark on the G-B line.
- **G to I = Shoulder length (13)** _____.
Square down from I to intersect with D line.
- **J to K = Bust span, plus 1/4"** (10) _____.
Square from J at center front through H to K.
- **D to L = One-half of D to J**.
Mark down from D.
- **L to M = Across chest, plus 1/4"** (15) _____.
Square a guideline up and down from M.
- **B to F = Dart placement (20)** _____.
Square down 3/16" from F.

Figure 2



*Ease: Total 1/2 inch at bust level when side seam is drawn.

Figure 3

- **I to N = New strap, plus 1/8" (8)** _____
Draw line from I to intersect E line.
- **N to O = Side length (11)** _____.
- **N to P = Mark 1 1/4 inch out from N.**
Personal fit, see formula or adjust after the draft is complete. Tab page 44.
- **O to P = Side length line is directed to P, and ends when equal to N to O. Draw line from P to F.**

Figure 4

Completing waist measurement:

- **P to Q = Waist arc (19), plus 1/4" ease, less B to F** _____.

Dart legs: Draw a line from K to F and measure. Draw dart leg from K through Q equal to K to F.

Label R.

Dart point: Center a point 5/8 inch from bust point. Redraw dart legs from this point to F and R.

Draw slight curved lines from B to F and R to P.

Figure 3

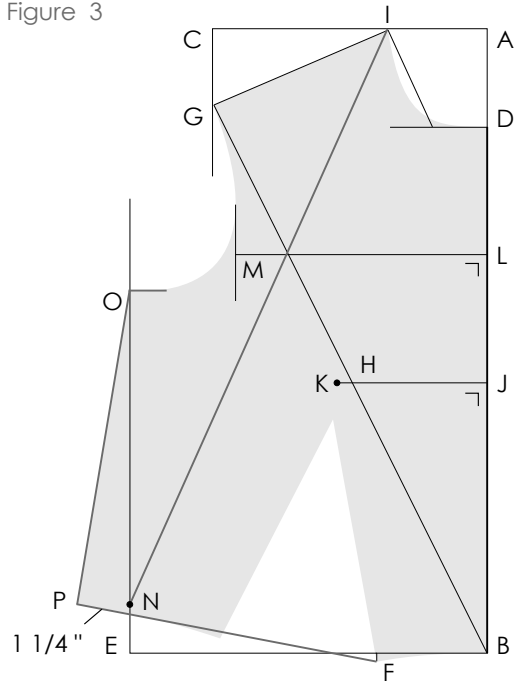
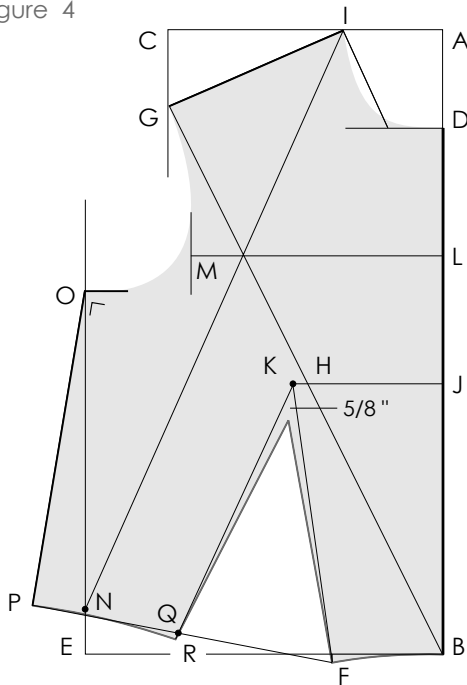


Figure 4



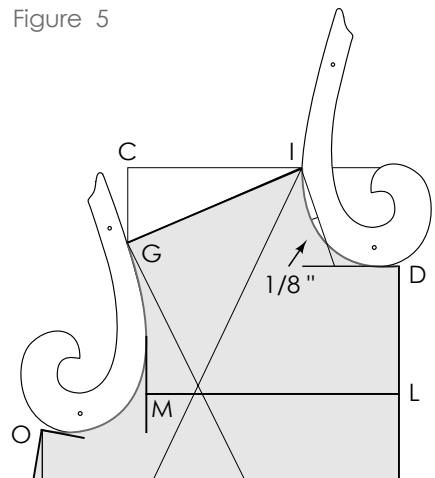
Best Cup Formula: Test Fit
 C Cup: N-P = 7/8"
 D Cup: N-P = 1-1/2"
 D Cup: N-P = 1-3/4"
 For additional information, see section on Fitting the Bodice, three pages ahead.
 Continue with instruction O-P.

Figure 5

Armhole: Draw armhole curve with rule touching G, M, and square line. Do not follow curve past square line.

Neckline: Draw curve from I to D passing inside the angle line by 1/8".

Figure 5



BACK BODICE DRAFT

Figure 6

- **A to B = Full length (6)** _____.
- **A to C = Across shoulder (14)** _____.
Square 3 inches down from C.
- **B to D = Center back length (5)** _____.
Mark and square out 4 inches.
- **B to E = Back arc (18)**, plus 3/4 inch _____.
Square up from E.

Figure 6

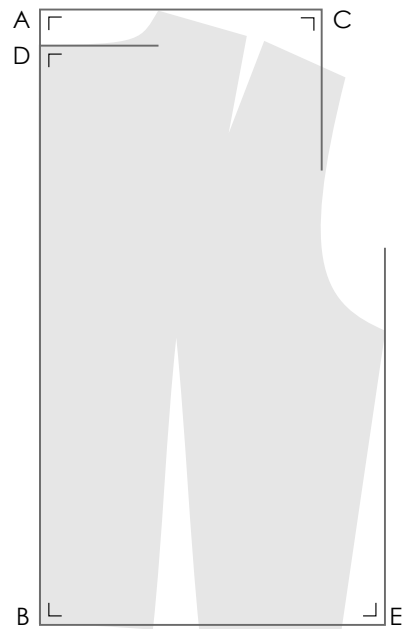


Figure 7

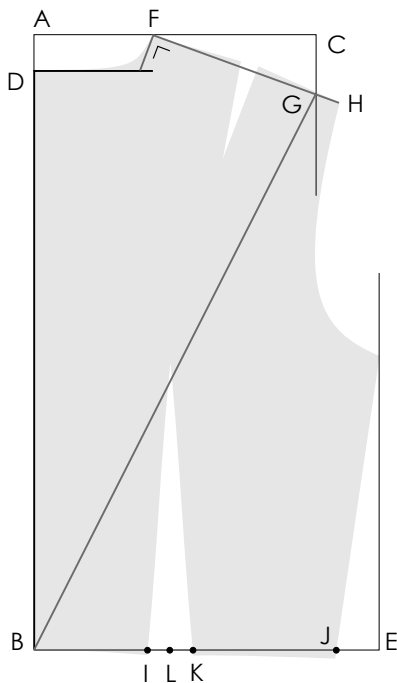


Figure 7

- **A to F = Back neck (12)**, plus 1/8 inch _____.
- **B to G = Shoulder slope (7)**, plus 1/8 inch _____.
- **F to H = Shoulder length (13)**, plus 1/2 inch _____.
Line may pass G.
Square down from F to D line.
- **B to I = Dart placement (20)** _____.
- **B to J = Waist arc (19)**, plus dart intake of 1 1/2" and 1/4" (ease). (Junior/petite sizes: add 1 inch dart intake, plus 1/4-inch ease.)
- **I to K = Dart intake.**
Mark center and label L.

Figure 8

- **J to M** = Square down 3/16 inch.
- **M to N** = Side length (11) _____.
- **L to O** = Square up from L 1 inch less than M to N.

Draw dart legs from O, 1/8 inch past I and K.

Draw slightly curved lines from K to M and from B to I.

Figure 9

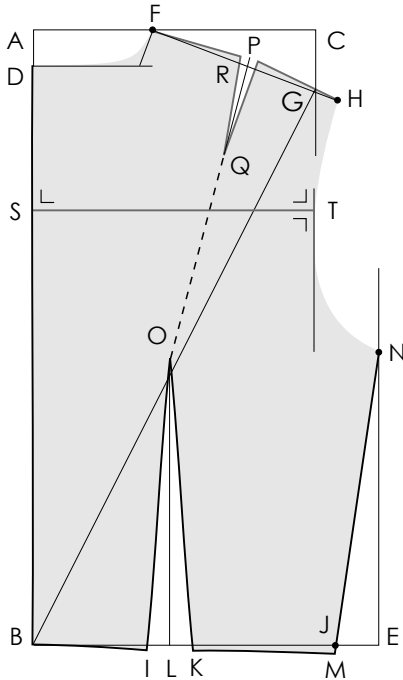


Figure 10

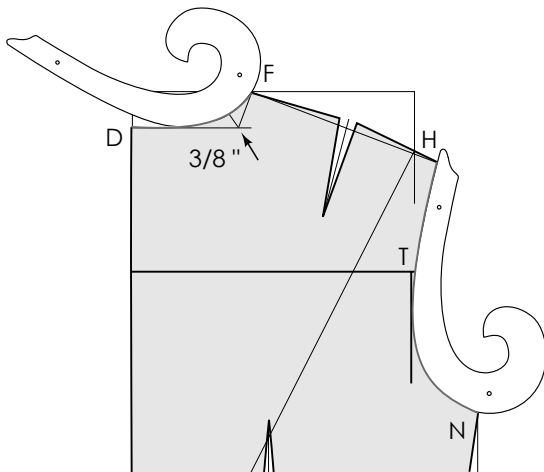


Figure 8

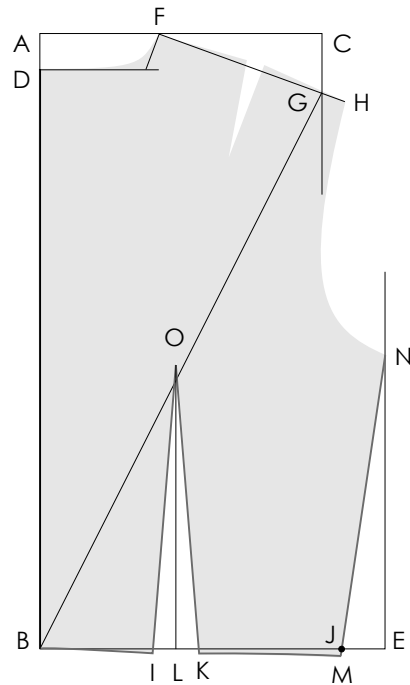


Figure 9

- **F to P** = One-half of F to H. Mark.
- **P to Q** = Draw a 3-inch line in the direction of point O (indicated by broken line).
- **P to R** = 1/4 inch. Mark.

Draw dart leg from Q 1/8 inch past R and connect to F.

Mark 1/4 inch from P. Draw other dart leg from Q equal to dart leg Q-R, and connect to H.

- **D to S** = One-fourth of D to B. Mark.
- **S to T** = **Across back, plus 1/4 inch (16)** _____.

Square up and down from T, as shown.

Figure 10

- **Armhole**: Draw armhole with the French curve touching H, T, and N. The curve should touch square line.
- **Neckline**: Draw a 3/8-inch angle line from the corner. Draw neckline from F, angle line and ending close to D.

To test fit, add seams to muslin. (See next two pages.)

Increasing and Decreasing Bust

The bodice is drafted with a B cup. The pattern can be adjusted for bust cup sizes A, C, D, and DD for personal fit. Test fit and, if necessary, adjust again; see Figures 4 and 5.

Figure 1

- Draw a line from dart point to bust point and to but not through mid-armhole.

Figure 2
C, D, DD Cup

Spread at bust point as follows:

- C Cup = 3/8 inch.
- D Cup = 3/4 inch.
- DD Cup = 1 inch.
- Center bust point.
- Lengthen dart leg A to be equal to B.

Figure 3
A Cup

- Overlap bust point 3/8 inch. Tape.
- Center bust point.
- Shorten dart leg A to true with B.

Figure 1

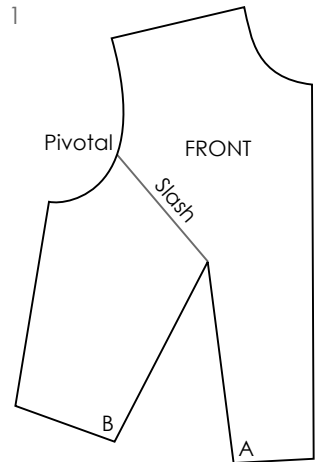


Figure 2

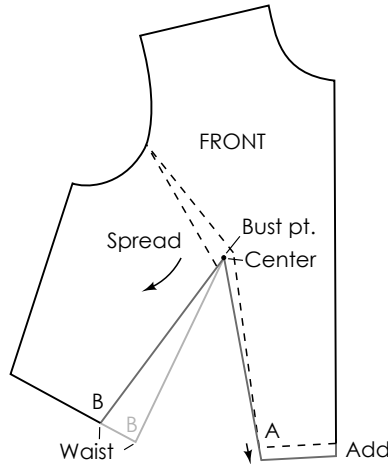
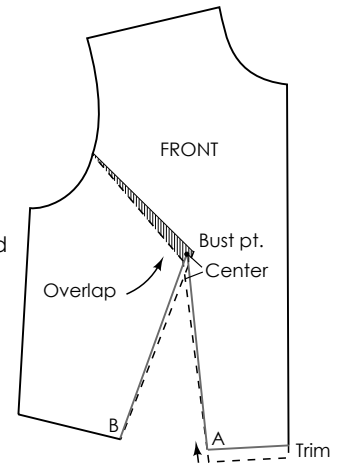


Figure 3



FITTING THE BODICE

Cut and sew the bodice. Press without steam. Place on form or model to analyze the fit. Always measure corrected areas and adjust the patterns.

Figure 4

Looseness: Pin excess at bust to zero at shoulder and waist.

Figure 4

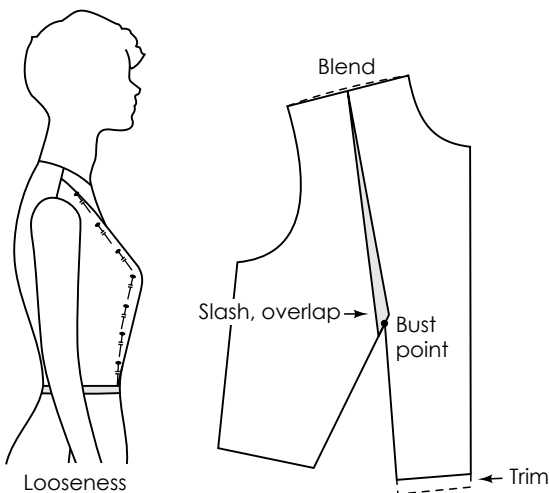
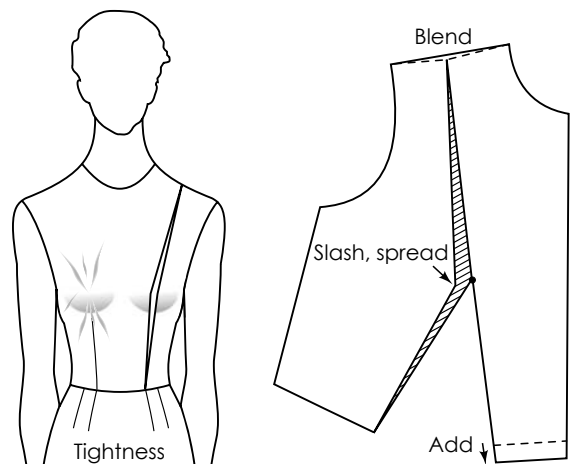


Figure 5

Tightness: Stress folds radiating from bust. Slash muslin from waist to bust, and spread to give bust sufficient room.

Figure 5



Pattern Correction for Asymmetrical Models

Model (a) with high/low shoulders.
Model (b) with high/low hips.

Corrections: Unfold the pattern: bodice (c) or skirt (d). Slash from low side to high side. Overlap recorded amount, mend, blend, and test.

Figure 1 a

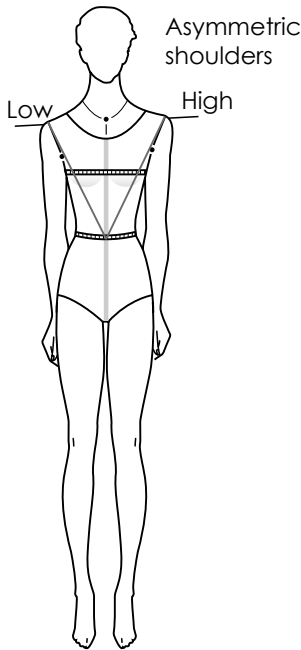


Figure 1 b

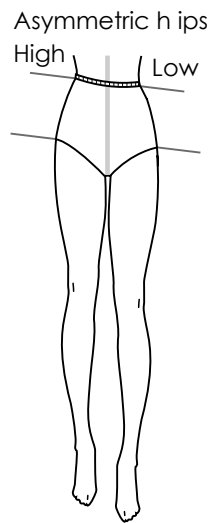


Figure 1c

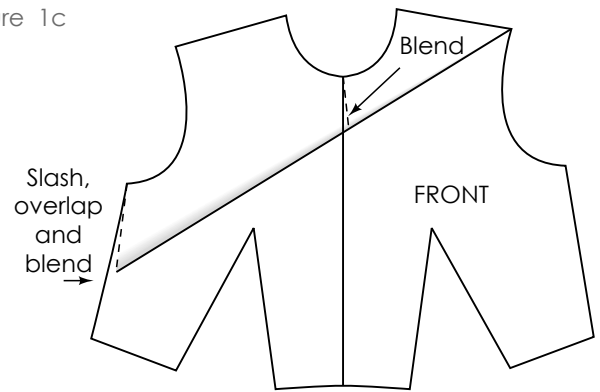
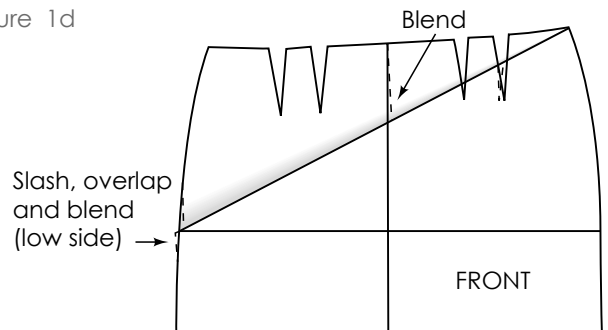


Figure 1d



- Possible solutions: Lift muslin at shoulder tip, lower dart point, or check waistline measurements and adjust side waist, if required.
- Correct the pattern by trimming the adjusted amount at shoulder tip to zero at neck.

Figures 3a, b

- Front or back swings away from the center line.
- Possible solutions: Add muslin at shoulder tip, check waistline measurements and adjust side waist, if required.
- Correct the pattern by adding the adjusted amount at shoulder tip to zero at neck.

Imperfect Alignment

Figures 2a, b

- Front or back bodice overlaps center line of the form.

Figure 2 a

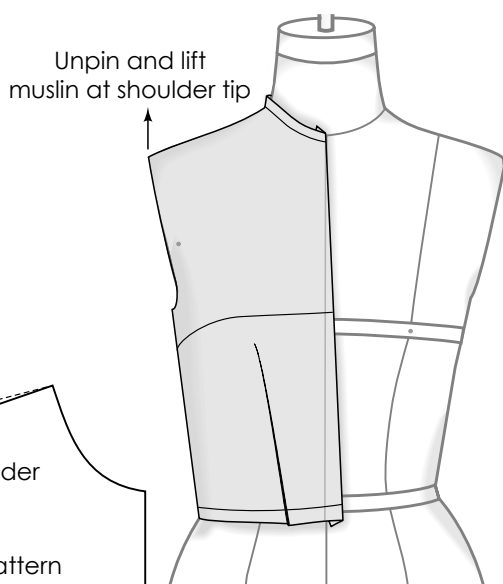


Figure 2 b

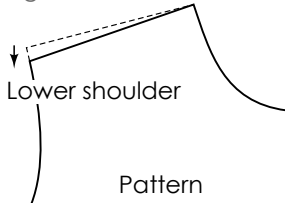


Figure 3a

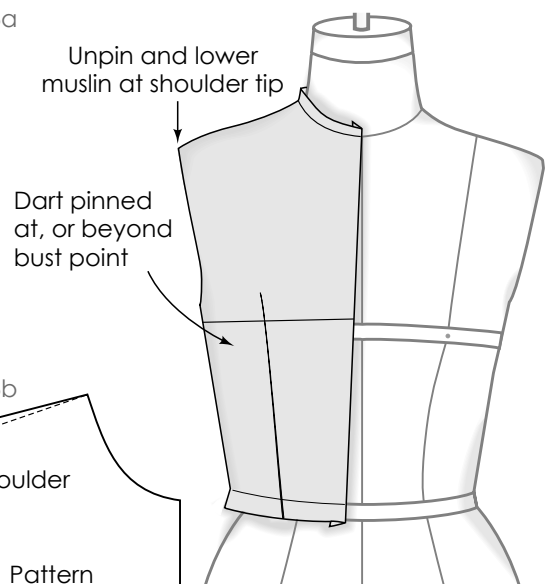
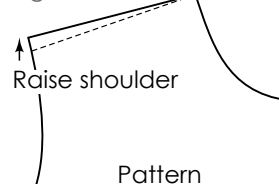


Figure 3b



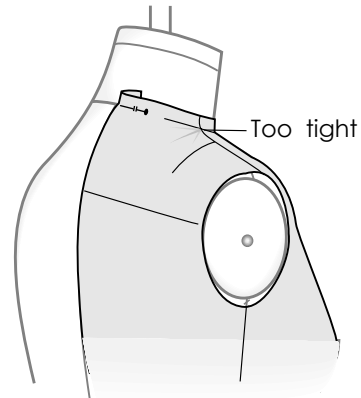
FITTING THE NECKLINE

If the front or back neckline is too loose (more than 1/8 inch) (Figure 4a), open the shoulder and smooth the fabric to fit. Mark the muslin and adjust the length of the shoulder. If stress appears at the shoulder/neck (Figure 4b), open the shoulder. Fit the muslin to the neckline (allow 1/8-inch ease). Mark the neckline and adjust the shoulder length, if necessary.

Figure 4 a



Figure 4b



FITTING THE ARMHOLE

A well-balanced sleeve depends on the accurate shape of the armhole and the correct placement of the shoulder and side seams of the form.

A well-shaped armhole fits smoothly over the shoulder and falls away evenly from the lower part of the armhole plate, and the side seam is aligned with that of the form. There is no appearance of stress lines or gapping. See Figure 5a.

If the armhole of the bodice is identified with one of the examples, follow the suggested adjustment and make corrections to the pattern.

Figure 5a

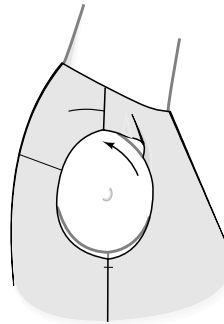
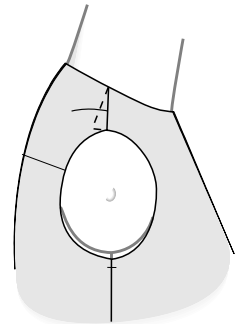


Figure 5b



Gap Above Front Mid-Armhole:

Figures 5a, b

- The fit problem is shown in Figure 5a.
- Release shoulder seam and smooth excess over the shoulder. Pin and mark adjusted shoulder (Figure 5b).

Figure 6a

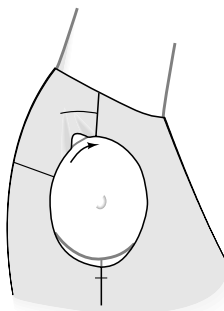
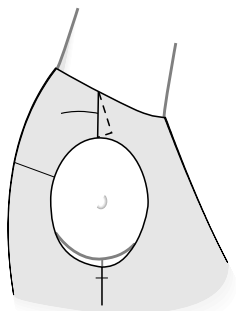


Figure 6b



Gap Above Back Mid-Armhole:

Figures 6a, b

- The fit problem is shown in Figure 6a.
- Release shoulder seam and smooth excess over the shoulder. Pin and mark adjusted shoulder (Figure 6b).

Gap Below Front Mid-Armhole:

(Gaping is caused by unbalanced side seams.)

Figures 7a, b, c

- The fit problem is shown in Figure 7a.
- Pin the excess, allowing 1/4-inch ease (Figure 7b).
- Slash the pattern from mid-armhole to bust point and from dart point to bust point. Overlap the pattern equal to the amount pinned at the armhole. Tape to secure (Figure 7c).

Figure 7a

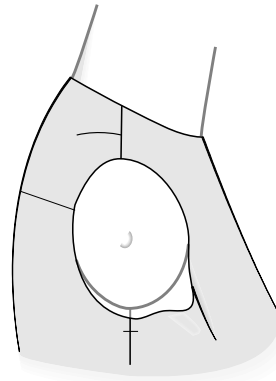
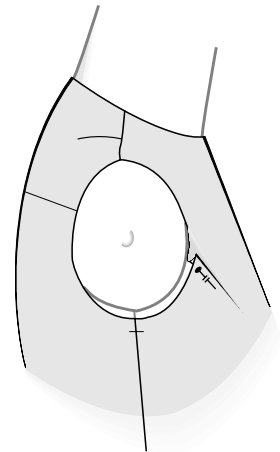


Figure 7b



Figures 8a, b

- If the armhole is too tight at the front armhole (Figure 8a), slash and spread 1/4 inch (Figure 8b).

Figure 7 c

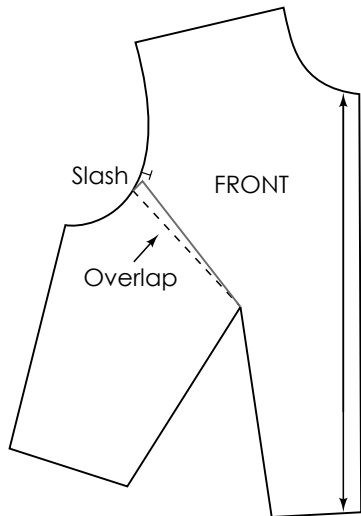


Figure 8a

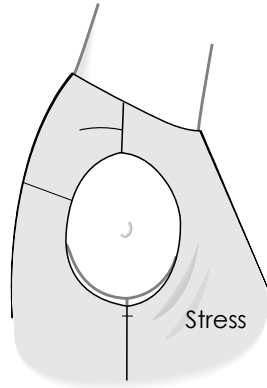
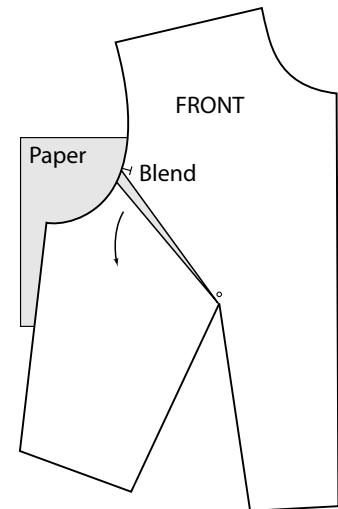


Figure 8b



Gap Below Back Mid-Armhole:

(Gaping is caused by unbalanced side seams.)

Figures 9a, b

- The fit problem is shown in Figure 9a.
- Release side seam and smooth excess downward. Mark side seam and be sure that 3/4-inch ease is included. Mark waistline.
- Measure the distance between the armhole pin head and corrected muslin for pattern correcting (Figure 9b).

Figure 9a

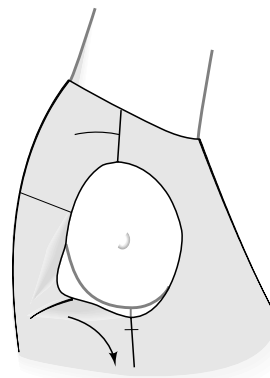
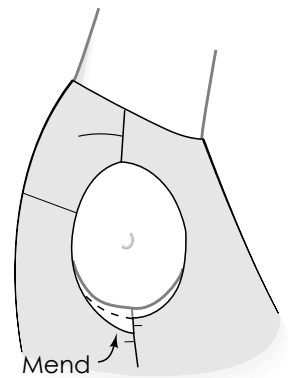


Figure 9b



SKIRT DRAFT

The basic skirt foundation has several uses: as a base for manipulation to create design patterns, combined with the bodice as a dress, as a skirt to complete a suit, and as a separate basic skirt. Two versions of the back skirt are given. In Type 1, the back darts are of equal intake and length. Type 2 has two darts of unequal intake and length.

Record measurements from the Model Measurement Chart in the spaces provided.

Personal fit: Use the Personal Dart Intake Chart to determine the number of darts and dart intake for the skirt draft. Subtract the waist (2) from the hip measurement (4). Find the difference to the nearest whole number in column 1.

For models having a sway back, mark one dart in front, with all remaining excess taken up by the back dart(s).

Personal Dart Intake Chart

Column 1:

4-inch Difference

Front: 1 dart—1/2" intake. Back: 1 dart—3/4" intake.

5-inch Difference

Front: 1 dart—1/2" intake. Back: 1 dart—1" intake.

6-inch Difference

Front: 1 dart—1/2" intake. Back: 2 darts—5/8" intake.

7-inch Difference

Front: 1 dart—1/2" intake. Back: 2 darts—3/4" intake.

8- or 9-inch Difference

Front: 2 darts—3/8" intake. Back: 2 darts—7/8" intake.

10-inch Difference

Front: 2 darts—1/2" intake. Back: 2 darts—1" intake.

11-inch Difference

Front: 2 darts—5/8" intake. Back: 2 darts—1 1/8" intake.

12-inch Difference

Front: 2 darts—5/8" intake. Back: 2 darts—1 1/4" intake.

13- or 14-inch Difference

Front: 2 darts—5/8" intake. Back: 2 darts—1 3/8" intake.

(Allow 3/8" ease at each quarter waist. For 3 darts at the back skirt, divide 2 3/4" into thirds.)

Skirt Front and Back

Figure 1

- **A to B = Skirt length** (as desired).
- **A to C = Center front hip depth (25)** _____.
- **A to D = Back hip arc (23)**, plus 1/2 inch (ease) _____.
Squared out from A, C, and B equal to A to D. Draw center back line F to D. Label E and F.
- **E to G = Center back hip depth (25)** _____.
Crossmark location.
- **A to H = Front hip arc (23)**, plus 1/2 inch (ease) _____.
Squared out from A, C, and B equal to A to H.
- Draw center front line J to H. Label J and I.

Figure 1

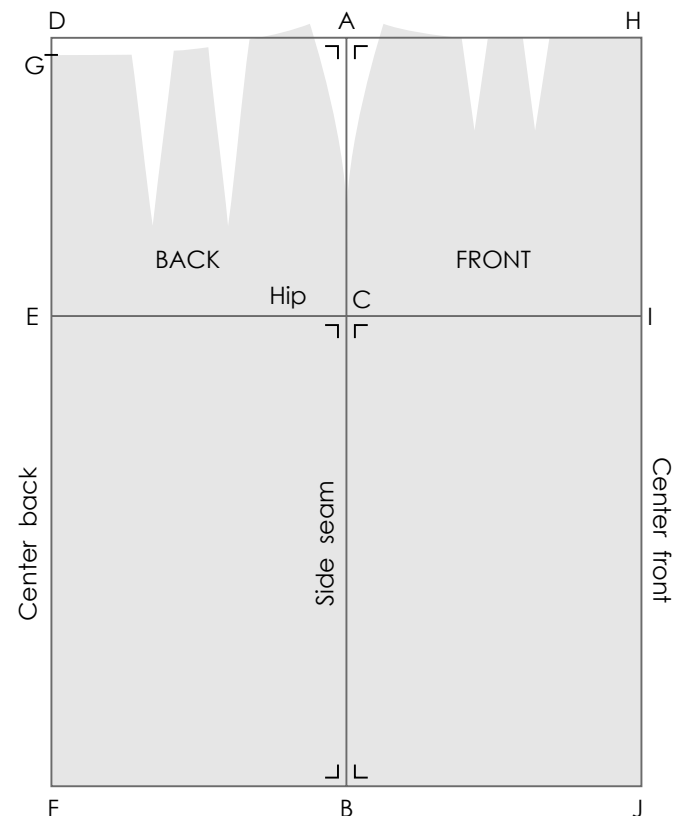


Figure 2
Back:

- **D to K = Back waist arc (19)**, plus 1/4 inch (ease), and add 2 inches for dart intake _____.
Personal fit; use dart intake from dart chart.
- **D to L = Dart placement (20)** _____.
Mark first dart 1 inch from L.
Mark dart space 1 1/4 inches and mark 1 inch for second dart.
Square up and down from K.

Front:

- **H to M = Front waist arc (19)**, plus 1/4 inch (ease), and add 1 inch for dart intake _____.
Personal fit; use dart intake from dart chart.
- **H to N = Dart placement (20)** _____.
Mark first dart 5/8 inch from N.
Mark dart space 1 1/4 inches and mark 5/8 inch for second dart.
Square up and down from M.

Figure 2

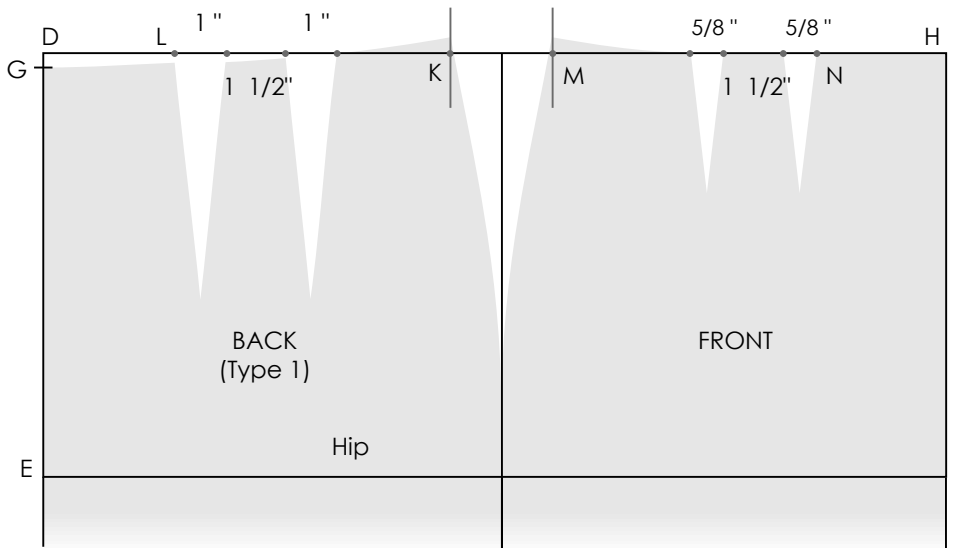


Figure 3

- **C to P = Side hip depth (26)** _____.
Draw side seam curve using the skirt curve rule. Shift the rule until the depth measurement touches the front and back guidelines. Label P and Q.

Waistline: Draw front and back waistline using the shallow end of the curve ruler from G to P (back) and from H to Q (front).

Figure 3

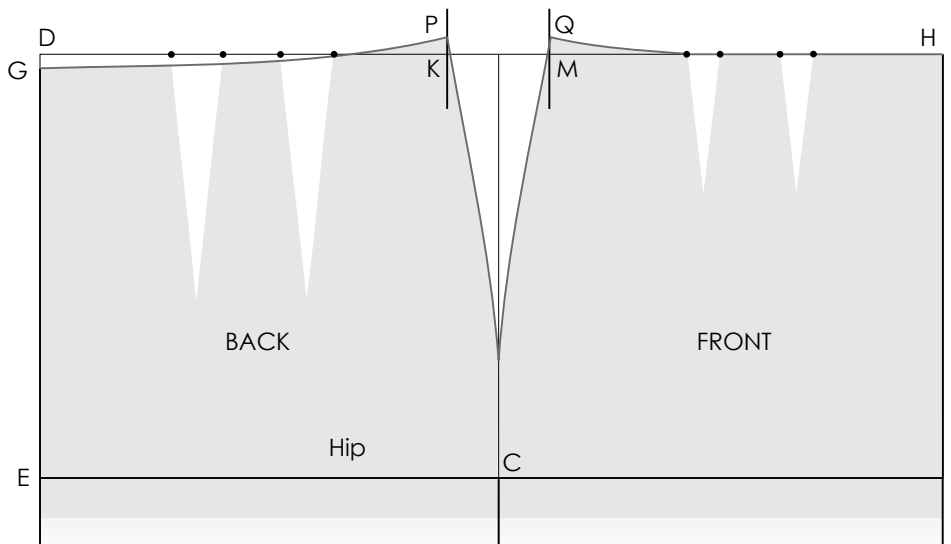


Figure 4

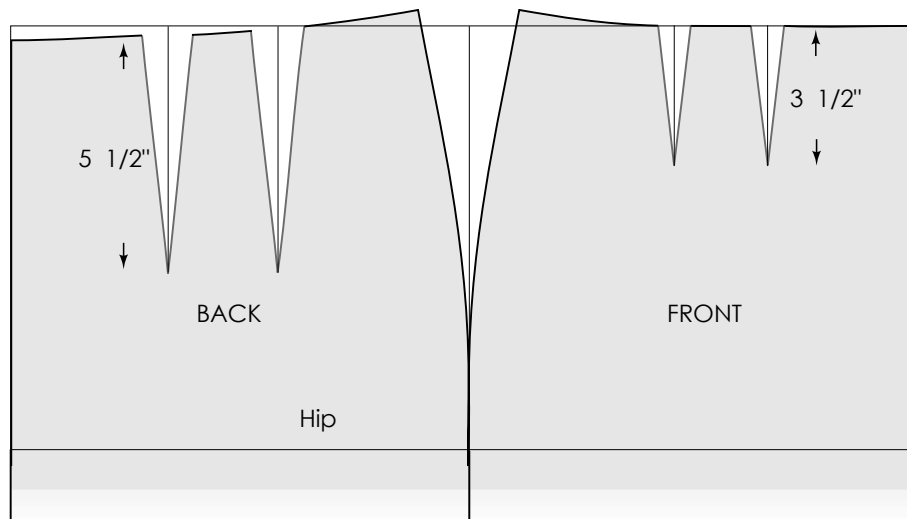
- Back darts: Locate centers of each dart intake, and square down 5 1/2 inches (5 inches for juniors and petites).

Draw dart legs from dart points to curve line of the waist.

True dart legs by adding to the shorter legs and blend to the curve of the waistline.

- Front darts: Repeat the process with the dart legs 3 1/2 inches long.

Figure 4



Skirt Back (for Suits and Separates)

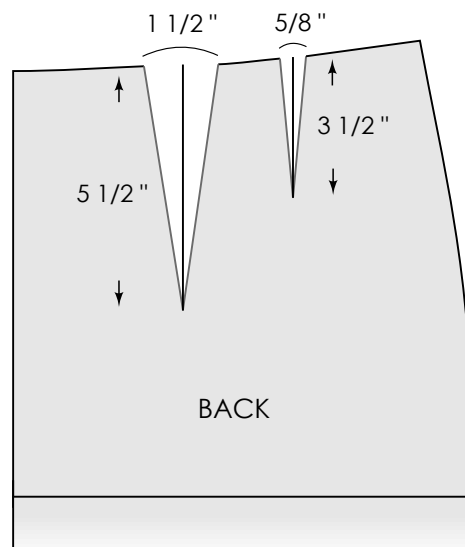
Trace the skirt back. Mark the corner of the dart leg closest to center back. Do not include the dart intake (Figure 5).

Adjust Dart Intake.

- Mark first dart intake 1 1/2 inches. Mark dart space 1 1/4 inches. Mark second dart intake 1/2 inch. Mark dart centers. Use this measurement from center back to mark dart points when drawing dart legs to length as illustrated. True dart legs by adding to the shorter leg.
- Blend to the curve of the waistline.
- Complete the pattern and cut in fabric for a test fit given on the following two pages.

Personal fit; adjust using your measurements.

Figure 5



Fitting the Skirt

Sew the skirt with a long stitch. Press without steam and place on the form. The skirt may be critiqued separately as illustrated or stitched to the bodice.

The following check points are guides in analyzing the fit of a skirt. The waistlines of the bodice and skirt must match and the darts that are closest to the center of the garment should align with the princess line. If not, check measurements and make corrections. Darts that appear with stress lines require that the darts be shortened. Darts ending with more than slight fullness require that the darts be stitched to a longer length. Adjust side seams if the skirt is too tight or too loose. The hemline of a balanced skirt is parallel with the floor. If not, follow the examples below for suggestions in correcting the skirt and patterns.

A Well-Balanced Skirt

Figures 1a, b

- The skirt aligns with the center lines of the form and hangs straight from the hip to the hemline, indicating that the HBL line (crossgrain) is parallel with the floor (Figure 1a). The skirt stitched to the bodice is shown in Figure 1b.

Figure 1a

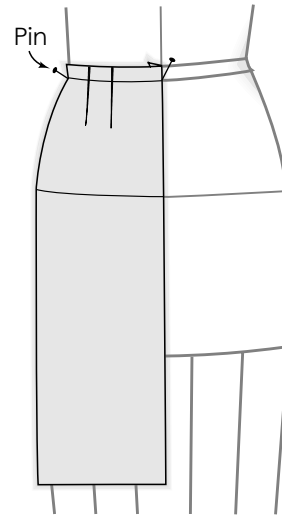


Figure 1b

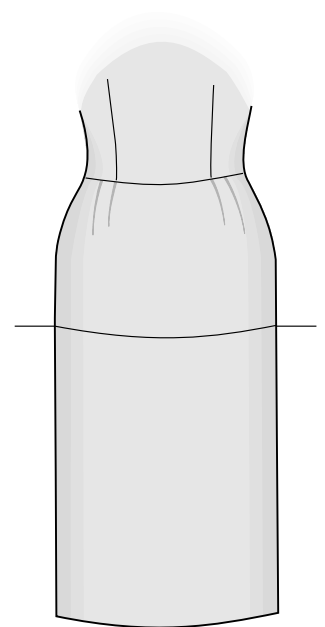


Figure 2a

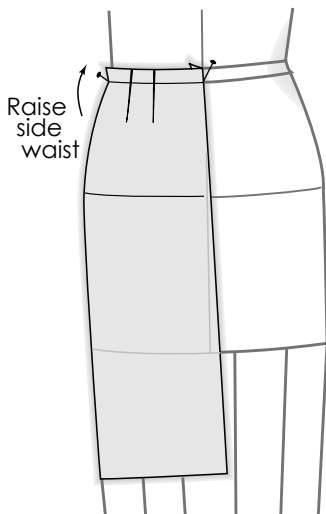
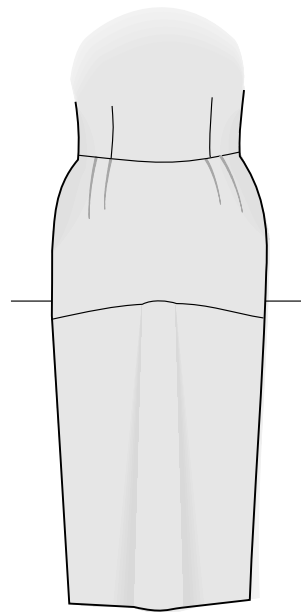


Figure 2b



Imbalanced Skirt

Figures 2a, b

- **Problem:** The skirt overlaps the center line (Figure 2a). A flare will appear at the center of the skirt (Figure 2b).
- **Possible causes:** Insufficient dart intake or side waist incorrectly marked. Check the location of the HBL on the form and the skirt draft.
- **Suggested solution:** Raise the side waist until the skirt aligns with the center line of the form. It may be necessary to release the side seams to correct the problem. Increase dart intake, if necessary.

Figures 3a, b

- The skirt swings away from the center (Figure 3a).
- The skirt will press against the thigh and move up the hipline when the wearer is walking (Figure 3b).
- Problem: Excessive dart intake or the side waist incorrectly marked. Check the location of the HBL on the form and the draft.
- Suggested solution: Lower the side waist until the skirt aligns with the center line of the form. It may be necessary to release the side seams to correct the problem. Decrease the dart intake, if necessary.

Figure 3a

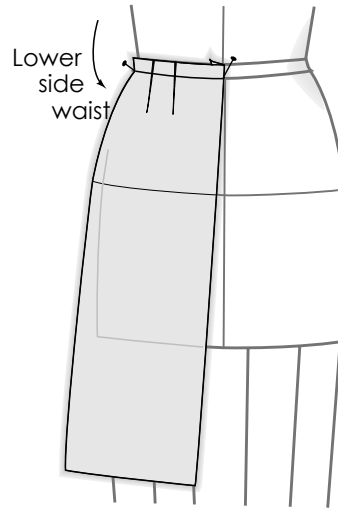
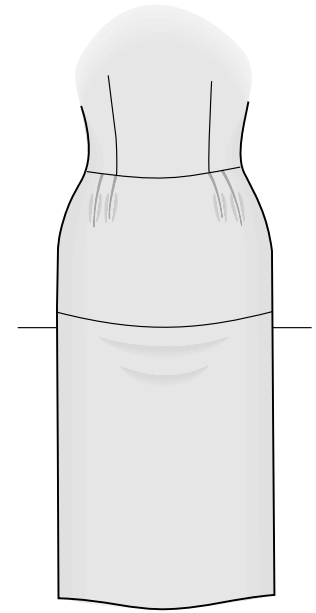


Figure 3b



SELF-EVALUATION TRUE AND FALSE TEST

Circle true or false. The answers are at the end of the chapter.

- | | | | |
|--|-----|---|-----|
| 1. Darts control the fit of the basic garment. | T F | 13. There are 12 major darts on the total basic bodice and skirt. | T F |
| 2. Dart legs confine unneeded excess. | T F | 14. It is not necessary to recheck measurements taken from the form or model. | T F |
| 3. A dart is the same as adding fullness. | T F | 15. The armhole measurement can determine the biceps. | T F |
| 4. Bodice darts do not radiate from the bust. | T F | 16. The armhole measurement can determine the cap height. | T F |
| 5. Gapping results from misplaced excess. | T F | 17. Measurements taken from a chart guarantee a perfect fit. | T F |
| 6. A standard missy form has a C-bust cup. | T F | 18. The shoulder and side seam of the form guarantees a perfect sleeve alignment. | T F |
| 7. The HBL is parallel with the waist. | T F | 19. The center cap notch stays at the grain line. | T F |
| 8. The center back waist is lower than the center front waist. | T F | 20. The front sleeve is identified by two notches. | T F |
| 9. Back darts are always the same length. | T F | | |
| 10. Some ease is in the front armhole. | T F | | |
| 11. Gapping is trimmed at the seams. | T F | | |
| 12. Darts take up excess caused by convex shapes. | T F | | |

PREPARING PATTERNS FOR TEST FIT

Matching Joining Seams

Place patterns with darts on top of patterns without darts at joining seams. Seams that do not match (check measurement chart) are adjusted equally at each end and blended with seamline.

Trueing Front and Back Bodice at Stitch Line

Figure 1

- Place back pattern on top of front pattern (shaded area), touching shoulder/neck corners and mark dart location on front shoulder.

Figure 1

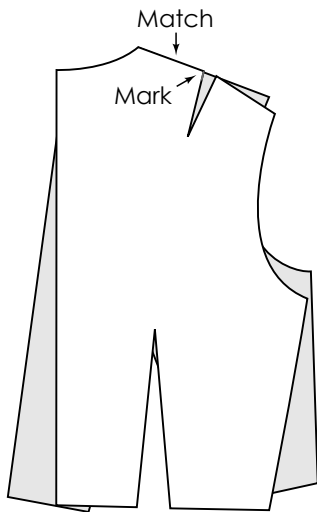


Figure 2

- Move back pattern so that other dart leg touches mark on front shoulder and pattern's edge, matching to shoulder tip. Adjust shoulder, if necessary.

Figure 2

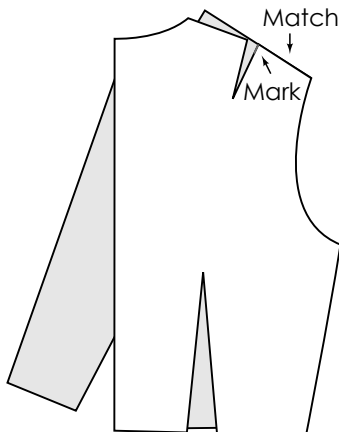
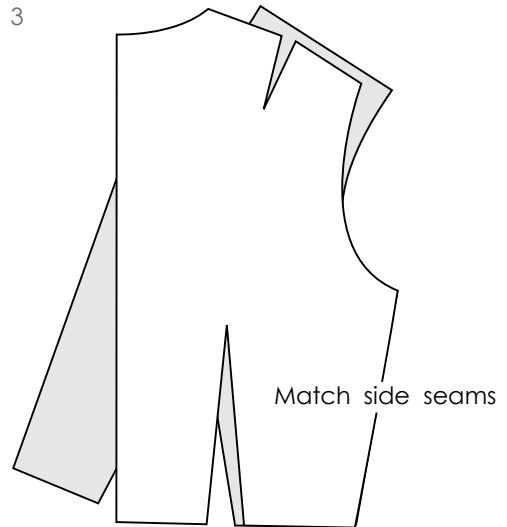


Figure 3

- Place side seams together, matching side at arm-hole and waist. Adjust side seam, if necessary.

Figure 3

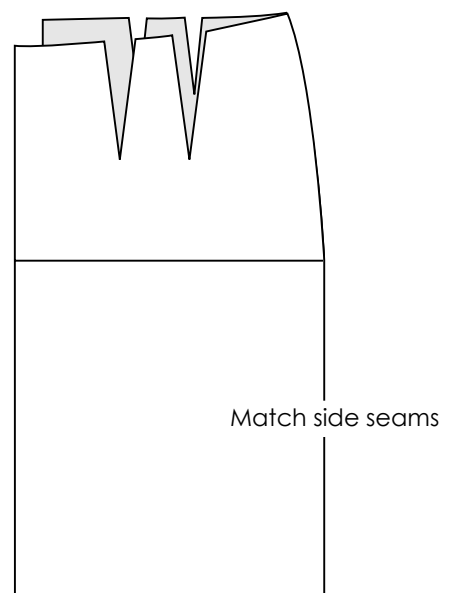


Trueing Front and Back Skirt

Figure 4

- Place back and front (shaded area) skirts together at sides. Match HBL lines. Skirt should match to side waist and hem from the HBL. If it does not, recheck muslin or recheck square line on draft. If correct, adjust patterns above and below the HBL to true.

Figure 4



Trueing Bodice with Skirt

Figure 5

- Place center back of bodice to center back of skirt (shaded area), matching stitchline to dart leg. Adjust dart, if needed.

Figure 5

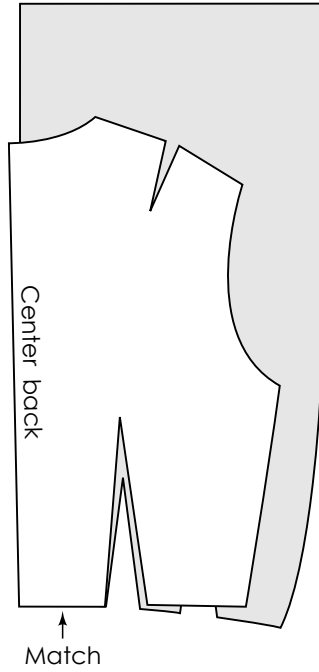


Figure 6

- Shift back pattern along waistline, matching mark of bodice with other dart leg on skirt. Side seams should match. If they do not, recheck waistline measurements and adjust.

Figure 6

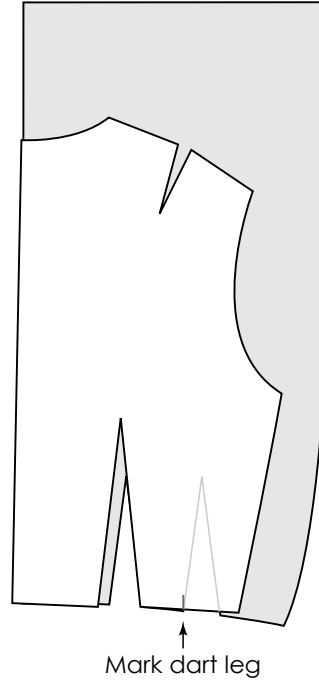
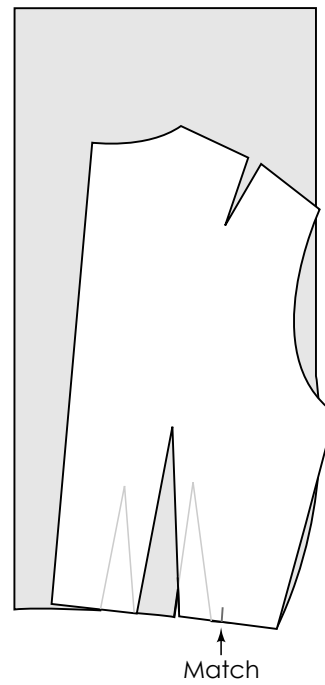


Figure 7

- Shift back pattern, matching other dart leg to dart leg of skirt. Broken line is skirt dart underneath. Mark location of dart leg on bodice.
- Repeat for front bodice and skirt (not illustrated).

Figure 7



THE BASIC SLEEVE

The basic sleeve is a mounted sleeve stitched to the basic bodice armhole.

A sleeve is to fit an arm, which is one of the most efficient and mobile parts of the human anatomy. The arm functions primarily in a forward motion but is capable of moving in every direction. This flexibility should be considered when testing the fit and comfort of the sleeve.

The center grain of a well-fitted sleeve should align with or be slightly forward of the side seam of models having a perfect stance. The arms of models with stooped shoulders tend to hang too far forward from the side seams. The arms of models with an upright stance tend to hang too far to the back from the side seams. In either case, the sleeve should align with the position of the relaxed arm without regard to alignment with the side seam.

Sleeve Terminology

Communicating in terms that are familiar with those in design and production will help to avoid misunderstanding when problem solving.

Grainline. Straight grain of the sleeve, which is the center of the sleeve from top of cap to wrist level.

Biceps level. Widest part of the sleeve dividing cap from the lower sleeve.

Sleeve cap. Curved top of the sleeve above biceps line.

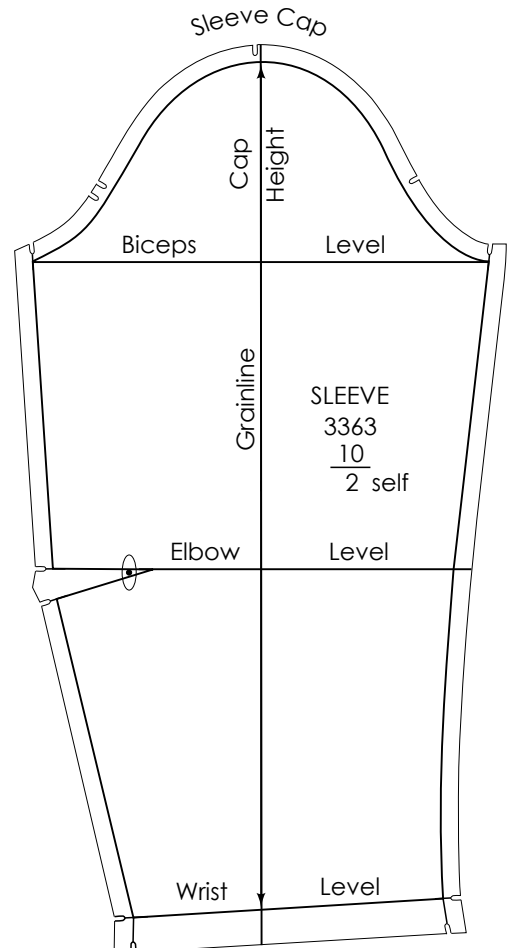
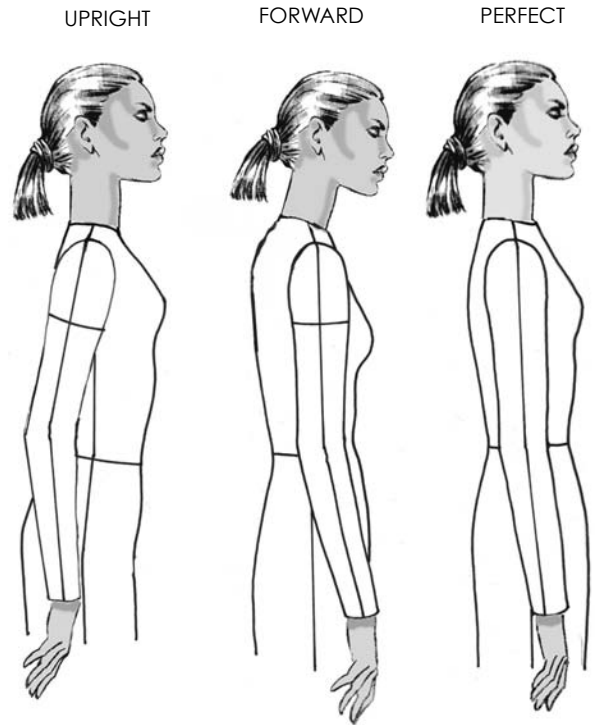
Cap height. Distance from biceps to the top at the grainline.

Elbow level. Placed at the articulation point of the arm, and the location of the elbow dart.

Wrist level. Entry for the hand.

Notches. A notch at the top of the sleeve cap divides cap ease between front and back sleeve and armhole of the bodice. One notch identifies the front sleeve, and two notches identify the back sleeve. Ease begins and ends at the front and back notches.

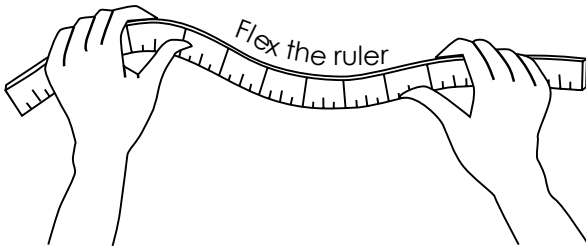
Cap ease. Ranging from 1 1/4 inches to 1 1/2 inches (depending on size) between front and back notches.



SLEEVE CAP EASE

Cap ease of the basic sleeve cap is approximately 1 1/4 to 1 1/2 inches for sizes 10 and above, and 1 1/8 to 1 1/4 inches for sizes below 10. The Sleeve Measurement Chart provides measurements for the sleeve draft but does not necessarily guarantee the correct amount of cap ease because of differences in forms and personal fit models. To help control cap ease and to avoid puckering, follow the “Armhole Measurements” formula (Figures 1a, b, and c). Other sleeve fitting problems that may develop can be resolved by referring to the armhole adjustment sections later in this chapter.

Figure 1 a



Armhole Measurement

Figures 1a, b, and c

To measure the front and back armholes, use a thin, flexible plastic ruler held upright when measuring. (Do not use a measure tape.)

Record measurements in spaces on the front and back armholes of the pattern for future reference.

- Measure front bodice armhole. Record ____.
- Measure back bodice armhole. Record ____.
- Add Measurements together. Record ____.
- Divide in half, add 1/4 inch. Record ____.

Record this measurements for your model size in the space provided on the Sleeve Measurement Chart titled “Armhole measurement.”

In the sleeve draft, it is the A to E instructions.

Figure 1b

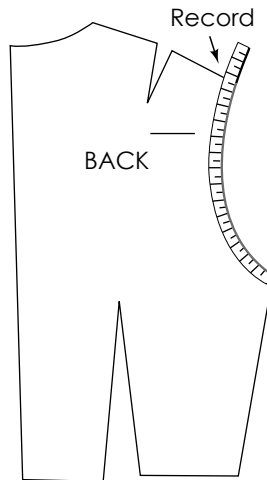
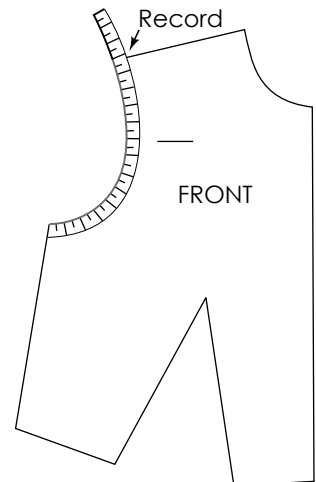


Figure 1c



SLEEVE MEASUREMENT CHART

Grade:	1"	1"		1 1/2"	1 1/2"	1 1/2"	2"
Sleeve length	6	8	10	12	14	16	18
Cap height	21 1/2	21 3/4	22	22 1/4	22 1/2	22 3/4	23
Armhole measurement	5 1/2	5 5/8	5 3/4	5 7/8	6	6 1/8	6 1/4
Biceps	—	—	—	—	—	—	—
	12 1/4	12 5/8	13	13 1/2	14	14 1/2	15 1/8

SLEEVE DRAFT

Figure 2

Figure 2

Draw a line on paper. Mark and label:

A to B = Sleeve length _____.

A to C = Cap height. Mark _____.

C to D = One-half of C to B.

D to D' = 3/4 inch. Mark. Square lines from A, C, D', B.

Armhole measurement = _____. Place a ruler at A and pivot until the measurement touches biceps line. Mark.

C to E = One-half of biceps measurement. Mark. Compare placement of the two marks, and mark biceps in between. Label E. Draw a line from A to E; divide into fourths. Mark and label, as shown.

C to F = C to E

Draw a line from A to F. Divide into fourths, mark and label, as shown.

B to O = 2 inches less than C to E.

B to P = B to O

Draw a line from O to E and from P to F.

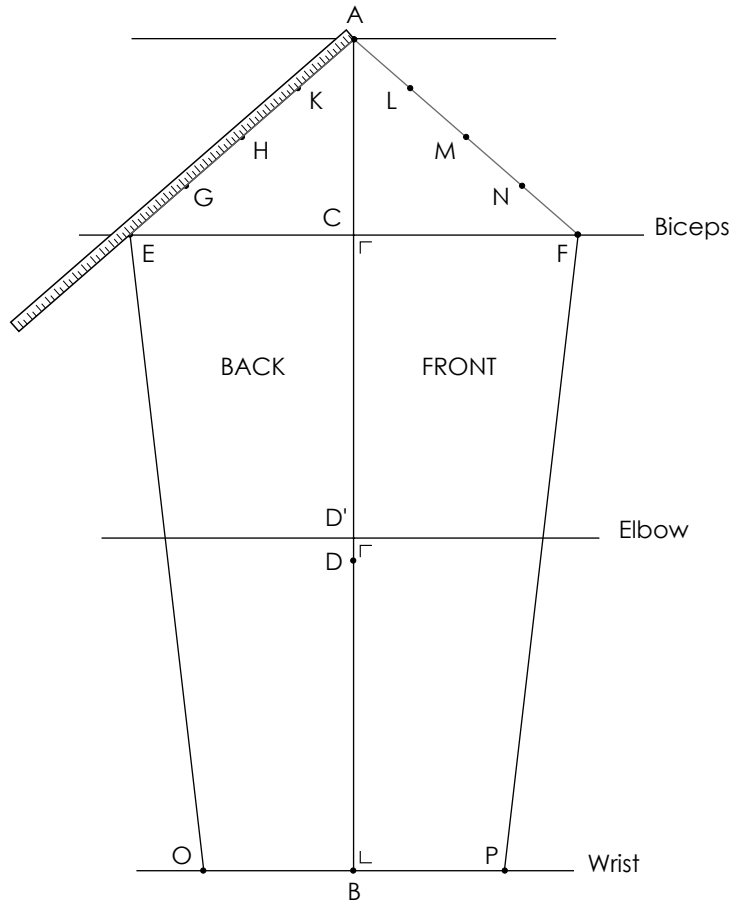
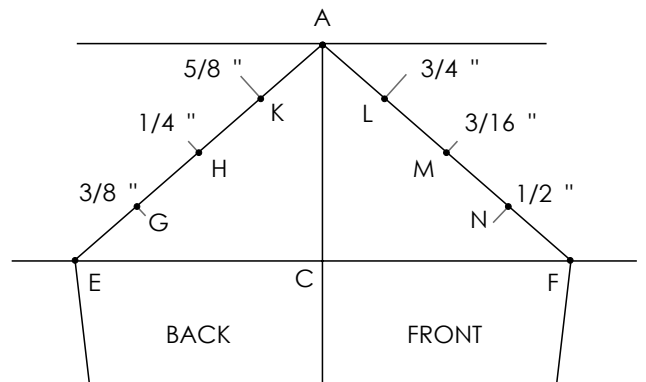


Figure 3

Figure 3

Square lines from the following:

- G—in 3/8 inch
- H—out 1/4 inch
- K—out 5/8 inch
- L—out 3/4 inch
- M—out 3/16 inch
- N—in 1/2 inch



Figures 4a, b
Front Capline:

- Use the French curve to shape the capline by touching A, L, and M. Draw the curve past M for blending.
- Change the position of the curve rule touching F, and N, and draw curve blending with M line (Figure 4a). Draw the curve.

Back Capline:

- Place the curve rule so that A, K, and H touch. Draw the curve past H to blend (Figure 4b).
- Change the position of the curve rule touching E and G, and draw curve blending with H line.

Figure 4a

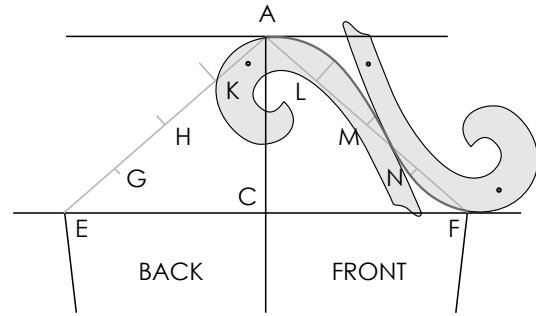


Figure 4b

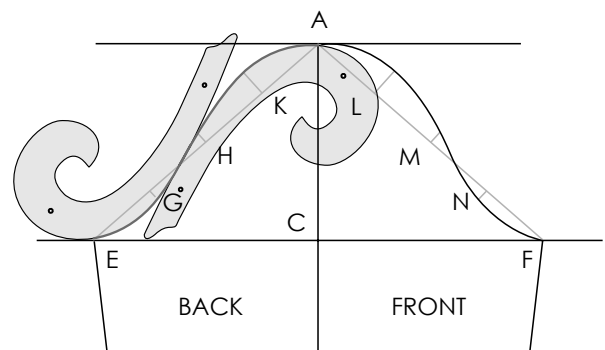


Figure 5

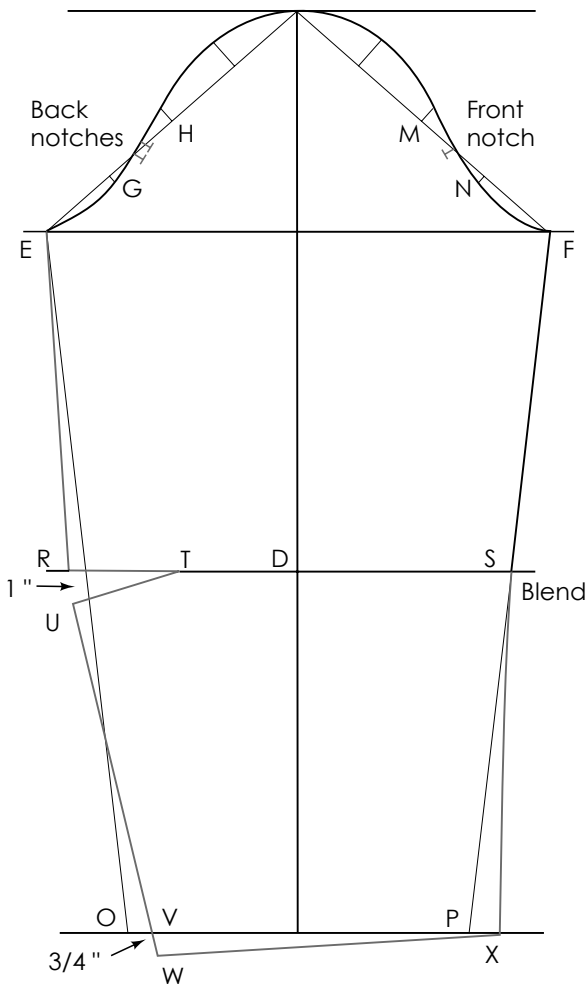


Figure 5

Completing the Sleeve:

- Label elbow Level S, and extend line R 1/4 inch. Draw a line from R to E.
- Elbow dart:
R to T = One-half of R to D. Mark.
R to U = 1 inch. Mark.
T to U = R to T. Draw connecting line.
O to V = 3/4 inch. Mark.
 Draw a line from U through V equal to S to P. Label W.
W to X = O to P. (Adjust at the fitting if necessary.)
 Draw a line ending at wrist level. Draw a slightly curved line from X to S to F.

Ease Control Notches

Back—Mark notch 1/2 inch up from G and the second notch 1/2 inch above it.
 Front—Mark one notch 1/2 inch above N.
 Continue with instructions to determine cap ease.

ADJUSTING SLEEVE TO ARMHOLE OF BODICE

The basic sleeve should measure approximately 2 inches more across the biceps of the pattern than the circumference of the arm. The basic sleeve cap should measure an average of 1 1/4 to 1 1/2 inches more than the front and back bodice armhole. The difference between the sleeve cap and armhole measurement is the amount of ease needed to fit over the ball of the arm. The amount of cap ease is determined by the width of the biceps, the cap height, and the circumference of the front and back armhole of the bodice. If any one of the factors is out of harmony, it will affect the fit and appearance of the sleeve in the following ways: excessive or insufficient cap ease, cap ease unequally distributed between the front and back armhole, and sleeves being too tight or too loose. Incorrect placement of the shoulder or side seams of the form will affect the alignment of the sleeve. It is advisable to correct these problems before attaching the sleeve to the garment to minimize fitting problems later.

Determining Cap Ease

Two methods are given to determine cap ease. The sleeve can be walked around the front and back armhole, or the measurement can be taken by using the plastic rule. Both are illustrated.

Method 1: Walking the Sleeve

Figures 1a, b, and c

- Place the corner of the front sleeve at biceps to the corner of the bodice.

Figure 1 a

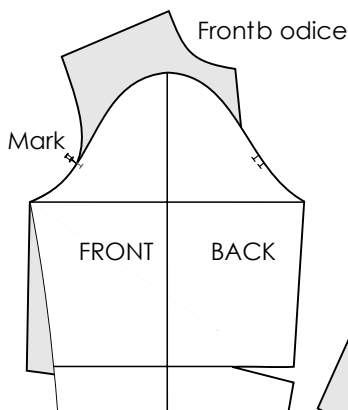


Figure 1b

Move incrementally up to this point

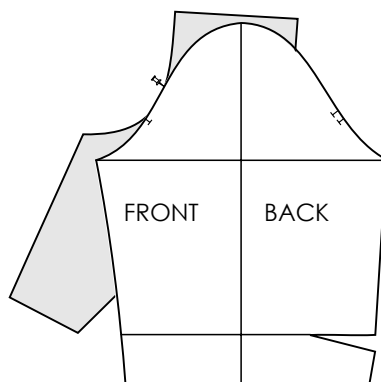
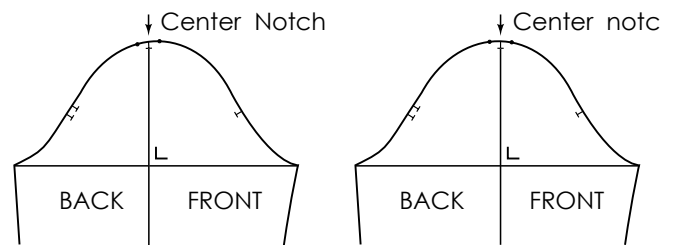
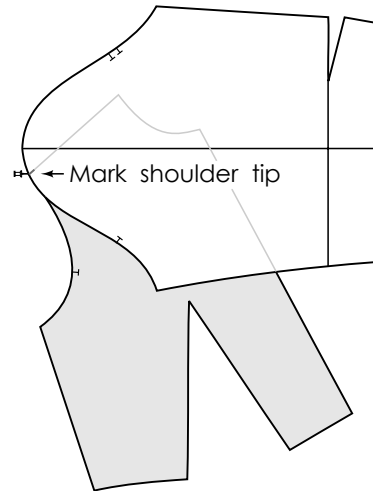


Figure 1c

Move incrementally to shoulder tip



- Use two pushpins alternately to pivot and advance the sleeve cap around the curve line of the armhole.
- Mark the notch location of the sleeve to the armhole of the bodice.
- When the sleeve cap reaches the shoulder tip of the bodice, mark the location on the sleeve cap.
- Repeat the process for the back sleeve.

Cap Ease

- If the cap ease is correct, center a notch between the marks to equalize the ease. Then continue on to the Setting the Sleeve into the Armhole section.
- If cap ease is more or less than required, see section on suggested adjustments of the sleeve or the armhole later in this chapter. When adjustments have been completed, continue on to the Setting the Sleeve into the Armhole section.

Method 2: Flex Rule Measurement

Figures 1a, b, and c

Use a very thin flexible plastic ruler held upright with both hands as the rule is manipulated around the curves of the armholes. Measure and record (if

not already recorded). Using back armhole measurement, measure the back side of the sleeve cap and mark where the back armhole measurement ended.

Repeat the process for the front armhole and mark the front sleeve cap.

Figure 1 a

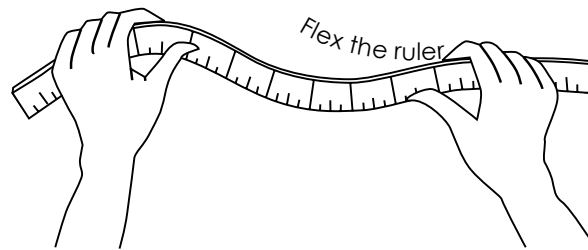


Figure 1 b

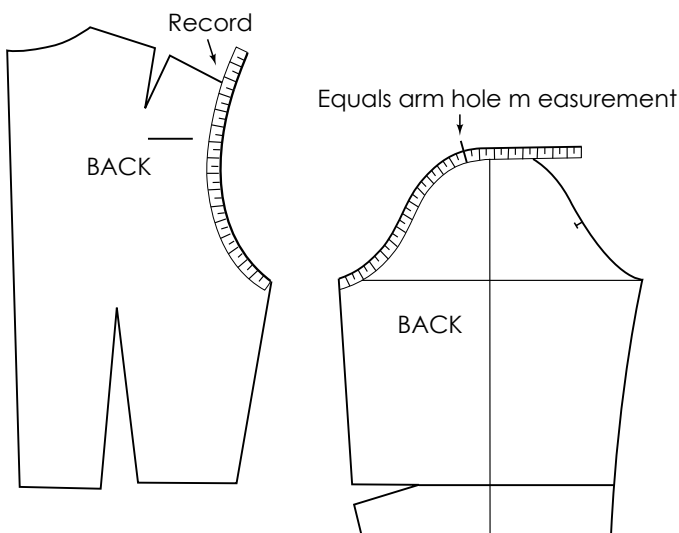
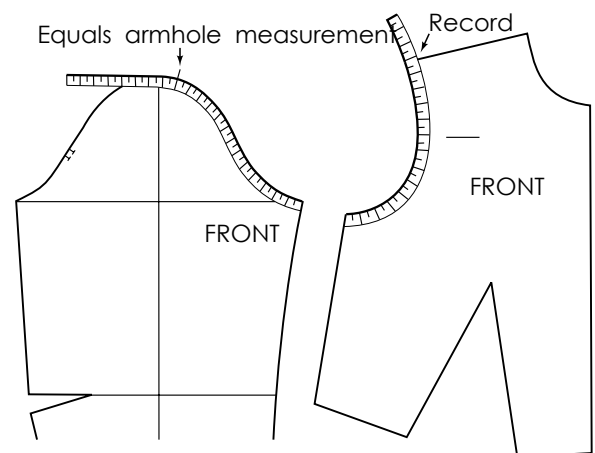


Figure 1 c



Cap Ease

Figures 1d and e

Measure the distance between the marks.

- If the amount of cap ease is sufficient, center a notch between the marks to equalize the excess. The center notch may be moved to equalize the ease. Continue to the next step, Setting the Sleeve into the Armhole section, to cut, stitch, and balance the sleeve.
- If the cap ease is less or more than needed, see the following pages for suggested adjustments of the sleeve or the armhole. When all adjustments have been completed, go to the Setting the Sleeve into the Armhole section to cut and stitch the sleeve.

Figure 1d

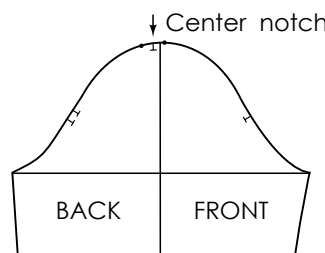
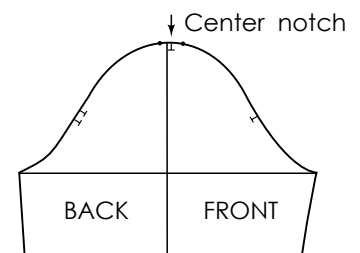


Figure 1e



Adjusting the Armhole to Accommodate Cap Ease

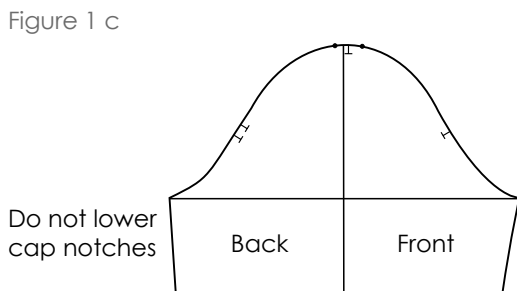
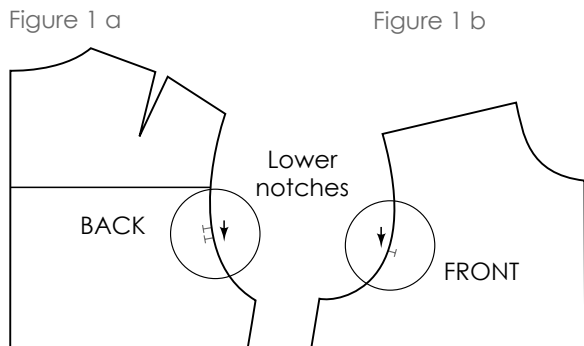
Even though the cap ease is the correct amount or a little more than required, the ease around the cap may show puckers (small gathers). The reason may be the weight of the fabric, or lack of control of the machine as the fullness is stitched around the curve of the armhole. Three examples showing how to control the cap excess are given.

Figure 1 should be tried first. If the problem is not resolved, combine with Figure 2 and finally Figure 3. The cap ease for example problem is 1 3/4 inches.

Figures 1a, b, and c

Lower front and back armhole notches (do not lower sleeve notches):

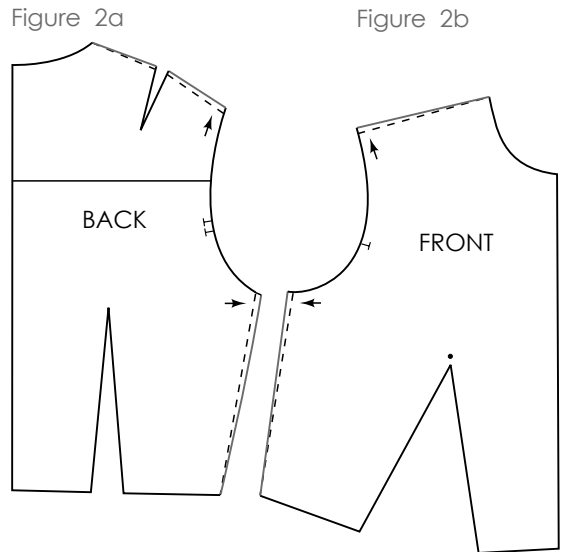
- Lower the front and back bodice notches 1/8 inch to 1/4 inch.
1/8 to 1/4 inch of sleeve ease is held and stitched below the notches, leaving remaining cap ease above the lowered notches.



Figures 2a, b

Increase the front and back armholes:

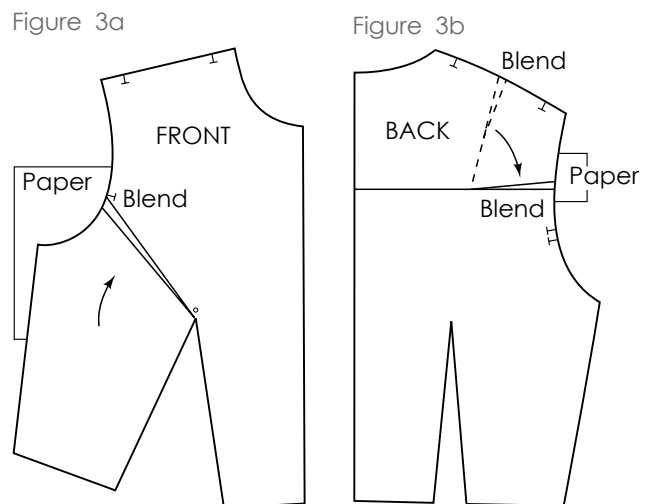
- Add 1/16 inch to the shoulder tip to zero at shoulder/neck.
- Add 1/16 inch to the front and back armholes to zero at the waist.
- The increased armhole can absorb more of the cap ease.



Figures 3a and b

Transfer ease to the armhole from available darts:

- Transfer 1/8 inch from the front waist dart and shoulder dart of the back bodice. Mend the pattern, or use the pivotal method.



Increase or Decrease the Biceps

Changing the width of the biceps also increases or decreases cap ease.

Figure 4

Increase biceps example: Add 1/2 inch to biceps

- Trace sleeve and all markings.
- Extend biceps line 1/4 inch to each side.
- Place sleeve with push pin on top of the extended line of the biceps. Pivot the sleeve upward until sleeve curves touch. Trace and blend with the traced cap. Pivot the sleeve downward until the under seams touch at wrist level. Trace and true the elbow dart.
- Repeat the process for the front sleeve. (Broken lines indicate the original sleeve pattern.)

Figure 5

Decrease biceps example: Decrease bicep 1/2 inch

- Trace sleeve and all markings.
- Mark 1/4 inch in from each end of the biceps.
- Place sleeve and push pin at the new biceps mark and follow the process shown in Figure 4.

Increase or Decrease Cap Ease

Problems: Puckering around the cap that appears like a puff sleeve (decrease cap height) (see Figure 7) or a sleeve swinging away from the side seam (increase cap height) (see Figure 6).

Figure 6

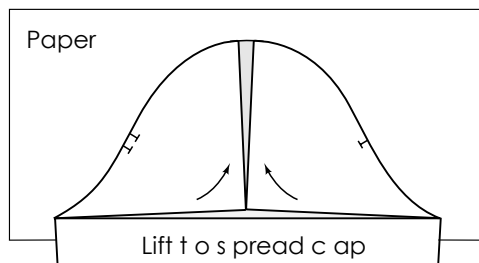


Figure 7

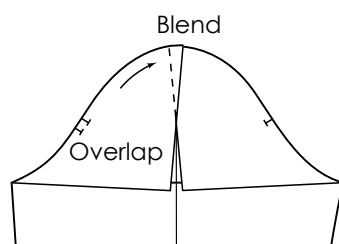


Figure 4

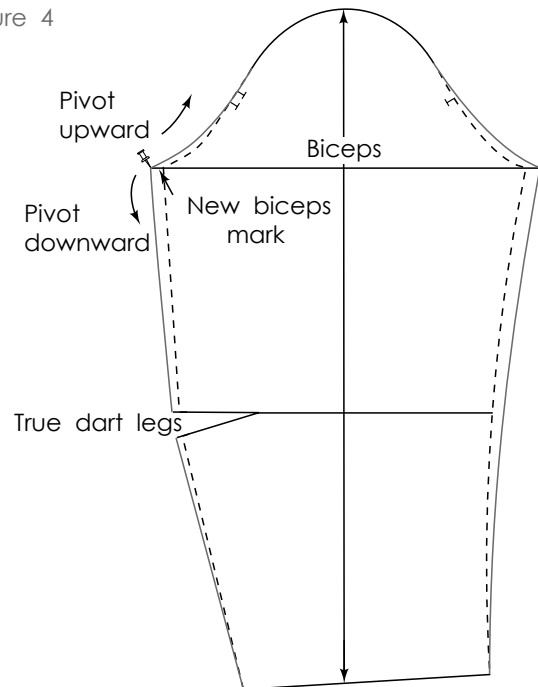
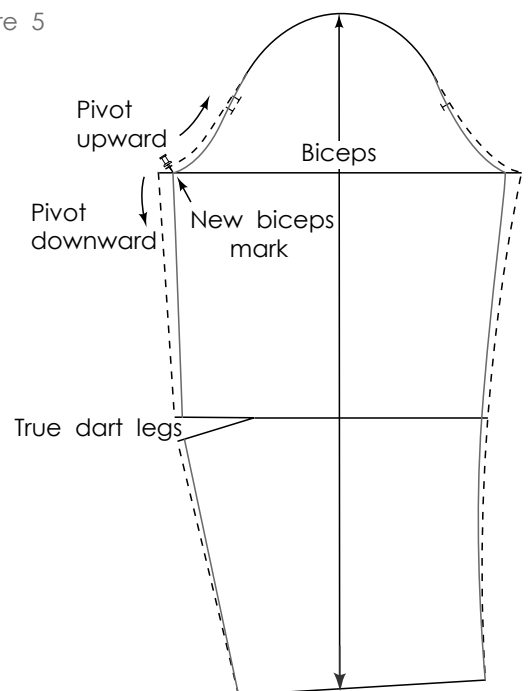


Figure 5



This method will also increase or decrease cap ease.

Figure 6

- To increase cap height, cut through the grainline to the corner of the front and back sleeve, and lift to spread the cap for the extra amount of ease needed.

Figure 7

- To decrease cap height, cut through the grainline to the corner of the front and back sleeve, and overlap the cap to eliminate the excess ease.

Setting the Sleeve into the Armhole

The sleeve is ready to be placed into the armhole. It is not known whether the sleeve will align with or hang slightly forward of the side seam. It is possible to precheck the fit by pinning the undersleeve to the armhole from notch to notch and pinning the cap notch to the shoulder seam. See Figures 2 and 4. If a sleeve hangs out of alignment, it can be rotated to correct the problem.

Figure 1a

- To prepare the sleeve, trace on muslin or the fabric of choice.
- Draw the center grainline and the biceps lines. Cut the sleeve from the fabric.
- Two methods can be used to sew the sleeve cap to the armhole: The cap ease can be crimped and stitched to the armhole or two rows of gather stitches can be made from front to back notch. Stitch one row at the seamline and the other 3/8 inch above. Pull the gather stitches to equal the distance from the front to back armhole notches. Ease should be evenly spaced to avoid puckers.
- Baste or stitch the sleeve to the armhole of the bodice for the test fit.

Figure 1a

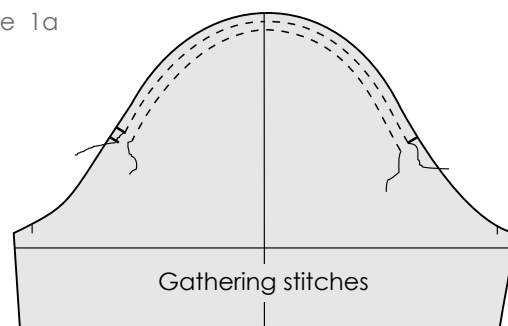
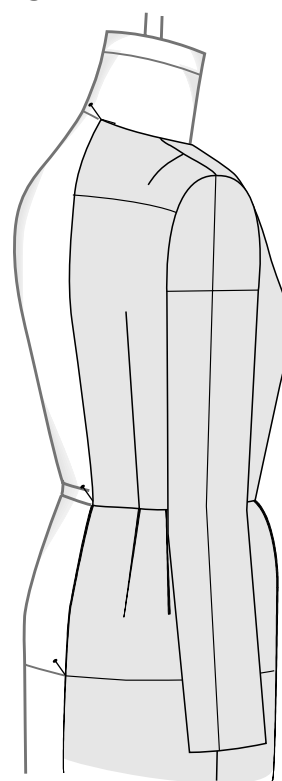


Figure 1b



Aligned

Evaluate the Hang and Fit of the Sleeve

Does the sleeve align with or hang slightly forward of the side seam (Figure 1)? Does the sleeve hang toward the back (Figure 2) or more than 1 inch forward of the side seam (Figure 3)? Sleeves that hang out of alignment should be rotated until aligned.

Does the sleeve show puckers or puff around the cap? If so, reduce cap height; see Figures 6 and 7 in the Back Bodice Draft section earlier in this chapter.

Is there insufficient cap ease? If so, increase cap height; see Figures 4 and 5 within the Front Bodice Draft section earlier in this chapter.

Sleeve with Perfect Alignment

Figure 1b

- The grainline of a well-balanced sleeve is aligned with or slightly forward of the side seam.

Rotating the Sleeve

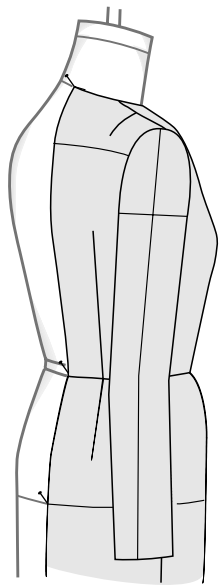
Rotating the sleeve will be necessary if the center grain of the sleeve hangs too far forward or too far back of the side seam of the garment. If either problem is observed, remove the sleeve from the armhole of the garment and follow the illustrations to correct the alignment of the sleeve.

Imperfect Alignment

Figures 2a, b

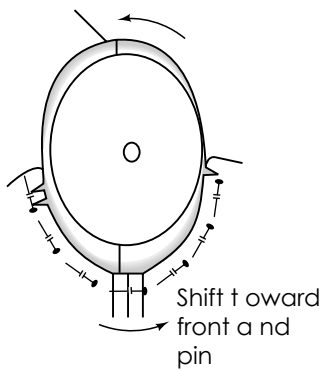
Sleeve hangs to the back of side seam.

Figure 2 a



Swing back of side seam

Figure 2 b



Imperfect Alignment

Figures 4a, b

Sleeve hangs forward of side seam:

Figure 4a

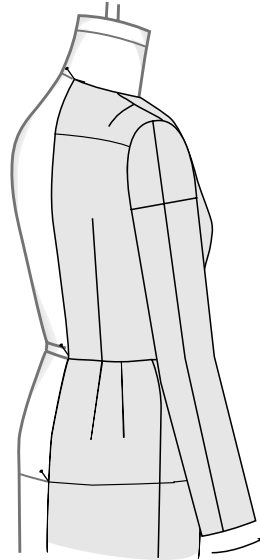
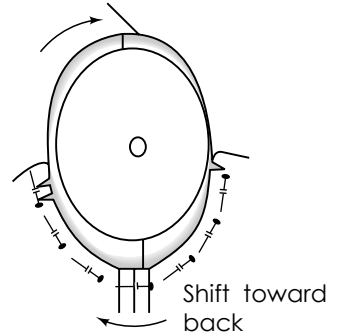


Figure 4b



Swing forward of side seam

Pattern Adjustment

Figures 3c, d

Adjust the shoulder and side seam, as shown.

Figure 3 c

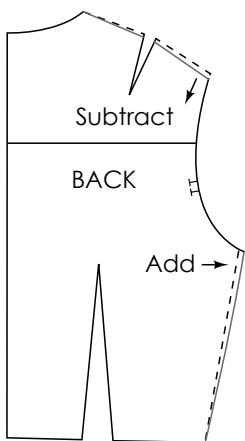
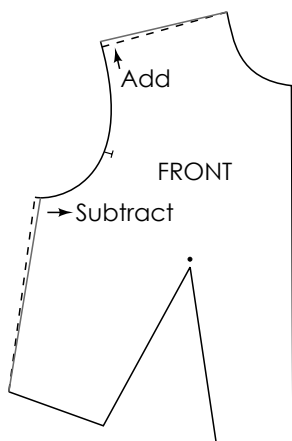


Figure 3 d



Pattern Adjustment

Figures 4c, d

Adjust the shoulder and side seam, as shown.

Figure 4c

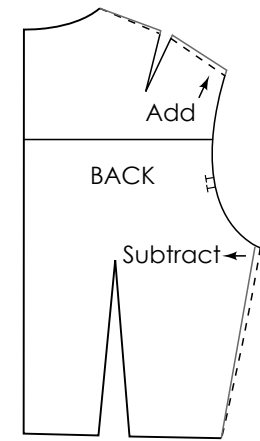
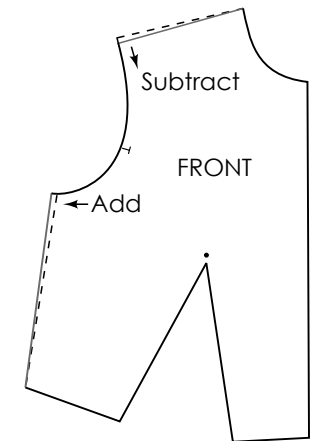
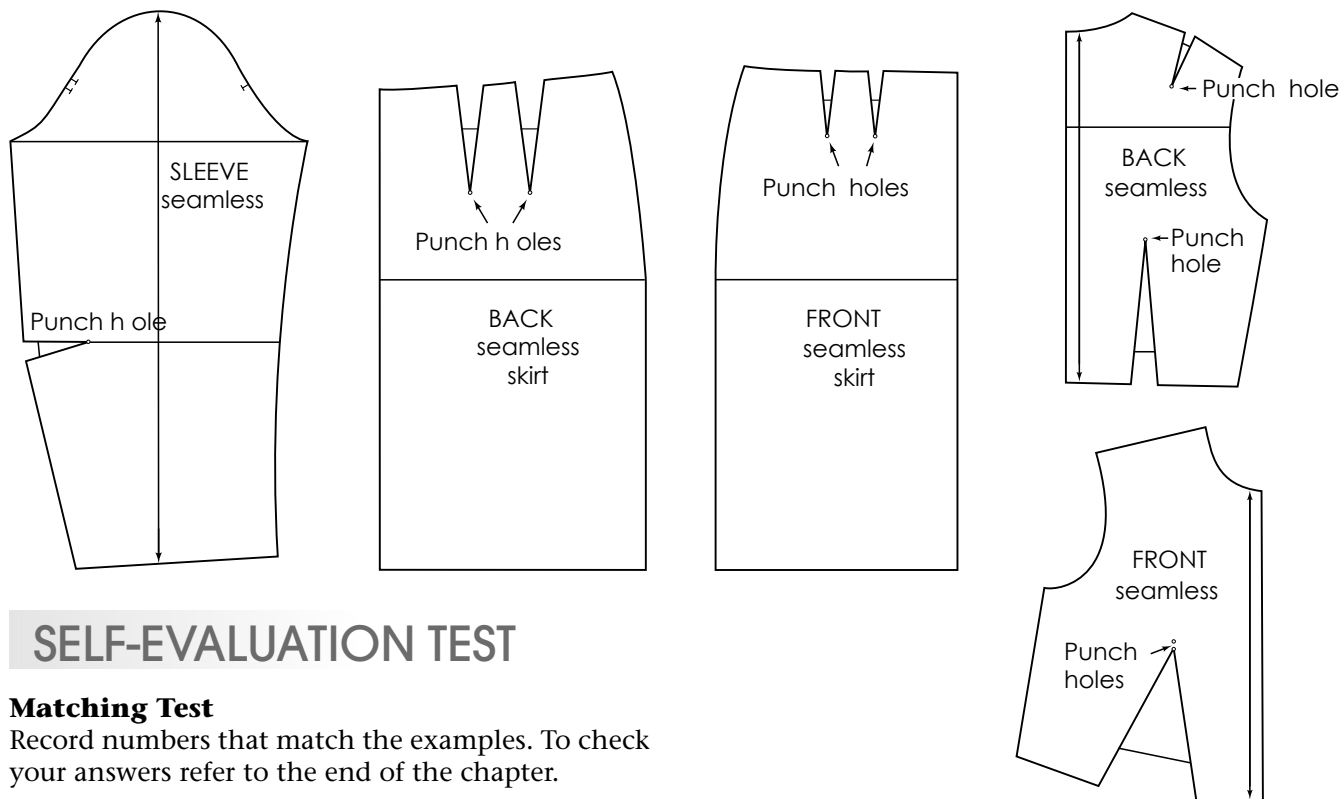


Figure 4d



SEAMLESS WORKING PATTERNS

The basic pattern set should remain seamless to develop design patterns. Seams are added at the completion of the basic pattern and design patterns. The professional designer or patternmaker may prefer to develop design patterns with seamed patterns to save time. The darts are partially cut out and a punch hole is placed at the end of each dart for accuracy when tracing the pattern for manipulation.



SELF-EVALUATION TEST

Matching Test

Record numbers that match the examples. To check your answers refer to the end of the chapter.

- | | |
|---------------------------------------|---------------------------------------|
| 1. Changes 2-D to 3-D | _____ Darts |
| 2. Perfect fit | _____ Horizontal balance line |
| 3. Cap ease for basic sleeve 3/8 inch | _____ Once marked not moved |
| 4. Gapping | _____ Insufficient cap ease |
| 5. Sleeve hangs to back | _____ Misplaced fullness |
| 6. Puckers along cap line | _____ HBL marked incorrectly |
| 7. Sleeve hangs out from side | _____ Balanced garment |
| 8. Basic dress | _____ Basic dress bridges the hollows |
| 9. HBL | _____ Cap height too short |
| 10. Uneven hemline | _____ Adjusting sleeve balance |
| 11. Armhole notches | _____ Excessive cap ease |
| 12. Equalize cap ease | _____ Control fit |
| 13. Rotating sleeve | _____ Shift center cap notch |
| 14. Biceps too loose | _____ Bodice in balance |
| 15. Bodice aligned | _____ Decrease bicep |
| 16. Working patterns | _____ Used for pattern manipulation |
| 17. Stitched darts | _____ Shift under seam to right |

COMPLETING THE PATTERN

A completed pattern has seam allowance, pattern symbols (notches, a punch, and circles), grainline, and pattern information. Pattern symbols guide the seamstress in constructing the garment, and pattern information assists in the production process. If the suggested pattern information differs from that of the company's standards, defer to the company's standard.

Pattern Information

Write or print pattern information clearly. Patterns other than lining and interconstruction should be written in black felt-tip pen. Lining patterns are written in blue, interlining in green, and interfacing in red. Pattern information can be placed in the center of the pattern or placed along the grainline and on the right-side-up of each pattern.

Grainline. The grainline is drawn through the length of the patterns.

Pattern identification. Label each pattern (*bodice front, back, skirt, sleeve, collar, pocket*).

Style number. Write the code number of the pattern set—for example, 3363 (33 may identify the type of garment and 63 may identify the fabric).

Pattern size. Record the pattern size.

Pieces cut. Write the number of pieces cut from each pattern to complete the garment.

A line separates the size (10) from the number of pieces cut. See examples on the next page.

Seam Allowance

The following are general guidelines:

1/4 Inch

- All faced areas
- Sleeveless armholes
- Narrow spacing
- Extreme curves)

1/2 Inch

- Armholes with sleeves
- Waistlines
- Center lines
- Stylelines
- Side seams (vary: 3/4 inch, 1 inch)
- Zipper seams (vary: 3/4 inch, 1 inch)

Overlock Seam

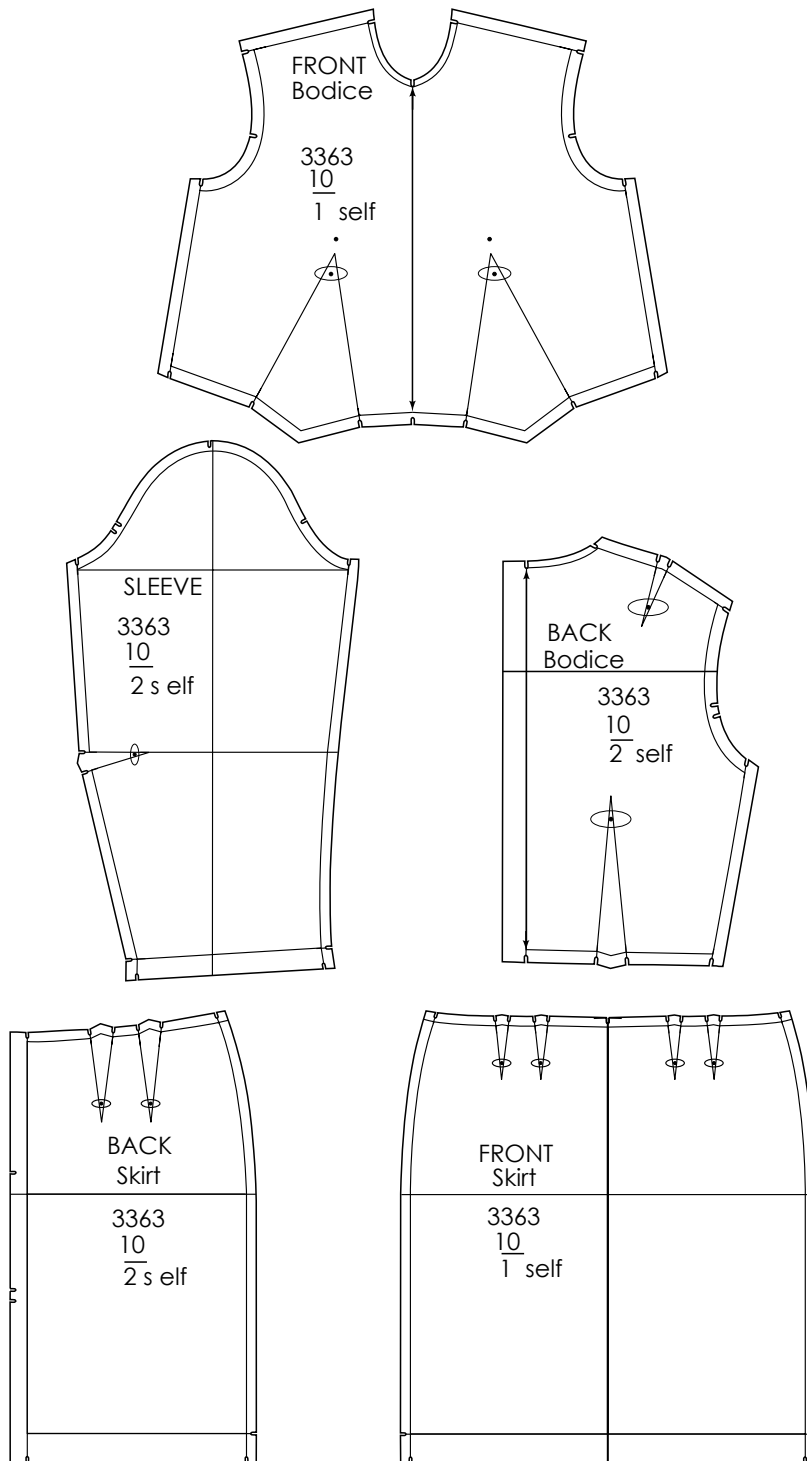
- 3/8-inch seam allowance

Punch/Circle

A symbol to indicate:

- Nearing the end of darts
- Pocket, or trim locations
- Button/Buttonhole placement
- Inverse corners

Basic Pattern Set—Seamed



FORM MEASUREMENT CHART

Circumference Measurements

1. Bust: _____, plus 2" ease _____
2. Waist: _____, plus 1" ease _____
3. Abdomen: _____
4. Hip: _____, plus 2" ease _____

Upper Torso (Bodice)

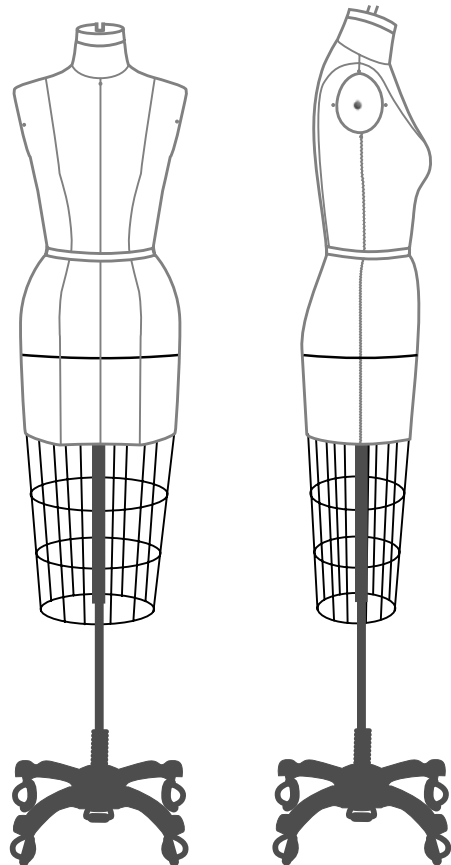
5. Center length: F _____, B _____
6. Full length: F _____, B _____
7. Shoulder slope: F _____, B _____
8. Strap: F _____, B _____
9. Bust depth: _____, radius _____
10. Bust span: _____
11. Side length: _____
12. Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____, B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____, B _____
20. Dart placement: F _____, B _____

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____, B _____
23. Hip arc: F _____, B _____
24. Crotch depth: _____
25. Hip depth: C.F. _____ C.B. _____
26. Side hip depth: _____
27. Waist to ankle: _____
Waist to knee: _____
Waist to floor: _____
28. Crotch length: _____
Vertical trunk: _____
29. Upper thigh: _____
Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____
Foot entry: _____

Form

Form make and type _____
Size _____ Year _____



Special Information

Set form to desired height and measure the following:

- C.F. waist to floor _____
C.B. waist to floor _____
C.B. neck to floor _____

PERSONAL MEASUREMENT CHART

Circumference Measurements

1. Bust: _____
2. Waist: _____
3. Abdomen: _____
4. Hip: _____

Upper Torso (Bodice)

5. Center length: F _____ B _____
6. Full length: F _____ B _____
7. Shoulder slope: F/R _____ F/L _____
B/L _____ B/L _____
8. Strap: F/R _____ F/L _____
9. Bust depth: F _____ Radius _____
10. Bust span: _____
11. Side length: F/R _____ F/L _____
12. *Back neck: _____
13. Shoulder length: _____
14. Across shoulder: F _____ B _____
15. Across chest: _____
16. Across back: _____
17. Bust arc: _____
18. Back arc: _____
19. Waist arc: F _____ B _____
20. Dart placement: F _____ B _____
21. Standard dart intake:
Front = $1''$ (2 darts $1/2$ to $5/8''$)
Back = $2''$ (2 darts 1 to $1\ 1/4''$)

Lower Torso (Skirt/Pant)

22. Abdomen arc: F _____ B _____
23. Hip arc: F _____ B _____
24. Crotch depth: _____
25. Hip depth: CF _____ CB _____
26. Side hip depth: R/S _____ L/S _____
27. Waist to knee _____ ankle _____ floor _____
28. Crotch length _____ Vertical trunk: _____
29. Upper thigh: _____ Mid-thigh: _____
30. Knee: _____
31. Calf: _____
32. Ankle: _____

*Measuring the Arm

Use your measurements (shown by asterisks) for the draft of the basic sleeve. Read the instructions. Use the *cap height* from the sleeve measurement chart, or use the formula to determine cap height.

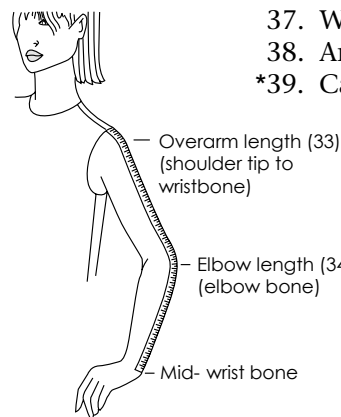
Personal Figure Variations

- A. Head height relationship:
Bust _____ Waist _____
Crotch _____ Knee _____
- B. Bust/back/chest relationship:
Bust _____ Back _____
- C. Hip types: _____
- D. Arm types: _____
- E. Abdominal/thigh relationship:
Abdominal _____ Thigh _____
- F. Shoulder type _____
- G. Shoulder/hip relationship:
Shoulder _____ Hip _____
- H. Leg types _____
- I. Leg types _____
- J. Figure stance: _____
- K. Asymmetric figure. Record high side, right and left.
Shoulder: _____ Hip: _____
- L. Tilting waistline. Record high and low.
Front: _____ Back: _____
- M. Bust/waist = _____
Waist/hip = _____
Bust/hip = _____
- N. Other variations: _____

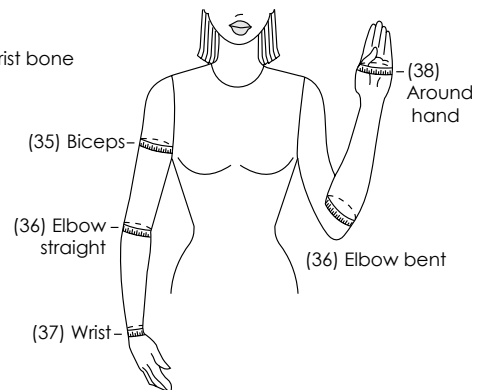
Personal Arm Measurements

33. Overarm length:* _____
34. Elbow length:* _____
35. Biceps plus 2":* _____
36. Elbow bent (reference) _____
37. Wrist (reference) _____
38. Around hand (reference) _____
- *39. Cap height _____

Length



Circumference



ANSWERS TO SELF-EVALUATION TESTS

1. T; 2. T; 3. F; 4. F; 5. T; 6. F; 7. F; 8. T; 9. F; 10. T;
11. F; 12. T; 13. F; 14. F; 15. T; 16. T; 17. F; 18. F;
19. F; 20. F

Matching test: 1, 9, 11, 3, 4, 10, 2, 8, 7, 13, 6, 17,
12, 15, 14, 16, 5

Dart Manipulation

Dart Manipulation (Principle #1)

WHY FLAT PATTERNMAKING?

WORKING PATTERNS

FLAT PATTERNMAKING METHODS

THREE FLAT PATTERN TECHNIQUES

The Process

Design Analysis

PATTERNMAKING TERMS

TEST FIT

Qualities of the Flat Pattern Patternmaker

DART MANIPULATION

Principle #1

Applying Dart Manipulation—Introduction to Design Patterns

Patternmaking Techniques

Charting Dart Locations

More About Darts

Completing the Dart

SINGLE-DART SERIES—SLASH-SPREAD TECHNIQUE

Steps in the Process

Center Front Waist Dart

Mid-Shoulder Dart

Center Front Neck Dart

French Dart

SINGLE-DART SERIES—PIVOTAL-TRANSFER

TECHNIQUE

Mid-Neck Dart

Side Dart

Mid-Armhole Dart

Shoulder-Tip Dart

THE SHOULDER DART

The Multidispersion Working Pattern for Use
When Shoulder Dart Not Required

THE BACK NECK DART

Excess Transferred to Armhole

SELF-EVALUATION TEST

Consistency of Dart Angle

Proof of Principle #1

TWO-DART SERIES—SLASH-SPREAD TECHNIQUE

Waist and Side Dart

Mid-Shoulder and Waist Dart

Mid-Armhole and Waist Dart

TWO-DART SERIES—PIVOTAL-TRANSFER

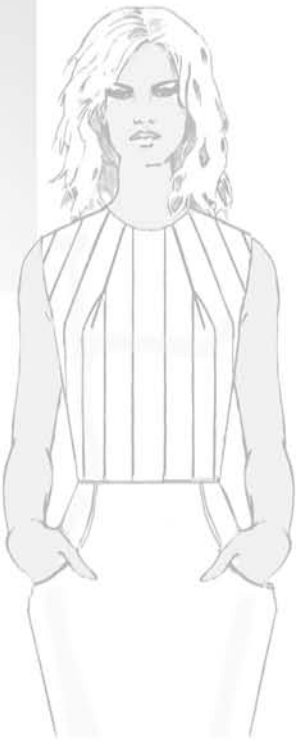
TECHNIQUE

Mid-Neck and Waist Dart

Shoulder-Tip and Waist Dart

Center Front Neck and Waist Dart

SELF-EVALUATION TEST



WHY FLAT PATTERNMAKING?

Flat patternmaking is the fastest and most efficient method devised for developing design patterns that control consistency of size and fit of mass-produced garments. Flat patternmaking is unique among other methods in relying on copies of previously developed patterns (working patterns) for manipulation using the slash, or pivotal methods.

Flat patternmaking is based on three major patternmaking principles and techniques: *dart manipulation* (relocating darts), *added fullness* (adding more fabric in the design), and *contouring* (fitting to the hollows of a model's figure). All are explained in greater detail in this chapter. Read the poem and see the transformation of a working pattern into a design pattern (the author's signature design).

ODE TO A WORKING PATTERN

From a master pattern was I cloned,
a perfect shape to be changed and
honed.

While I lay prone on this tabletop,
design lines are plotted nonstop.

Who is this person with scissor in
hand

slashing, spread, lapping according
to plan?

Look what has been done to me
that outrageous pattern is a travesty!

My original shape I can't reclaim,
for what I was is not the same.

But wait, now assembled and sewn,
what was confusing is now known.

I do not look the same it is true,
yet without me what could they do?

Draw the design on the model provided,
my shape the clue by which to be guided.

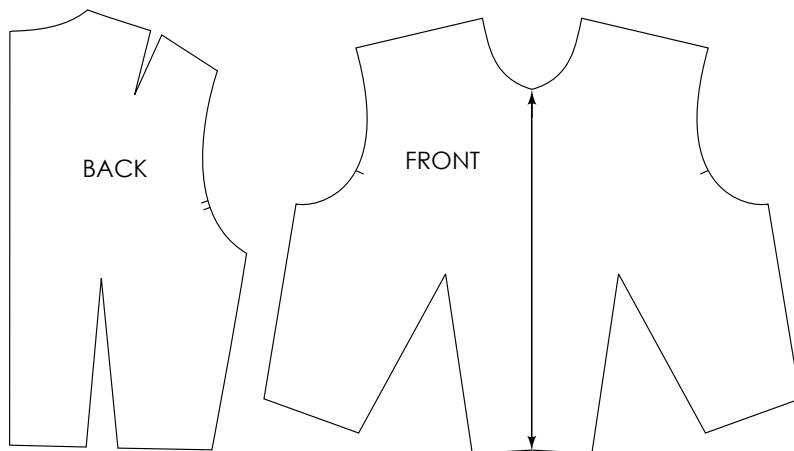
If perplexed, see later in text and you will
find me,

darted, flared, and fitted and in all my glory

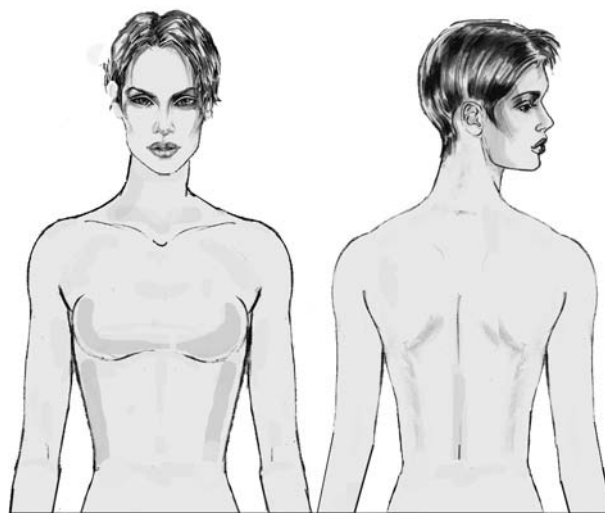
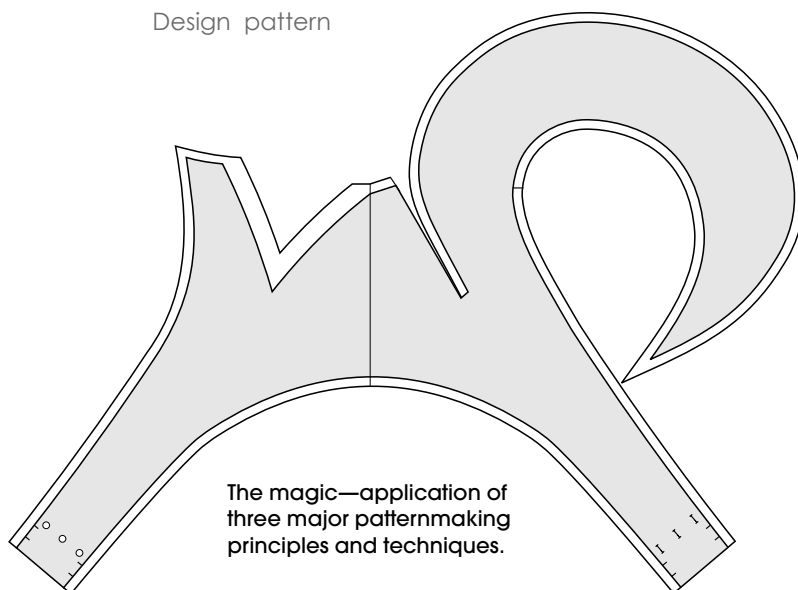
Designs simple and complex you can create
by learning flat patternmaking, so why wait?

—Helen Joseph-Armstrong

Working patterns



Design pattern



I am waiting to be dressed in my design

WORKING PATTERNS

Working patterns should remain seamless for the inexperienced patternmaker (for clarity) and for drafting more complex patterns where joining parts overlap. Experienced patternmakers may choose to work with seamed patterns.

A pattern of any type can be a working pattern, especially if a pattern exists that closely relates to a design. For example, if the design has a princess line

and the only difference is that the panels are gathered, the patternmaker will choose a princess line pattern to copy, if one is available. This saves time because part of the design detail has already been worked out.

Always trace a copy of the working pattern for manipulation when using the slash method for pattern development. The original pattern is saved as a base for other designs.

FLAT PATTERNMAKING METHODS

There are two flat patternmaking techniques: *Slash method*—to relocate darts, slash to open the pattern for more fabric, or slash to overlap for a closer fit.

Pivotal/transfer method—the original pattern is pivoted and traced in sections until the new pattern shape is completed without slashing. Both pattern methods are explained and illustrated in this chapter.

A working pattern becomes a design pattern after its shape changed through manipulation.

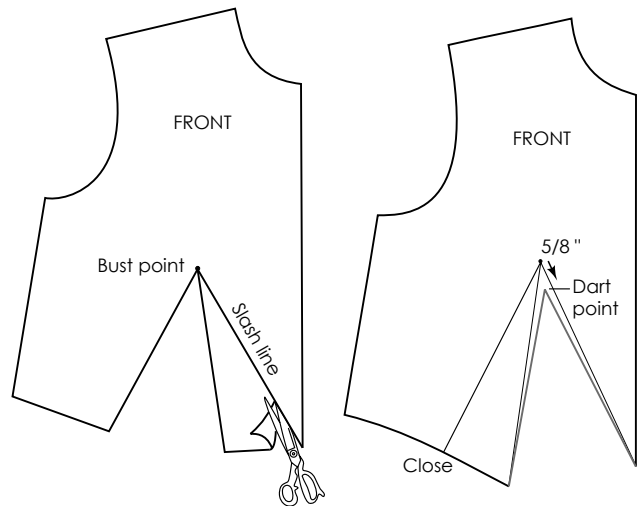
THREE FLAT PATTERN TECHNIQUES

Dart manipulation. Changing the location of a dart within the pattern frame. Remember that the dart is responsible for fit and will be part of the design in one form or another.

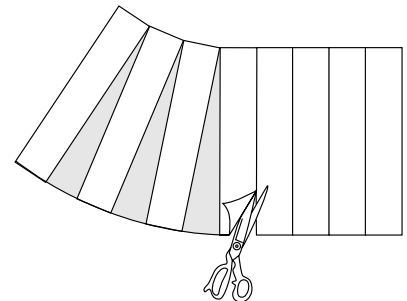
Adding fullness. Applies when design fullness is greater than the dart excess can provide. Added fullness is not directed to the pivotal point (bust). Adding to the pattern's outline also indicates that added material is needed for the design.

Contouring. Fitting to the contour above, below, and in between the bust, leaving the dart excess to be absorbed into stylelines, or gathers. Gapping ease caused by cut-out neck lines and armholes is transferred to be absorbed.

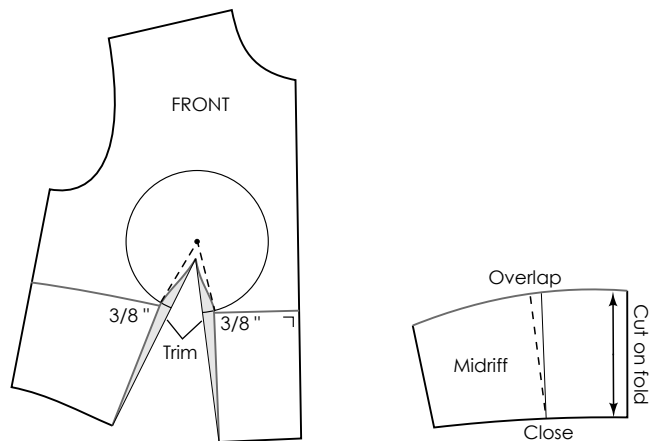
Dart Manipulation



Adding Fullness



Contouring



The Process

The process for creating design patterns using the flat patternmaking system:

- First, the design is analyzed and its creative elements identified.
- Second, the patternmaker identifies which of the three principles and techniques to apply in creating pattern shapes for a three-dimensional replica of the design. Other design elements that do not change the shape of the patterns are part of the finished design.
- Third, the working pattern—a traced copy using the slash method or the original pattern for the pivotal method—is chosen.

Design Analysis

Through design analysis, an experienced patternmaker is able to identify which principles and techniques to apply in developing correct pattern shapes that end in a three-dimensional replica of the design.

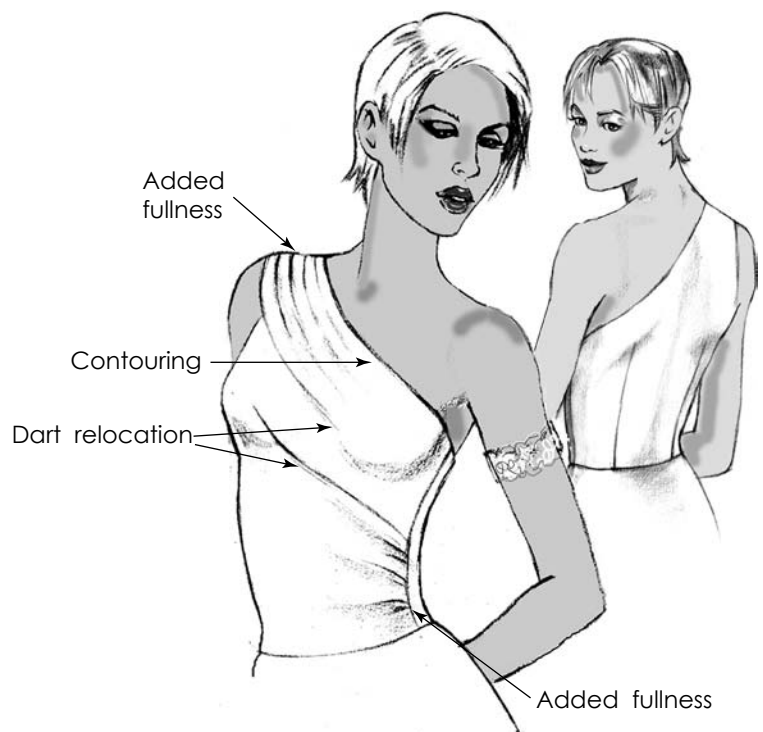
The example illustrates how a sketch should be marked after the patternmaker has identified principles and techniques in preparing for pattern manipulation. The design incorporates all three principles and patternmaking techniques.

To develop these skills, the patternmaker should cut muslins for each design project. Place the muslin on a form or model to study and compare the relationship between the pattern shapes and resulting design.

Eventually, when looking at a design, the pattern shapes will be visualized, and when looking at the shapes of patterns, the design is revealed.

Design projects in the text provide analyses of each design and the accompanying principles and patternmaking techniques, from simple to complex.

Each principle and patternmaking technique is carefully explained with clear illustrations and explanations throughout the text.



PATTERNMAKING TERMS

Patternmaking terms and their definitions will be introduced wherever appropriate throughout the chapter to help facilitate understanding.

Pattern plot. The act of placing lines on a traced copy of the working pattern relating directly to the design features. The lines are used as guidelines for pattern manipulation.

Pivotal point. A designated point on the pattern (for example, the bust point). The pattern is slashed to, or pivoted from, this point. This allows the pattern shape to be altered without changing its size or fit.

Pattern manipulation. The act of slashing and spreading, or pivoting a pattern to alter its original shape. The new pattern shape represents design features of the garment.

Design pattern. The finished pattern that contains all the features related to the design.

TEST FIT

As each design project is completed, the design should be cut in preshrunk muslin (or fabric chosen for the design) and placed on a form or model for a test fit. One-half of the garment is needed when fitting the form (unless it is an asymmetrical design, which requires a full garment). A full garment is required when fitting the model. Seam allowances can be added in one of two ways for a test fit:

1. The seamless pattern can be traced on cloth, adding seam allowance directly on the fabric.
2. Seam allowances can be added to the pattern before cutting in cloth.

The garment should be stitched using 6 to 10 stitches per inch. The seams are pressed without steam. Place the garment on the form or model for the test fit.

Qualities of the Flat Pattern Patternmaker

A patternmaker, with earnest dedication, will be able to:

- *Analyze* the similarities and differences between design and working pattern, and can identify which patternmaking principles and techniques to apply to the developing design.
- *Visualize* in three dimensions as the design lines are plotted on the working pattern. The process is done while the pattern lays flat on a tabletop, hence, the name flat patternmaking.
- *Finalize* the process through manipulating the plotted design lines using the selected patternmaking principles and techniques in creating an exact replicate of the design.

As you continue your studies, you will learn all the necessary fundamentals that form the basis for confidence in developing designs both simple and complex (see *Ode to a Working Pattern*). As your knowledge increases, so also will your appreciation of the flat patternmaking method. I encourage you to experiment with designs of your choice. Use the half-forms, size 8, as a practice tool when space is limited.

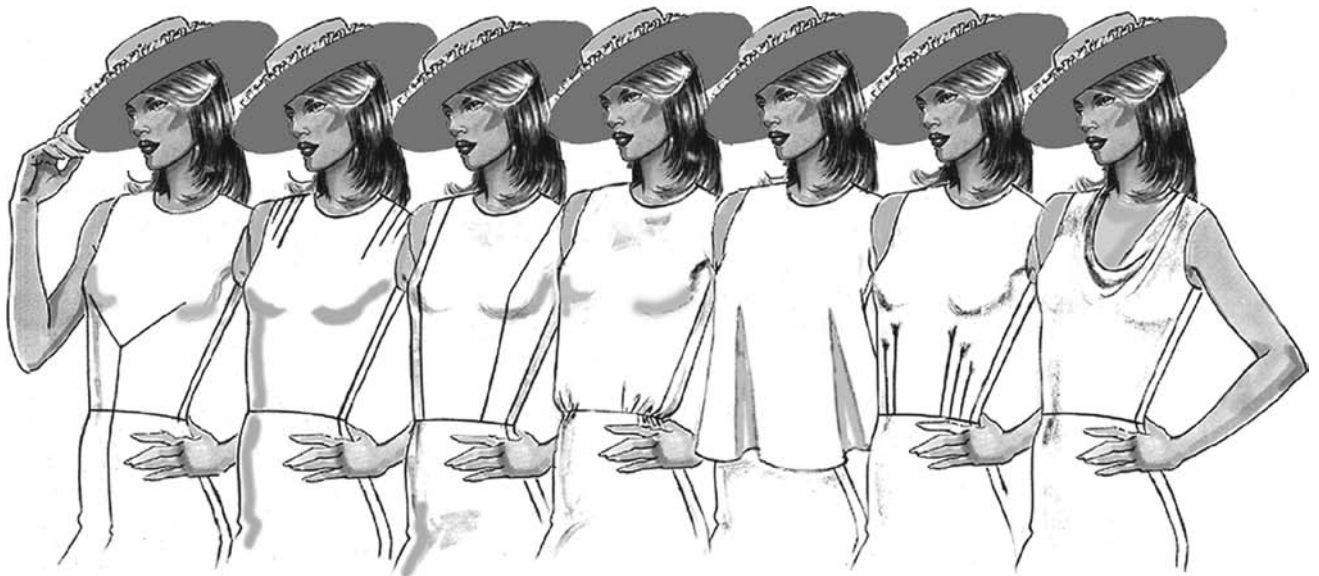
DART MANIPULATION

Principle #1

Principle. A dart can be transferred to any location around the pattern's outline from a designated pivotal point without affecting the size or fit of the garment.

Corollary. The dart excess (space between the dart legs) can be used as gathers, pleats, tuck-darts, stylelines (those that cross over the bust point or within 1 inch of the bust), cowls, flare (unstitched dart legs), or ease in the armhole for casual garments. The creative use of the dart excess is called a *dart equivalent*.

The dart or its equivalent will *always* be somewhere within the pattern where it was first developed. Dart(s) or dart equivalents will direct themselves toward the pivotal point. A dart ends before reaching the pivotal point and should not go beyond it, especially the pivotal point of the bust.



Style darts Multiple darts Stylelines Gathers Flare Tuck- darts Cowl

Applying Dart Manipulation—Introduction to Design Patterns

The technique is applied when the dart of working patterns (bodice, skirt, sleeve, or any working pattern) are relocated in the process of creating design patterns. To create a design pattern, the design is analyzed first to identify the location of the dart or equivalent before manipulating the pattern.

The following design projects illustrate the beginning of pattern manipulation, and each process should be completed in the order given because each will help to prepare the patternmaker or designer for more advanced work. Both artistic and technical skills are required to successfully create design patterns.

Patternmaking Techniques

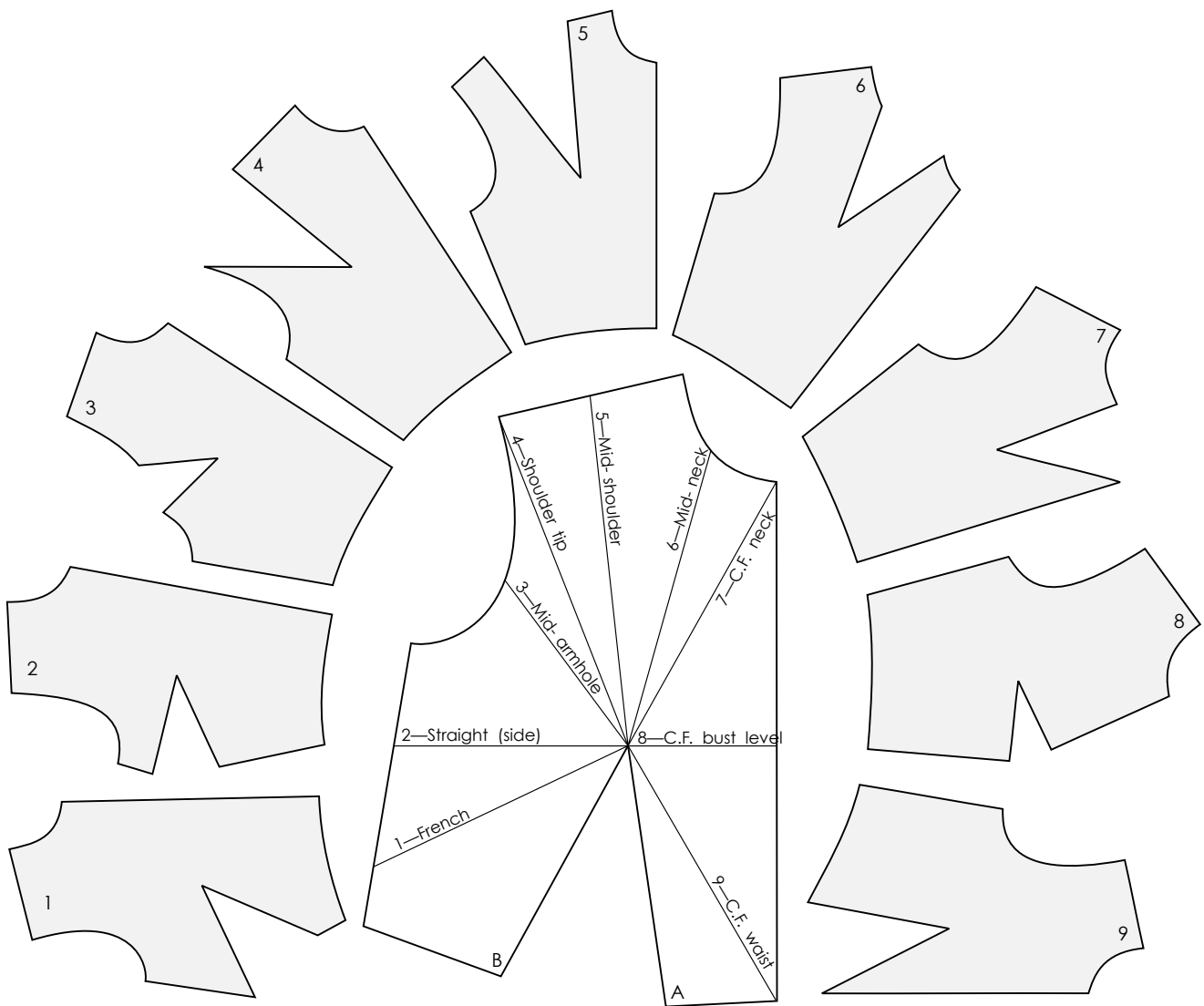
- *Slash-spread and overlap:* Through this method, the patternmaker is able to see how the original working pattern changed into a design pattern.
- *Pivotal-transfer:* This method does not require that the working pattern be slashed in order to change its original shape into a design pattern. It is a faster method and, with experience, it is preferred. Project examples start in the section entitled Single-Dart Series—Pivotal Transfer Technique later in this chapter.

Charting Dart Locations

To prepare for the following projects, trace a *copy* of the basic front bodice pattern on tag board and draw guidelines from bust point, marking each dart location. The guidelines establish common areas for dart relocation and for creating design patterns. However, they are not the only dart locations because a dart can be transferred anywhere around the pattern's outline. The selected dart locations have specific uses and names. The names should be learned for clarity when communicating in the design room. Label the waist dart legs A and B.

The French dart can be placed at any angle below the straight dart; the C.F. (center front) bust dart and straight dart are squared from the center front. The mid-armhole dart is directed from bust point to the armhole notch, and the shoulder dart is placed at the princess line.

The shapes of the patterns that encircle the charted pattern differ from one another and are the result of transferring the original waist dart to the designated locations. The size and fit have not been altered by this process. For verification, refer to the Side Dart section, Figure 2, later in this chapter.



More About Darts

All darts radiate from convex shapes of the figure. The bust is rounded, not pointed. If the dart is stitched to the end of the pivotal point, strain lines will appear around the bust, distorting the fit of the garment. The dart should end at a distance from the bust point to release fabric (fullness) for the bust mound.

Completing the Dart

The dart can be finished one of two ways:

1. Trim dart excess to within 1/2 inch of the seamline before stitching the dart (Figure 3).
2. Fold the dart excess under and stitch on the seamline (Figure 5).

Figure 1: Direction of Dart Excess

Follow the arrows for direction of the dart excess when folded. The excess is placed on the back side of the pattern and on the wrong side of the garment.

Excess folds downward for darts located anywhere along the

- Armhole
- Side seam
- Center lines

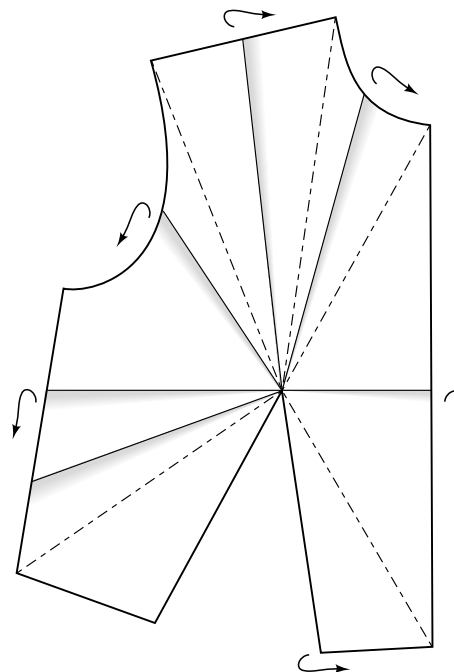
Excess folds toward the center front/back for darts located anywhere along the

- Shoulder
- Neckline
- Waistline

The folded dart follows the shape of the seam it lays against. If not, the dart will twist when stitched.

Darts placed at corners (broken lines) of the pattern are usually trimmed to 1/2 inch of seamline.

Figure 1

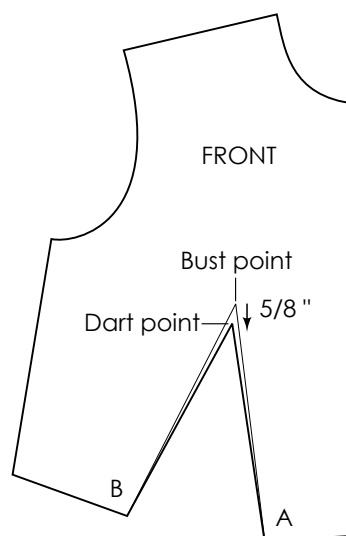


Locating Dart Point—Applies to the One-Dart Control

Figure 2

- After the dart is relocated, draw guidelines (light lines) from waist to the **bust point**.
- Center a mark 5/8 inch below bust point to establish the **dart point**.
- Draw the actual dart legs from waist to the dart point mark. Label A and B.

Figure 2

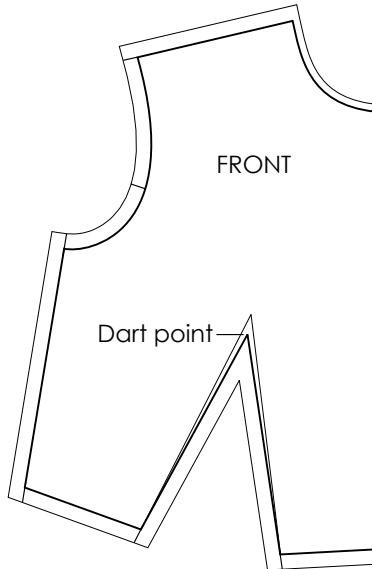


Dart Excess Trimmed

Figure 3

- Add a 1/2-inch seam allowance; notch and cut from paper.
- Punch and circles not required.

Figure 3

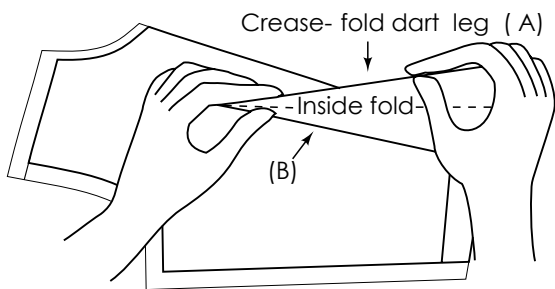


Dart Excess Folded

Figure 4

- The example illustrates the waist dart excess folded toward center front. For all other dart locations, see arrow directions in Figure 1 on the previous page.
- Cup the pattern when crease-folding the dart leg A to B. The crease ends at dart point (not bust point).

Figure 4

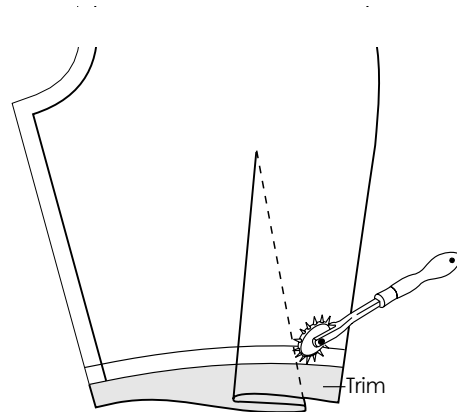


Tracing the Folded Dart

Figure 5

- With the dart folded, cup the pattern and trace across the fold at waist. The tracing will give the correct shape to the dart excess.

Figure 5



Punch and Circle Required

Figure 6

- Unfold the dart and pencil in perforated marks.
- Center a mark 5/8 inch below the dart point for the location of the punch and circle symbol (guide alerting the seamstress to sew 1/2 inch beyond the mark to the dart point).
- Add 1/2-inch seams, notch, and punch/circle.
- Trace, cut, and stitch for test fit.

Figure 6

