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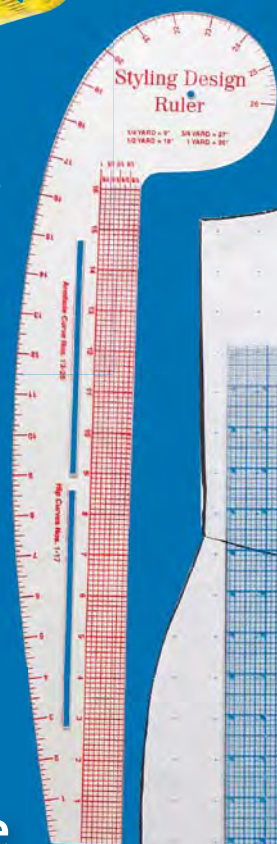
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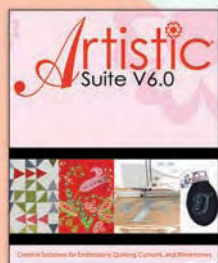
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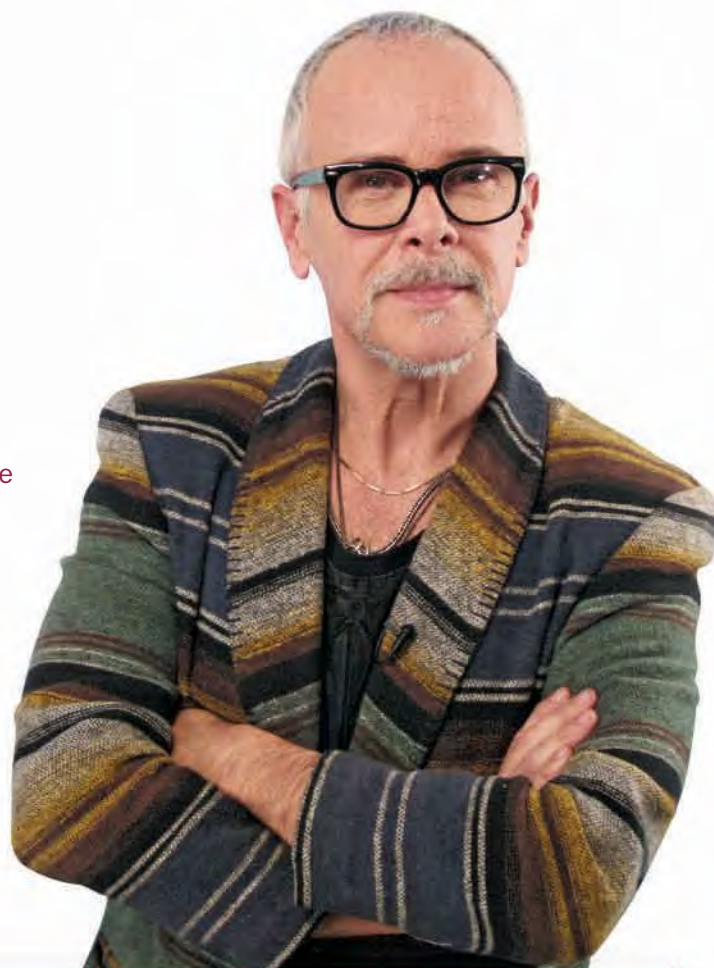
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# Fitting

SPRING 2013



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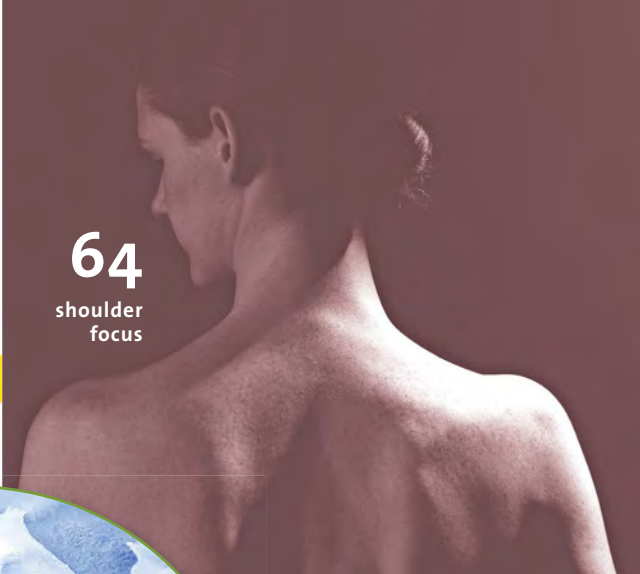
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Deana Tierney May  
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## Sewing perfection is a garment that fits

**A**sk garment sewers why they make their own clothes, and a great fit is inevitably a part of their answer. None of us is a standard size—and *vive la différence!* Our variety of beautiful shapes means that getting a good fit from an off-the-rack garment or an out-of-the-package pattern is not a reality for most. However, with knowledge about how to sew for fit, you can create garments that make you look and feel spectacular.

To help you do that, this issue brings together some of the best fitting articles from *Threads*' 27-year history, written by renowned fitting experts. Whether you're new to garment fitting or you want to tackle a particularly challenging problem, you'll find answers on the following pages.

Get started by taking good measurements and discovering the best tools for the job. Learn how to identify and solve fitting issues. (You'll see that there's often more than one way to fix a problem.) Make a muslin to experiment freely, and learn what methods work best for you. Or, draft a pattern directly to your measurements, eliminating a lot of fitting adjustments right off the bat. Finally, learn how to fine-tune the fit on the areas that need adjusting. We cover shoulders, armholes, sleeves, bust, waist, how to scale down a pattern, and more.

With this issue in hand, you can create and sew garments that fit like a dream in no time!

Happy sewing and happy fitting!

—Deana Tierney May  
Editor

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# Fitting

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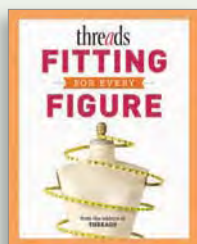
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# QA

## How you lengthen a skirt pattern depends on the style

**Q** I've heard that most patterns are sized for a 5-foot, 6-inch-tall body. I'm taller. What's the best way to add length to a skirt pattern?

—J.R. Laurie, Portland, Oregon

**A** Karen Howland responds: Adding length to patterns and to ready-to-wear is something with which I am familiar; I'm 6 feet 2 inches tall. At first thought, the solution appears to be as simple as adding extra length to the bottom. However, if a silhouette tapers or flares, it's not that simple.

When you add significant length to a skirt by extending the side seams, a flared skirt can end up with a hem that's wider than your fabric; and a tapered skirt can end up with a hem edge that is so narrow you can't walk.

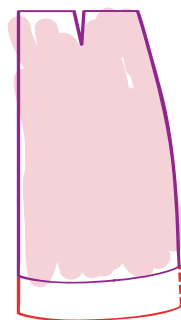
The style of your skirt determines whether it's best to add length at the lower edge or at the lengthen/shorten lines printed (or added) on your pattern. When you spread a skirt in the middle of its length, you have to true the seams, which means straightening the jagged seamline that forms when the seamlines are broken between the pattern segments. There may be other fit considerations, as well, when spreading pattern segments. Here are general guidelines for lengthening skirts.

*Adapted from the Threads Fitting Department, no. 117, by Karen Howland.*

### LENGTHEN STRAIGHT STYLES AT THE HEM

On straight-cut skirt patterns, usually you can add the desired extra length successfully at the hem.

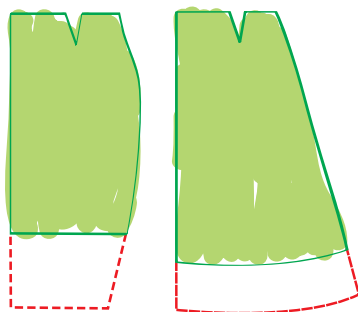
Extend the seams by continuing the line from the upper section, retaining the angle of the seams. If there is a slight flare, the lower edge will be fuller than the original.



*Draw a new hemline and hem allowance at an equal distance from the original hemline to establish the new length.*

### LENGTHEN FLARED AND TAPERED GARMENTS ABOVE THE HEMLINE

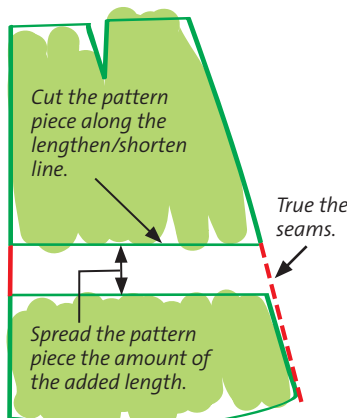
Don't just add length to the hem edge of flared or tapered skirts or you could end up with a hem that's wider than your fabric or one that's too narrow to walk in.



*Avoid adding length at the bottom of these styles.*

#### Flared skirt

To add length to a flared skirt pattern, produce a better-fitting pattern, and retain the lower edge's original dimension, add length at the lengthen/shorten lines printed on the pattern, as shown.



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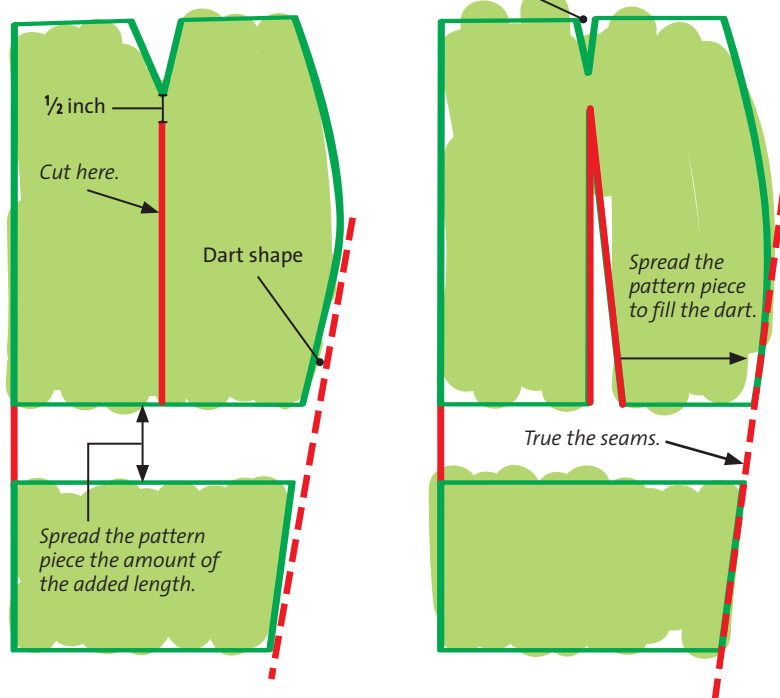
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## Tapered skirt

If you are using an unforgiving fabric or adding significant length to a tapered skirt, the following dart adjustment will improve your results:

1. **Cut along the lengthen/shorten line** and separate the pattern the amount of the additional length.
2. **Lay a straightedge (ruler) from the widest point** on the upper pattern segment to the hem at the side seam, to indicate the new side seamline. Be sure to keep the center front/back of both segments in alignment. Notice the dart shape between the side seam and the straightedge.
3. **Draw a line parallel to the center line** from the waist dart point down to the lower edge of the upper skirt pattern segment. Slash along this line to 1/2 inch from the dart point, and spread the slash until the side seam meets the straightedge between the hip and hem. The waist dart will close slightly. (This adjustment isn't necessary on minimally tapered skirts.)
4. **Fill the void formed by cutting and spreading** with new tissue paper, and tape it in place.

Adjusting the pattern piece on a tapered skirt changes the dart and maintains the way the fabric drapes.



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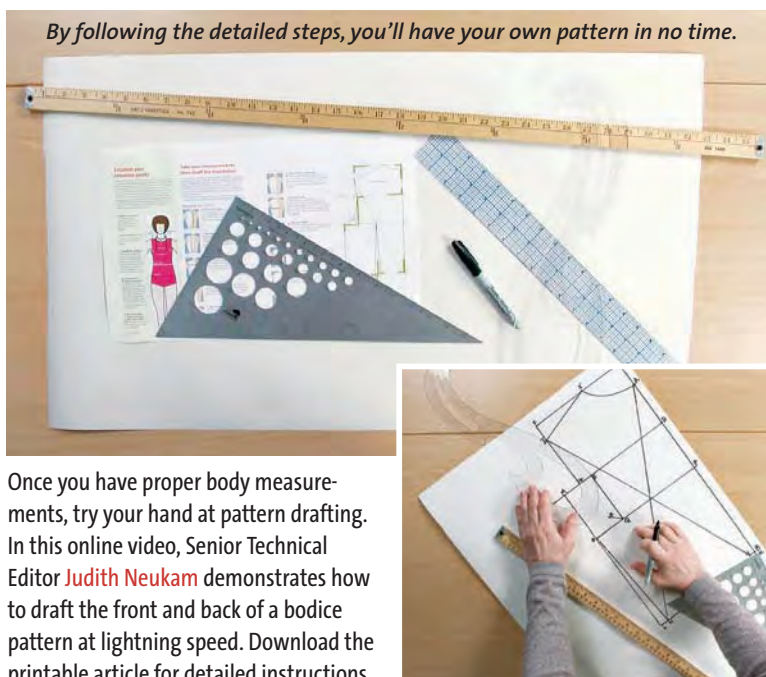
CONTESTS & MORE

## Expert Fitting Advice and More!

Accurate measurements are a must for achieving a good fit. You can get them by measuring your favorite, well-fitting clothes. Download **Susan Lazear's** printable measurement chart to learn how.

Measure the clothes you like to wear the most.

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Ease	
Preferred ease for fitted clothes	
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= _____ total	= _____ total
Preferred ease for semifitted clothes	
Bust _____ inch pinch X 4	Hip _____ inch pinch X 4
= _____ total	= _____ total
Preferred ease for loosely fit clothes	
Bust _____ inch pinch X 4	Hip _____ inch pinch X 4
= _____ total	= _____ total
Preferred ease for nonfitted clothes	
Bust _____ inch pinch X 4	Hip _____ inch pinch X 4
= _____ total	= _____ total
Preferred ease for _____ clothes	
Bust _____ inch pinch X 4	Hip _____ inch pinch X 4
= _____ total	= _____ total
Preferred ease for fitted sleeves:	
_____ inch pinch X 2	
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= _____ total	
BODY DIMENSIONS	
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Chest circumference	_____
Waist circumference	_____
Hip circumference	_____
Bicep	_____
Wrist	_____
Other	_____
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Once you have proper body measurements, try your hand at pattern drafting. In this online video, Senior Technical Editor **Judith Neukam** demonstrates how to draft the front and back of a bodice pattern at lightning speed. Download the printable article for detailed instructions.

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# GOOD MEASURES



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Notions *p. 20*
- ♦ Does Your Pattern Fit? *p. 26*
- ♦ Fit for Everyone *p. 31*



# Measure It Right

Precise and accurate measurements yield a better-fitting garment

BY BARBARA EMODI

The key to perfecting any pattern, computer-generated or hand-drafted, lies in gathering specific information about the body to be fitted. Although pattern design is an art, taking measurements is a science. Fortunately, the process is systematic and logical, and with time and a patient measuring partner, you can be confident in the accuracy of your measurements.

By following the detailed steps in this article, you will obtain a set of measurements to use for fine-tuning the fit of commercial patterns or creating hand-drafted designs. And if you are working with pattern-drafting software, you'll be able to adapt my methods as you follow brand-specific instructions. Accurate measurements also can help you compare the corresponding sections of your favorite garments to discover and understand the amount of wearing ease you prefer.

## PREPARATION IS EVERYTHING

The prerequisites for accurate measuring are deciding the appropriate garments to wear while being measured and marking key reference points on the body.

### What to wear

Body shape, and subsequently fit, can be greatly affected by the undergarments worn when measurements are taken—bras in particular. To ensure an accurate fit, wear the undergarments you normally do. Be prepared to mark on them, if necessary, for recording

## Mark reference points

Mark the body so you'll have consistent reference points while you measure. (The solid lines on our leotard are extrabold for photography purposes.)

### A NECKLINE

Identify the natural neckline with a short chain necklace that settles comfortably, just below the slight hollow at the base of the neck.

Mark the exact center front of this neckline with an adhesive or pen dot.

Mark the prominent vertebra at the top of the spine with an adhesive or pen dot. Bend the head forward to make the vertebra easier to find.

Mark a point on each side of the neck, in line with the hollow just behind the earlobe.

### B BUST POINT

Mark the nipple location with a cross of two pins on the bra fabric or with an adhesive dot.

### C SHOULDER POINT

Feel for the end of the flat bone at the end of the shoulder, or raise your arm until a dimple appears at the end of your shoulder and feel for the shoulder bone in this depression. It is important to identify an exact shoulder point.

Mark it with an adhesive or pen dot.

### D SHOULDER SEAMLINE

Draw a series of dots (more accurate than a drawn line) on the body, from the side-neck point marked on the neckline, along the top of the shoulder, to the shoulder point.





## E WAISTLINE

Depending upon body proportions, there are two possible waistlines: a natural waist or, for people who do not have a naturally indented waist, a de facto (chosen) waist, where the top of skirts or trousers sits. Find the natural waist by tying a piece of elastic around the person's waist, and having her bend from side to side until the elastic settles comfortably in the hollow around the middle of her body; take the waist measurement here. If the person does not have an indented waist, adjust the elastic on her body to sit at the de facto waist. This often entails moving the elastic above or below the natural waist, sometimes to be higher at the back and lower at the front.

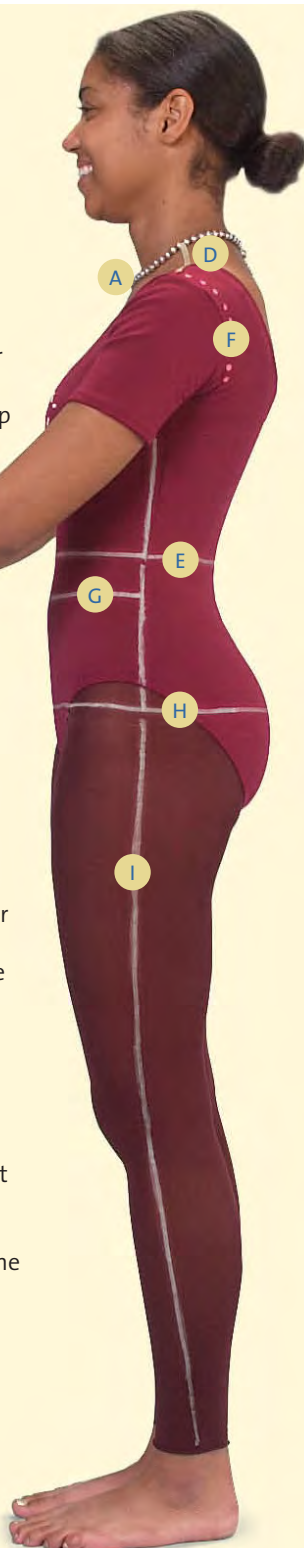
Once established, mark the waistline on the body with a pen; the elastic can shift while measuring.

## F ARMHOLE

Mark with a dotted line. Start from the shoulder point, down into the crease formed by the body joining the arm, on both the front and back. If locating the armhole is difficult, duplicate one from a form-fitting T-shirt, slipping one hand under the sleeve to trace the seamline onto the body.

## G ABDOMEN

Mark a line parallel to the floor across the fullest part of the abdomen.



## H HIPS

Find the widest part of the lower body by wrapping a measuring tape around the hip area and sliding it down the body, note that the widest part may be anywhere from a few inches to more than 12 inches below the waist.

Where the measurement is largest, mark a line exactly parallel to the floor all around the body.

## I SIDE SEAMS

Draw a series of dots perpendicular to the floor from the underarm to the ankle on both sides of the body.

## J CENTER FRONT AND CENTER BACK

Draw a series of dots perpendicular to the floor from the hollow of the neck to the waist. Repeat from the nape of the neck.

## CHECK THE POINTS OF INTERSECTION

Be sure all horizontal markings clearly intersect all vertical markings so you'll be able to identify the exact center front, center back, and side seams. Note: The center front of your waistline may not be in line with your navel.

## MARKING AND MEASURING TOOLS

- $\frac{1}{4}$ -inch adhesive dots
- 12-inch ruler
- Flexible but stable measuring tape
- Narrow elastic—to locate and mark the waistline
- Pins
- Short, fine chain necklace—to establish a natural neckline
- Washable markers—to draw lines on skin and/or undergarments

### Optional:

- Form-fitting T-shirt with set-in sleeves—to help identify an armhole
- Twill tape/cotton cording—for marking crotch length



reference points. We photographed our model in a leotard, but you'll get more accurate measurements if you wear only your best-fitting undergarments.

### Gather your tools

The most important aid in the measurement process is a good-natured, discreet measuring buddy because there is no way to take accurate measurements of yourself.

A few tools are required to mark the reference points and measure the distances. I've supplied a list of these in "Marking and measuring tools," page 15.

### TIPS ON MEASURING

Measurements should be taken with the subject standing with natural posture. Arm measurements should be taken with the arm relaxed and slightly bent at the elbow. Keep the tape smooth, level, and snug (not tight) when measuring around the body.

Significant asymmetries are common in a body. That's why it is important to measure both sides of the body; if you find discrepancies greater than  $\frac{1}{2}$  inch, adjust or draft the pattern with distinct right and left side pattern pieces.

### MEASURING—THE FIRST STEP TO A GOOD FIT

Taking accurate measurements isn't going to solve all your fitting problems. Fitting is a two-step process. The first step involves a flat pattern that reflects an individual's body measurements, and a pattern is only as good as the measurements on which it is based. Once the pattern is cut in fabric, expect to do some final fine-tuning. But a set of accurate measurements will get you off to a good start.

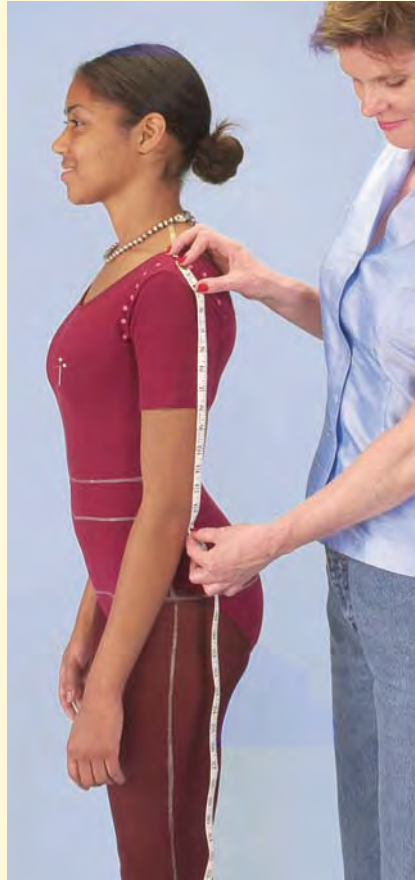
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*Adapted from "How to Take Measurements" in Threads, no. 106.*

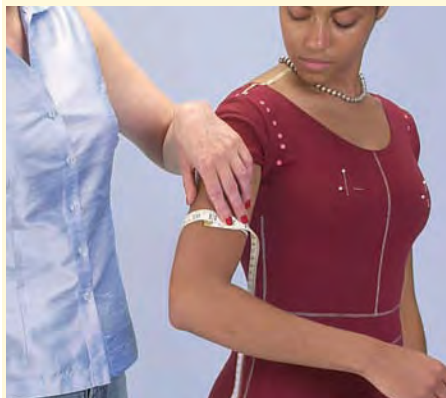
## Where to measure

As you measure, refer to these photos of the author measuring our model. When taking circumference measurements, lay the tape snugly on or around the surface, making it neither tight nor loose.

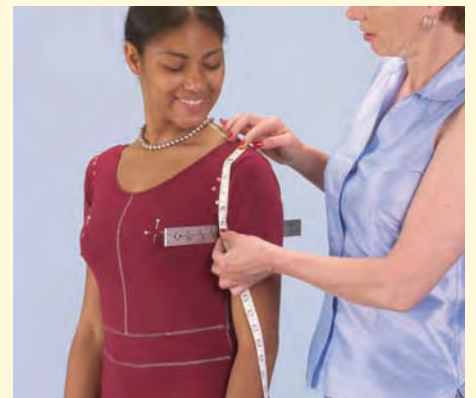
### ARMS



**Arm length (sometimes called over-arm):** Keep the arm relaxed with a slight natural bend at the elbow. Take this measurement in two steps, from the shoulder point to the elbow, and then from the elbow to just below the wrist bone.



**Biceps/upper arm:** Measure around the biceps with the arm slightly bent and the biceps relaxed.



**Armhole depth:** Slide a ruler horizontally, high up under the arm; with the tape, measure from the shoulder point to the ruler.

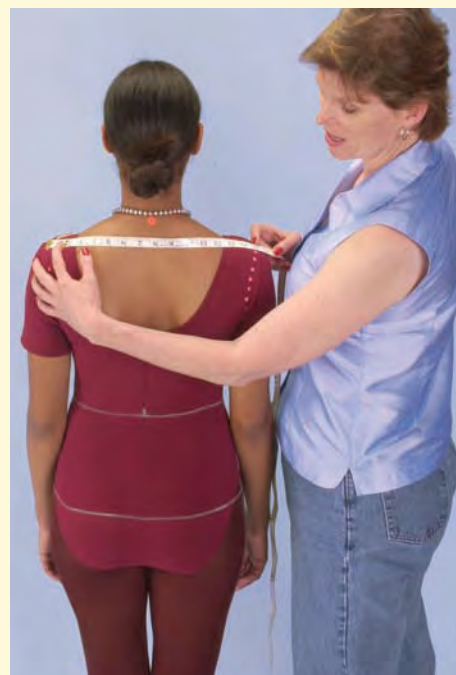
## SHOULDERS



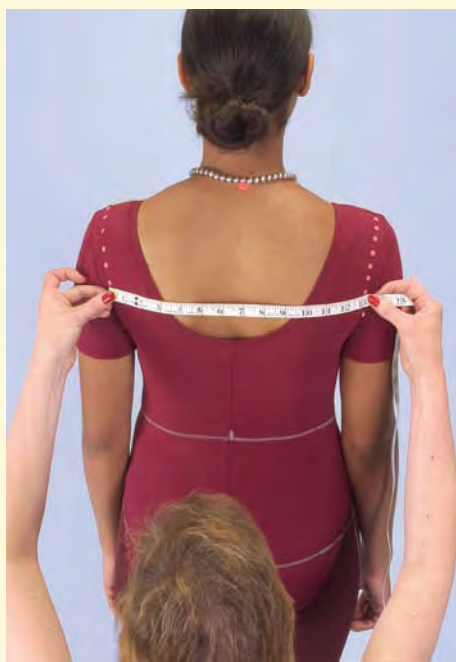
**Shoulder length:** Measure from the side-neck point to the shoulder point.



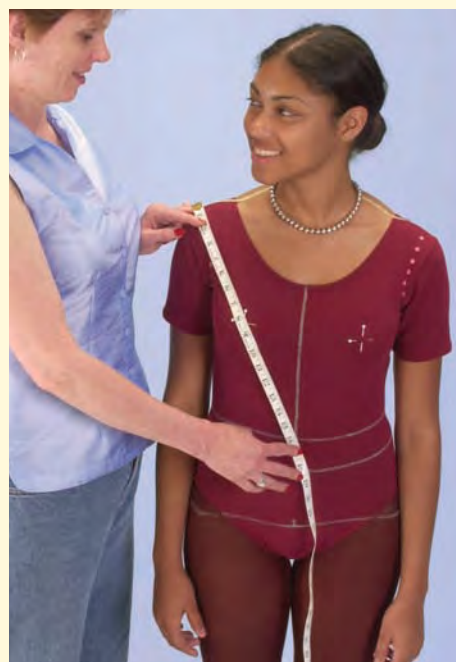
**Shoulder-to-shoulder/front:** Measure between the shoulder points in a straight line across the front.



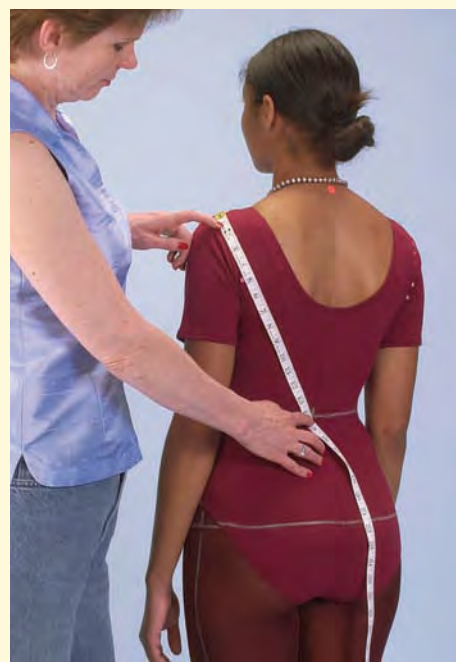
**Shoulder-to-shoulder/back:** Measure between the shoulder points in a straight line across the back.



**Back width:** Measure between the armholes (make sure the tape doesn't get caught up in the shoulder blades).



**Front shoulder slope:** Measure from the shoulder point to the waistline center front in a straight diagonal line, over the bust point.



**Back shoulder slope:** Measure from the shoulder point to the waistline center back.

**Neck to waist (not shown):** Measure from the base of the neck to the waistline at the center front and center back.



## NECK



**Natural neckline:** Holding the tape so it stands on edge, measure around the base of the neckline as defined by the necklace.

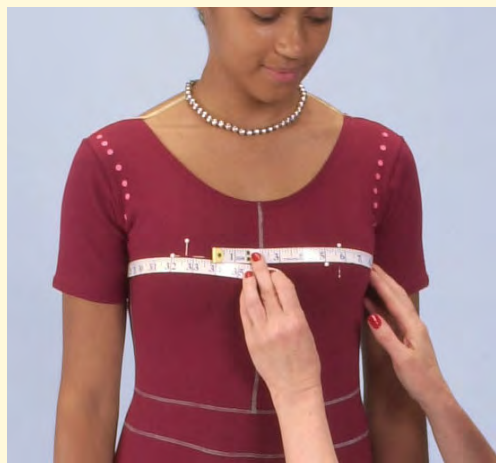


**Neck edge to bust point (also called bust depth):** Measure from the side-neck point to the bust point.

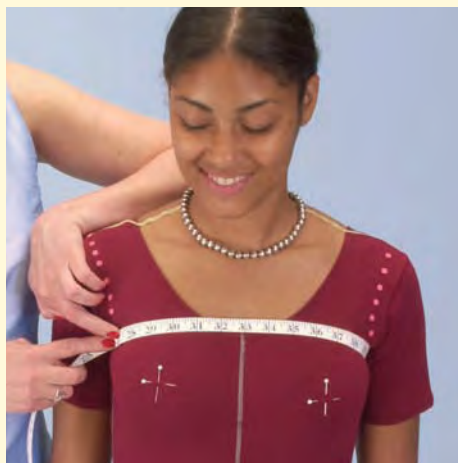


**Neck edge to waist:** Measure from the side-neck point to the waistline in a straight line, over the bust point.

## BUST



**Bust circumference:** Measure the fullest part of the bust with the tape parallel to the floor.



**Upper bust:** Measure the circumference above the bust, with the tape up against the armpit.



**Under bust:** Measure the circumference under the bust, holding the tape in line with the bottom edge of the bra.



**Chest width:** Measure above the bust from armhole to armhole, holding the tape parallel to the floor.

## WEB **extra**

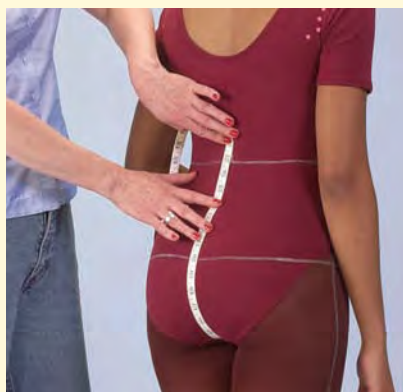
*To record your measurements easily, print out the chart from*

**[Threads.Magazine.com](http://Threads.Magazine.com).**

## CROTCH



**Crotch depth:** Have the person sit on a flat chair, and use a ruler to measure from the marked waistline to the chair seat. Keep the ruler perpendicular to the seat.



**Crotch length/front and back:** Measure from the waistline center front to the waistline center back through the crotch, holding the tape comfortably close to the body. Note the distance from the center front to the inseam (crotch front length) and subtract it from the total to derive the crotch back length. (Or mark and then measure a length of twill tape to determine these dimensions.)

## LEGS



**Outer seam:** Measure from the side waist to the preferred pants hem.



**Inseam:** Measure from the lowest part of the crotch to the preferred pants hem. Tape the measuring tape to a 12-inch ruler to comfortably take this measurement. Don't spread legs any wider than necessary.



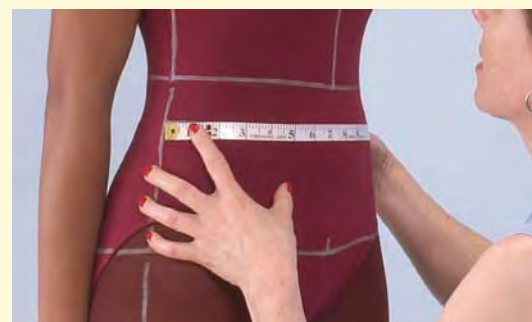
**Waist to floor/ front and back:** Measure the perpendicular distance from the waistline to the floor at the center front and center back.

## WAIST AND HIPS

All circumference measurements taken below the waistline should be accompanied by a depth measurement—the vertical distance between the waist and the specific measurement.



**Waist:** Measure the circumference of the marked waistline.

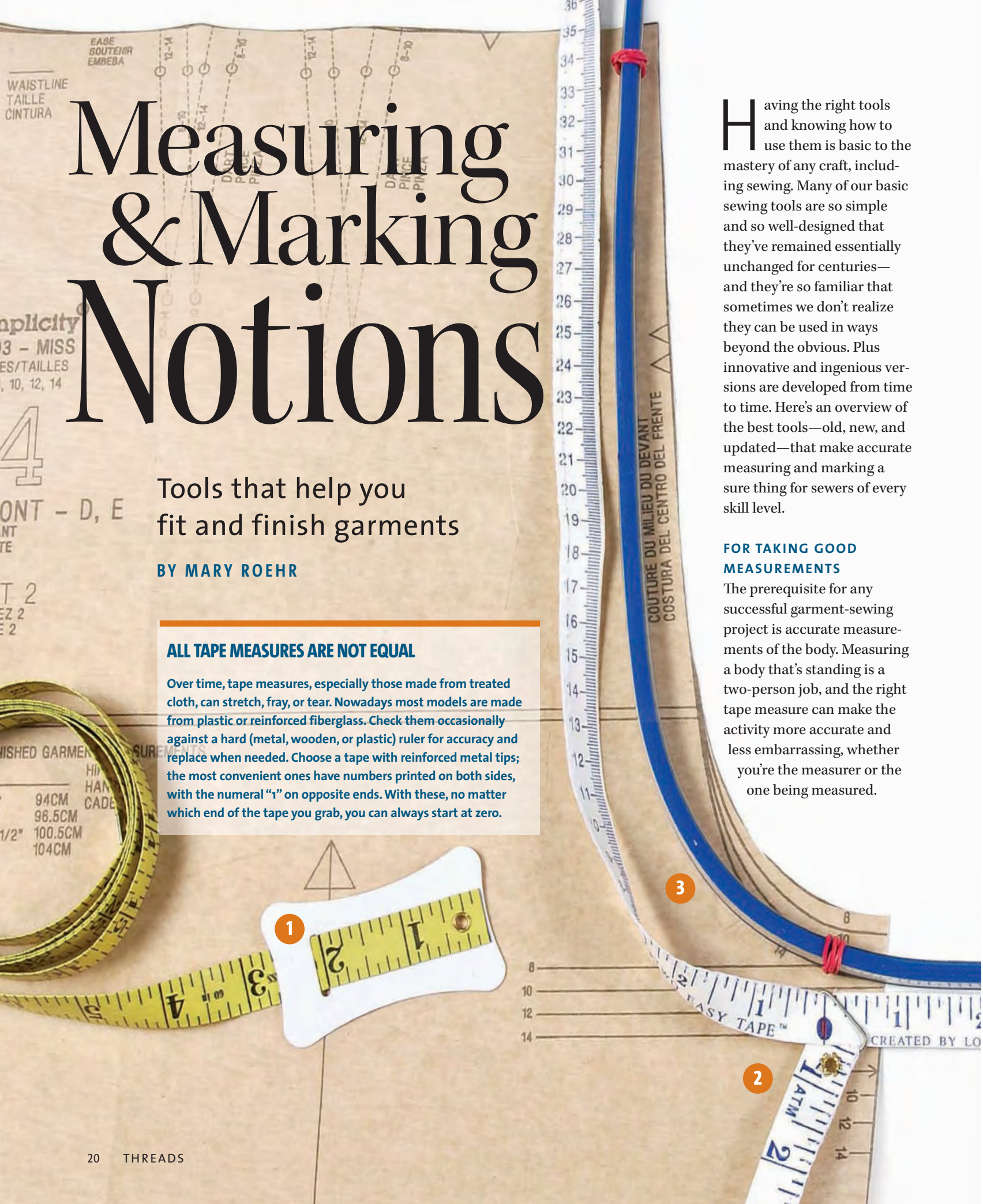


**Abdomen:** Measure from side to side across the fullest part of the abdomen.



**Hip circumference:** Measure around the fullest part of the hips with the tape parallel to the floor. (When the hip is not the fullest lower body measurement, take another measurement at the fullest part.)





# Measuring & Marking Notions

Tools that help you fit and finish garments

BY MARY ROEHR

## ALL TAPE MEASURES ARE NOT EQUAL

Over time, tape measures, especially those made from treated cloth, can stretch, fray, or tear. Nowadays most models are made from plastic or reinforced fiberglass. Check them occasionally against a hard (metal, wooden, or plastic) ruler for accuracy and replace when needed. Choose a tape with reinforced metal tips; the most convenient ones have numbers printed on both sides, with the numeral “1” on opposite ends. With these, no matter which end of the tape you grab, you can always start at zero.

Having the right tools and knowing how to use them is basic to the mastery of any craft, including sewing. Many of our basic sewing tools are so simple and so well-designed that they’ve remained essentially unchanged for centuries—and they’re so familiar that sometimes we don’t realize they can be used in ways beyond the obvious. Plus innovative and ingenious versions are developed from time to time. Here’s an overview of the best tools—old, new, and updated—that make accurate measuring and marking a sure thing for sewers of every skill level.

## FOR TAKING GOOD MEASUREMENTS

The prerequisite for any successful garment-sewing project is accurate measurements of the body. Measuring a body that’s standing is a two-person job, and the right tape measure can make the activity more accurate and less embarrassing, whether you’re the measurer or the one being measured.



**1** ***“Modesty” tape measure keeps your hands to yourself***

A rigid support backs one end of this tape. To measure someone else's inseam with minimal awkwardness, hold the bottom of the support as you position the tape end at the crotch.

**2** ***Two Easy Tape measures in three directions***

This pair of measuring tapes is configured to easily measure the crotch length and inseam from a secure reference point; it comes with Lorraine Henry's *Measuring Made Easy* booklet (Louet.shptron.com, Conselle.com). One tape measures in both directions from a zero marking at its center, and a second tape is attached by a metal loop. To use it, pass the first tape through the crotch from center front to center back and secure it with an elastic tied around the waist. Then adjust the tape so the zero and the metal loop are at the inseam. You can take very accurate crotch front, crotch back, and inseam measurements with this tool.

**3** ***Flexible ruler records and measures curves***

If you wrap a flexible ruler around a body curve (crotch, neckline, or armhole, for example), it is stiff enough

to hold the shape while you carry it from body to worktable, where you can draw along it to transfer the contour to a pattern. You can also slide rubber bands along the length of the ruler to mark specific points and then later measure between them with a tape measure.

**FOR ADJUSTING AND DRAFTING PATTERNS**

Once armed with accurate measurements, you can adjust lines and curves on commercial patterns to personalize the fit or draft original patterns. The following tools facilitate laying out and drawing smooth curves and straight lines—whether altering or designing.

**4** ***Slide a French curve in order to draw graceful lines***

The perimeter and interior cutouts of this clear plastic

drafting template feature a variety of curves, which can be used in part or whole to draw graceful necklines, collars, armholes, and the like on an original design or to true a pattern you are altering (see “Truing refines pattern adjustments” below). To use, slide, flip, or rotate the template, aligning a portion of the outline with key points on your pattern and drawing along the edge to connect them. Keep adjusting the template until the drawn curve is smooth and pleasing. French curves are available in a variety of proportions.

**5** ***L square does math***

This L square is unique because it makes it easy for you to mark a specific inch span into thirds (or halves, two-thirds, quarters, eighths, or sixteenths) at-a-glance, a function designed for use in pattern drafting, but handy when you want to distribute repeating elements evenly in a given space. You can see the fractional divisions printed along one edge. The right angle enables you to establish lengthwise and crosswise grainlines on slopers or master patterns, and you can

**TRUING REFINES PATTERN ADJUSTMENTS**

When you're drafting a pattern or altering one by slashing and then spreading or overlapping the sections, the seamlines and cutting lines often shift out of alignment and become separated or jagged. Truing is the process of reconnecting and smoothing altered lines. When the separated lines are exactly horizontal or vertical, just extend a straight line from one to the other; if they are angled or curved, connect them with a line that splits the distance by which they have strayed from their original location.





square it against a corner edge of fabric to confirm the grainline, or use it to check that your quilt corners are square. If you connect the inside and outside corners diagonally with a straightedge, you will establish a 45-degree angle, which you can use to draw a perfect bias line.

## 6 Seam gauge measures and drafts

This multitasking 6-inch metal ruler has a sliding indicator that you set to a specific measurement. This easily portable reference makes measuring, comparing, and establishing the size of hems, seam allowances, tucks, pleats, buttons, and buttonholes uncomplicated and memory-free because the slider holds the measurement until you reposition it. A plus: The seam gauge and slider each contain a hole that you can use to create a compass. Put a pin through one hole to pivot on and a pencil through the other, as shown below.



## PATTERN DRAFTING REQUIRES DIRECTIONS

You can draft a pattern for anything from a bra to a pants suit, as long as you have the drafting directions. These are a series of steps you follow to draw garment patterns based on specific body measurements or sloper (basic pattern) manipulations. Drafting guides can be found in *Patternmaking for Fashion Design*, by Helen Joseph Armstrong (Prentice Hall, 1999), or see “The Best Custom Pants,” in this issue, page 56, or “Pattern Drafting Primer” in *Threads*, no. 165. Books with period clothing drafts can be found in fashion school and theatrical bookstores.

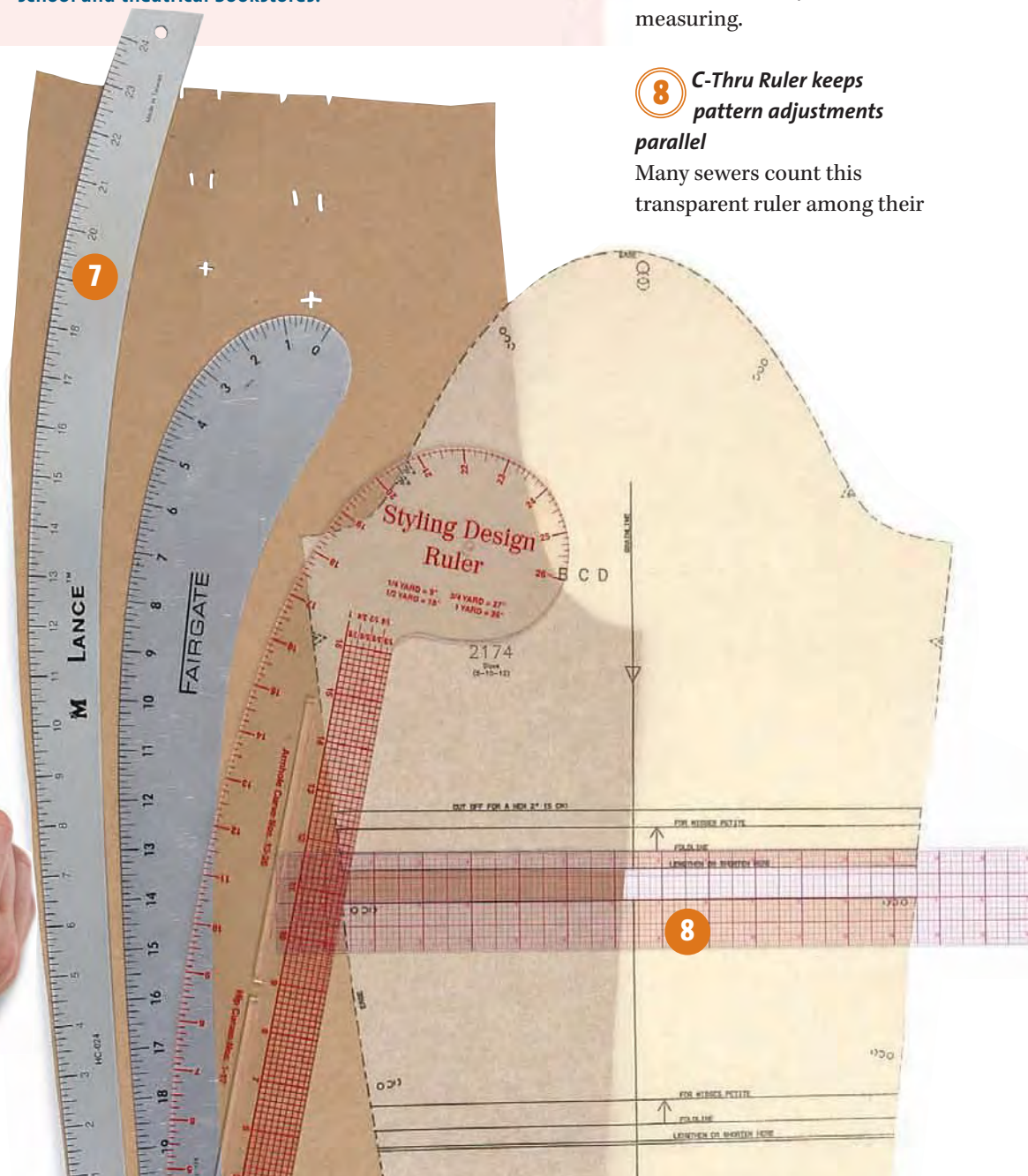


## 7 Hip curves work for lapels

Shaped in a long gentle curve, this tool enables you to draw perfect hiplines, hems, two-piece sleeves, flared shapes, and lapels. Hip curves come in several forms; as shown below, some incorporate other drafting/measuring devices that help you reduce sleeve caps and adjust arm-scye curves. Unlike the more dramatic French curve, hip curves are usually marked for measuring.

## 8 C-Thru Ruler keeps pattern adjustments parallel

Many sewers count this transparent ruler among their



11

12

13

10

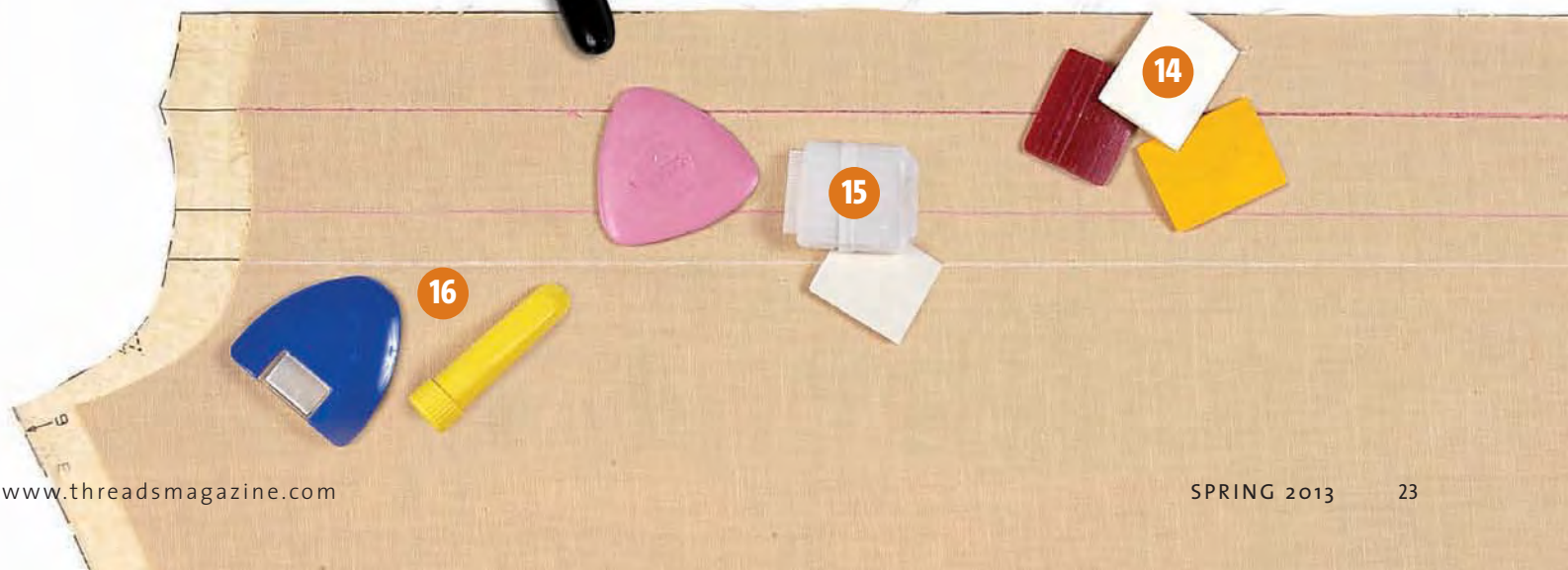
Designed for use by train conductors, this nickel-plated, cast-iron punch is heavy enough to make distinctive  $\frac{1}{16}$ -inch by  $\frac{1}{4}$ -inch notches in patterns cut from oaktag or paper. Use it to mark strategic match points, dart placements, and pleats. To punch interior marks like dart tips, as shown on page 22, fold the paper and punch through the fold. Use tailor's tacks, marking pens, or chalk through the punched notches to transfer their location to fabric.

To transfer measurements, shapes, or markings from a muslin to a pattern or from a pattern to fabric, use a tool designed for the task at hand.

- 10** *Marking wheels have different edges for good reason*
- 11** The points of a pin-
- 12** point tracing wheel (10)
- 13** leave a punctured trail beneath any line they pass through, making this wheel ideal for transferring a pattern onto paper. If you're making a symmetrical pattern, draw half, fold the paper, and run the wheel over the lines to transfer the reversed image to the other half. You can make a pattern from finished clothing by spreading out a garment onto paper and running the pinpoint wheel along the edges and through the seamlines. But be cautious because the points may mar the fabric—that's why this wheel shouldn't be used with dressmaker's tracing paper to mark most fashion fabrics.

Roll-A-Pattern (13) is a smooth-surfaced rubber wheel that produces a permanent ink line on leather, upholstery, and wood. The wheel picks up its color from a felt-tipped marker in the handle. Use it to trace around a pattern or template; it will glide along an edge without leaving ink residue on the template.

- 14** *Chalks are made of wax or clay*
- 15** Tailor's chalk is widely used by professionals to
- 16** mark clothes for alteration or record
- seamlines and match points on muslins that have been pin-fit. It is inexpensive, long-lasting, and won't evaporate or dissolve in water. Wax chalk (14) leaves marks





that disappear when touched with a hot iron and is most often used on thick fabrics that readily absorb the mark as it melts. Clay chalk (15) is usually used on thinner or delicate fabrics because you can brush it away. You can purchase a plastic holder and sharpener that make the chalk more efficient to use.

To draw precise but temporary lines on fabric, run a powdered chalk marker (16) along a ruler or use it free-hand. These markers dispense a thin line of powdered clay chalk via a tiny perforated wheel, which is set into a handle that doubles as the chalk container. They come in a variety of handle shapes and colors, can be refilled, and never require sharpening.

#### FOR ESTABLISHING FINISHING DETAILS

These tools facilitate getting buttons evenly spaced, hems straight, and cuffs even.

#### 17 *Magicuffer measures pants cuffs*

Making cuffs is confusing for many sewers. With this tool, you can mark pants hems and calculate cuff measurements as fast as you can draw lines. Simply match up the Magicuffer to the inseam and align slot A with the desired length. Draw chalk lines in slots A, B, C, and along the edge of D, cut off the excess fabric at D. Fold to the inside on line B, and sew the hem along the cut edge. Turn the cuff to the outside along line A and press; then tack in

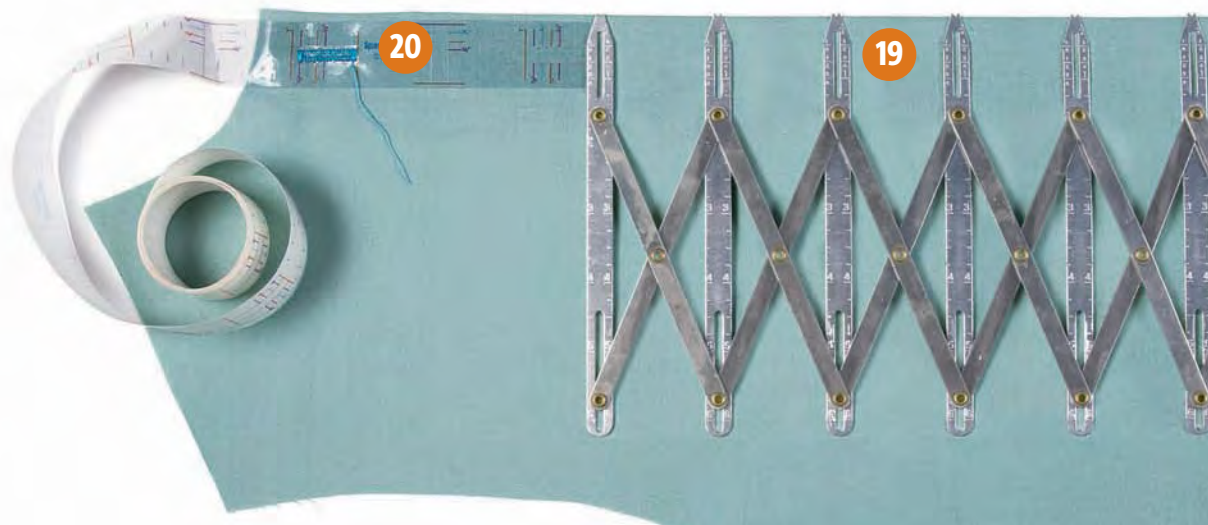
place at the seams. Caution: The clearly marked templates are made of heavy-duty plastic, but will melt when touched with an iron.

#### 18 *Ezy-Hem Gauge is a fold-and-press guide*

Use this tool to turn up and press an even hem allowance, whether or not the hemline is marked on the right side of your garment. The gauge is marked for straight hems from  $\frac{1}{4}$  inch to 4 inches deep and for curved hems from  $\frac{1}{4}$  inch to  $2\frac{1}{2}$  inches deep. With the wrong side of the garment up, place the appropriate gauge edge (curved or straight) on the hemline, fold up the hem allowance so the edge aligns with the correct depth mark, and press it in place right over the gauge. For deep curved hems, sew a basting stitch along the allowance edge so you can tighten it evenly against the gauge.

#### 19 *SimFlex spreads to establish even button spacing*

Expand or contract this metal gauge to establish evenly





spaced button and buttonhole placements within a given span. To get the best results, always expand the gauge fully and then reduce it so the desired number of points fit within the span.

## 20 Space-Tape marks buttonholes

Spacing buttonholes is usually easier than marking them for stitching. Adhesive-backed Space-Tape is marked with a variety of buttonhole sizes, in vertical and horizontal orientation. Use the tape to establish the buttonhole locations, and then stitch the buttonholes directly through it using the printed measurements; tear away the excess tape when you're done. Any Space-Tape that remains under the stitching acts as a stabilizer.

## 21 Chalk Hem Marker helps you mark hems solo

You might find a wooden version of this hem marker in Grandma's attic. Regardless of its vintage, this tool offers a way to mark hems by yourself, on yourself. It's also handy for

marking hems on others. To use, first decide how far off the floor the hemline should be and set the top of the slider at that level. Then put on the garment and stand close to the marker so that the powder-dispensing slider just touches the fabric. Squeeze the rubber bulb to dispense a neat chalk line. Rotate, and squeeze continuously until you've marked a line perfectly parallel to the floor around the entire hem. If you want a floor-length hem, and the marker doesn't go that low, mark a line and measure down from it.

## 22 Hemming clips (not shown)

These handy clothespin-like clamps double as a depth gauge while securing a folded hem allowance. Because they hold the fabric flat, you can try on the garment and get a realistic idea of how it will look when finished. They are especially good for establishing pants hems. *Adapted from "Measuring & Marking Tools," in Threads, no. 111.*

## SOURCES

Most of the tools featured in this article can be found at any good sewing supply vendor. We've also listed some online sources if you can't find something locally; several of these vendors carry diverse supplies.

**AceSewing.com** (chalk products, chalk hem marker, French curve, hip curve, marking wheels)

**AMApparelSupply.com** (chalk products, French curve, hip curve, L square, marking wheels, pattern notcher)

**BBBlackandSons.com** (chalk products, L square, Magicuffer, pattern notcher)

**DressFormDesigning.com** /FashionDesignSupplies.html (flexible ruler, French curve, hip curve, L square)

**FashionPatterns.com** (C-Thru Ruler, French curve, hip curve, modesty measuring tape, pattern notcher, SimFlex)

**NancysNotions.com** (chalk products, Ezy-Hem gauge, flexible ruler, French curve,

hemming clips, marking wheels, SimFlex, Space-Tape)

**SewTrue.com** (chalk products, chalk hem marker, Ezy-Hem gauge, flexible ruler, hip curve, L square, modesty tape measure, pattern notcher, seam gauge, SimFlex)

**WardrobeSupplies.com** (chalk products, chalk hem

marker, Ezy-Hem gauge, French curve, hip curve, L square, marking wheels, modesty measuring tape, seam gauge)

**VogueFabricsStore.com** (chalk products, C-Thru Ruler, L square, marking wheels, seam gauge, French curve, hip curve)



# Does Your Pattern Fit?

Before cutting, check your pattern's measurements against your own

BY BARBARA EMODI

**Y**ou love the fabric, you're excited by the pattern, and you've taken and recorded your measurements carefully. What's the next step to a successful garment? Comparing your measurements with those used to draft the pattern, and reconciling any discrepancies—so that the fit is in your favor.

The fact that most people can't fit into a commercial pattern without making a few adjustments is no surprise, but using your measurements to figure out where to make those adjustments on the pattern tissue may seem mysterious at first. I'll show you which measurements to take on a basic pattern so you'll have a fair comparison with your body size, and start you in the direction of choosing the best among the multisizes on the tissue, or altering the pattern to fit.

## IT'S ALL IN THE NUMBERS: MEASURE AND COMPARE

To take an accurate set of measurements of yourself, refer to "Measure It Right," page 14, and ask a friend to help you with the tape measure. You won't need all of the measurements shown for basic pattern adjustments, but they can be useful for more advanced pattern alterations. You'll find photos of the key measure-

ments with the pattern information given here.

Measuring a pattern is inherently easier than measuring your body. Begin by selecting the relevant pattern pieces: garment front, back, and/or side panels, and sleeve. Once these have been adjusted, use them as the basis for altering connecting pieces such as facings, collars, and waistbands. Because flat pattern measurements are intended to determine the finished size of the garment, you'll need to omit seam and hem allowances from your measurements, as well as any cut-on facings. Simply draw stitching and edge lines around each pattern piece. Leave out fullness controlled by darts, tucks, or pleats when measuring.

## EASE INTO A GOOD FIT

We know that patterns aren't designed to end up skintight, with exactly our measurements—there's always some extra space built in for comfort and movement (wearing ease), and for style (design ease). For details on determining the ease on a pattern, see "If you want to fit in, maintain minimum ease," page 27. When you're adjusting a pattern for fit, it's essential to take into account wearing ease, which will vary from figure to figure

and from one part of the body to another. Wearing ease is built into all dimensions of a garment, but is most important in circumferential (as opposed to lengthwise) measurements, so be careful not to remove it when making adjustments. You can preserve design ease as is to maintain the intended look of the garment, or adjust it to reflect your own sense of visual proportion.

## THE LONG AND THE SHORT OF IT

It's a cinch to assess a pattern for length: When working with vertical dimensions such as sleeve length, bust depth, and inseam and outseam lengths for pants, simply factor in  $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch ease beyond your body measurement.

Comparing measurements isn't intended to produce a perfect fit on its own; rather, it's meant to help you choose the right size and make early adjustments so that a pattern has the right amount of room for you, in all directions. Tissue fitting, making a muslin, or fitting during sewing will further refine the garment. So grab your tape measure and ruler, and measure your way to a great fit.

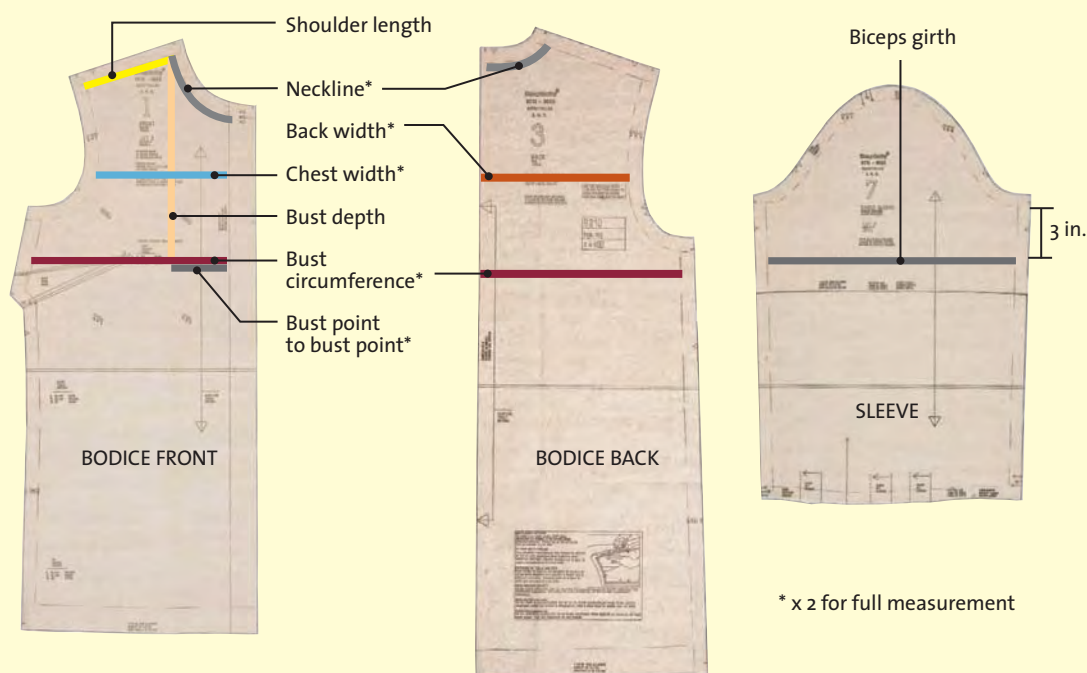
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*Adapted from "How to Measure a Pattern to Assess its Fit" in Threads, no. 112.*

## If you want to fit in, maintain minimum ease

Wearing ease is that extra space in a garment that lets you take a deep breath, raise your arm above your head, or sit down without splitting any seams. Be sure to maintain the minimum amount of ease recommended at right for well-fitting, comfortable clothing; where a range is provided, consider that larger figures require more ease than slight ones. If you have your own ease preferences, follow them instead.

To calculate the intended ease of a pattern through the chest, bust, waist, and hips, subtract the pattern company's standard measurements (usually found on the pattern envelope) from the finished dimensions of the garment (these will be printed either on the envelope or on the pattern piece itself; if they're not provided, measure the pattern pieces from seamline to seamline). The difference is the total ease, or wearing ease plus design ease. Subtract the minimum wearing ease given here, and you're left with design ease. Note: The color-coded measuring lines on the patterns below correspond to the colored tape measures on page 28.



### Wearing ease recommendations:

**Bust:**  
2 to 4 inches; 3 to 5 inches for coats and jackets

**Chest width:**  
 $\frac{1}{2}$  to  $\frac{3}{4}$  inch

**Back width:**  
 $\frac{3}{4}$  to 1 inch; 1 to 2 inches for jackets and coats

**Biceps:**  
 $\frac{1}{2}$  to  $2\frac{1}{2}$  inches; 3 to  $4\frac{1}{2}$  inches for jackets; 4 to 6 inches for coats

**Waist:**  
1 inch

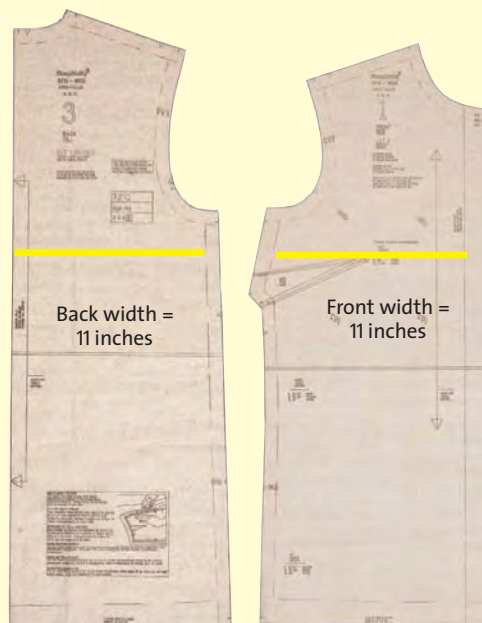
**Hips:**  
2 to 4 inches

**Crotch length:**  
1 to 2 inches

**Crotch depth:**  
 $\frac{1}{2}$  to 1 inch

### Finding the ease

<b>22 inches</b>	(twice the back width)
<b>+ 22 inches</b>	(twice the front width)
<hr/>	
<b>44 inches</b>	(finished bust measurement)
<b>44 inches</b>	(finished bust measurement)
<b>- 34 inches</b>	(standard bust measurement)
<hr/>	
<b>10 inches</b>	(total ease)
<b>- 2 inches</b>	(minimum wearing ease)
<hr/>	
<b>8 inches</b>	(design ease)

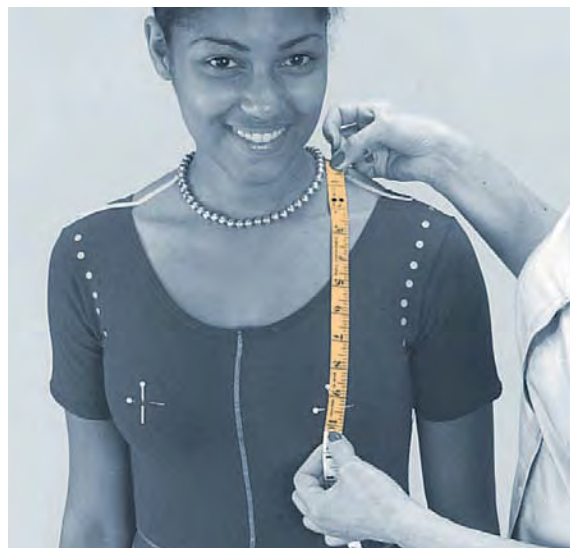






## Measure the bodice and adjust accordingly

Vertical and circumferential measurements are important in fitting the bodice; match vertical pattern dimensions with those taken from the body, plus minimal ease of  $\frac{1}{4}$  inch. Follow ease recommendations on page 27 for round-the-body measurements; remember to measure back and front, when needed, and to double the flat half-pattern dimensions for full circumference measurements.



**Shoulder length and bust depth:** They should equal the body measurement, plus  $\frac{1}{4}$  inch ease.



**Back width and chest width:** Adjust armhole seamlines in or out to improve the fit.



**Bust point to bust point:** Use to position the dart ends; darts should end at least 1 inch from the bust point.



**Neckline:** Check that the neckline is at least as large as the neck measurement, then make a muslin dickey of the bodice's upper third, with only the shoulder seams stitched, to fine-tune the fit.

**Biceps girth (not shown):** Adjust at the underarm seams, tapering to the original seam by mid-forearm. Adjust bodice side seams to accommodate sleeve changes.

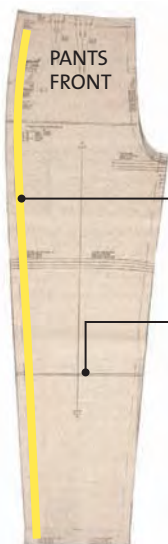


## Limb length comparisons are straightforward

A direct comparison between your length measurements and those of the pattern, plus  $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch of ease, provides a good starting point for fitting basic garments. Fullness of sleeves, the presence of cuffs, the taper of pants legs, and the height of the shoes you intend to wear with the pants will all affect how much extra ease to add.



Lengthen or shorten here.

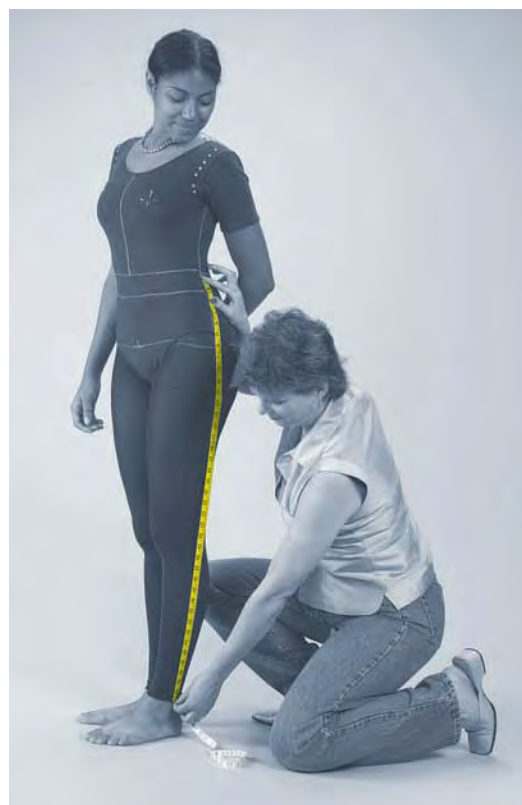
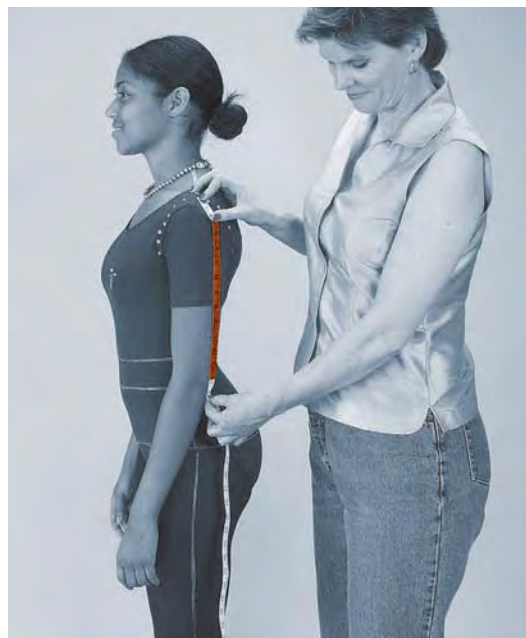


Lengthen or shorten here.

PANTS BACK

Inseam

Lengthen or shorten here.

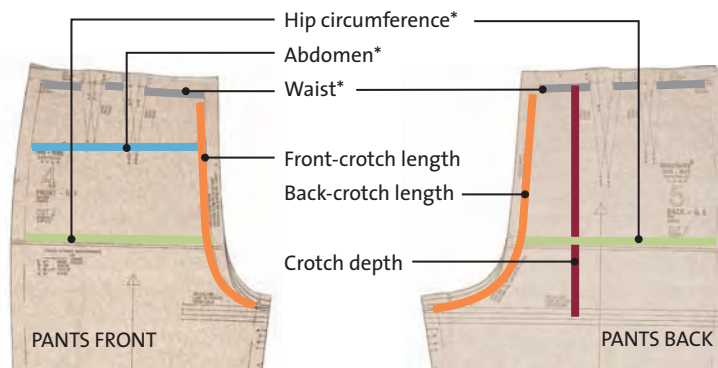






## Measurements help match pants curves to yours

Circumference dimensions at the pattern's waist and hips, as well as the crotch length and depth, must be reconciled with your own measurements. Use recommended ease amounts to build comfort and good fit into the pants.



\* x 2 for full measurement

### Waist and abdomen:

Measure the abdomen across the front at the depth of greatest fullness (e.g., at waist, or below). Add or subtract at side seams, equally in front or back, or more in front if a full abdomen warrants. Adjustments also may be made by deepening or eliminating darts.



**Hips:** Adjust at the side seams, by curving gently from waist to hip; taper gradually back to original width at hem.



**Crotch length:** Adjust either at crotch points (front and/or back), or by raising or lowering the waistline at center front or center back. Adjust this before crotch depth; solving fit problems here often also takes care of crotch-depth issues.



**Crotch depth:** Compare your measurement literally with that of the pattern, and make adjustments as needed at the marked crotch-depth line (usually from crotch point to side seam, perpendicular to the grainline).



# Fit *for* Everyone

Sew removable covers to make your dress form work for multiple figures

BY KENNETH D. KING

When I went behind the scenes at the Metropolitan Opera, I learned that the costumer there makes body doubles that fit over standard dress forms. This way, the designers can create a custom-fitted garment without the performer having to appear for multiple fittings, and the Met doesn't have to store an army of dress forms.

Inspired by the Met's system, I set out to create a removable body double for a standard dress form. It's a great solution for anyone who sews for others—mothers and daughters, best friends, wedding parties, and dressmakers as well, or just yourself and an ever-changing figure. You can create a removable padded cover for anyone you sew for without having to invest in multiple dress forms, and your client doesn't have to be present for fittings.

The process for making the body double isn't difficult, and the result is well worth the time invested. This method takes four steps: making a foundation layer for the dress form, fitting a cover layer to the figure, padding the gap between the layers, and making it removable. This is a good way to get a perfect custom dress form, starting with the standard dress form you already own.

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*Adapted from Threads, no. 161.*





# Fit the form to make the foundation

Start by making a foundation layer to fit the dress form exactly. There are several ways to get a precise fit for your dress form. If it is a standard size, buy a basic pattern, and cut and assemble it to fit. You can also create this layer by draping muslin onto the form to get the pattern. See *Threads* articles: “On Draping a Fitted Bodice” by Donald McCunn (no. 52); “Master Class: Introduction to Draping” by Valerie Fuhr (no. 96); and “Try Plus-Size Draping—For the Best Bodice Ever” by Kathleen Cheetham (no. 130). The foundation layer backs the padding you add later.

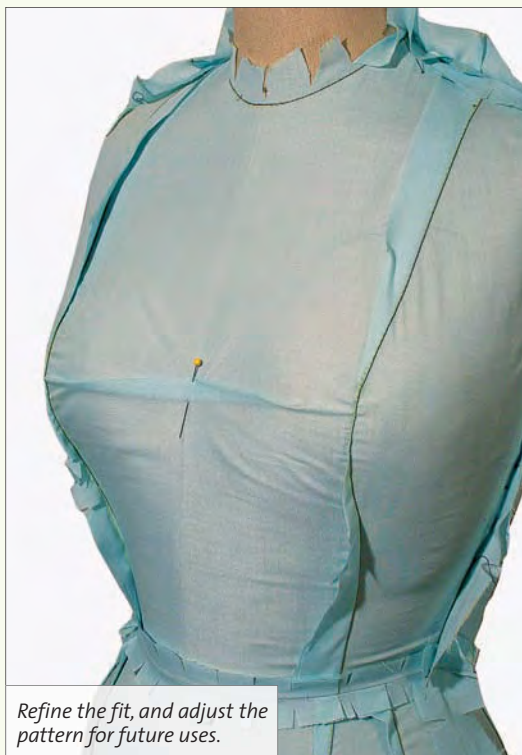
**1 Make a foundation layer pattern using your preferred method.** (I draped a muslin to the form; cutting it long enough to cover at least the widest hip section, marked the seams and darts, and pinned the seams smoothly.) Then, remove the muslin, true the lines, and use it to make a paper pattern, which you’ll need every time you make a new body double. Notice that the armholes are eliminated. You can cut the foundation from any stable woven fabric.



**2 Assemble the foundation.** Sew the side and waist seams, and install a separating zipper in the center back.



**3 Make any corrections to the foundation.** In this example, a horizontal dart was added between the bust points to create separation, and the side seams were let out on the front and back because the foundation was too snug.



**4 Transfer all corrections to the paper pattern.** Preserve this pattern to use whenever a new foundation is needed for another body double.

## Prepare the cover

Now, you'll create a cover using the measurements of the person you'll be sewing for. If you are your first body double candidate, you will need help fitting yourself.

### MAKE A FITTING SHELL

Follow your preferred method, either pattern drafting or draping. My fitting model, Kathy, stood for measurements so I could draft a fitting shell pattern to her shape. The shell should be snug and fit smoothly at the shoulder slope, neckline, armholes, bust, spine curvature, waist, and hips. The shell becomes the cover for the finished form and includes a center-back zipper. For a sturdier body double, you can make the cover in canvas or upholstery fabric, but muslin works, too.



*The fitting model tries on the fitting shell to check the fit from all sides.*

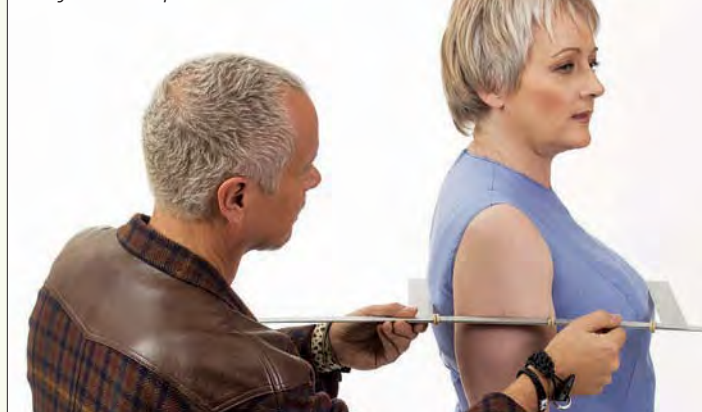
### TAKE BODY MEASUREMENTS

When you pad a snug shell, it can distort into a cylindrical shape that doesn't reflect the body's true contours. Fullness is distributed differently on each figure; some are deeper but narrower side to side, and others are not as deep but wider side to side. To duplicate the body silhouette, you need to measure and maintain its widths and depths. The best way to do this is with a caliper. Finding calipers to measure the body may be difficult or expensive, but you can make a serviceable facsimile with two L squares (ModernSS.com) held together by covered elastic hair bands. Band the L squares together by stacking the long sides of the squares and sliding one on top of the other to establish the correct distance between the short ends. Then measure between them with a measuring tape. Measure and note the body's depth and width at the bust and hip, as well as the back rib cage width. These measurements help determine where to position the padding on the form before the cover is put into place.

*Use two L squares as calipers to measure the bust width.*



*This caliper substitute also accurately defines the depth measurements.*



**Create a removable padded cover for anyone you sew for, without having to invest in multiple dress forms.**





# Fill the gap with fusible padding

With the measurements taken and the cover fitted, begin padding the foundation. For better control, use fusible quilt batting (JuneTailor.com). It enables you to build up the layers of padding easily, and it doesn't shift. When padding, exaggerate the curves and circumferences to give the cover something to compress for a firm body double.

**1 Tear the batting rather than cutting it.** This creates softer edges and enables you to blend the layers of batting together as you're working.

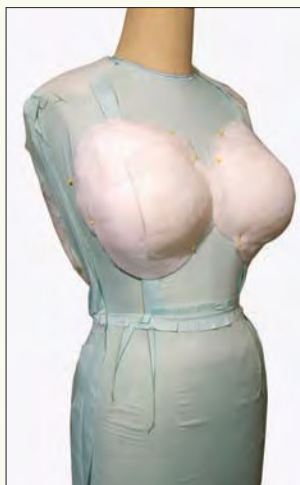


**2 Begin padding the top back.** As you add the batting layers, use a steam iron to fuse them to each other and the foundation. My fit model has a high curve at the base of her neck, and a strong, wide back. Using layers of batting with the fusible side to the dress form, I started at the center back and worked outward, layering batting to mimic the shape of her back.

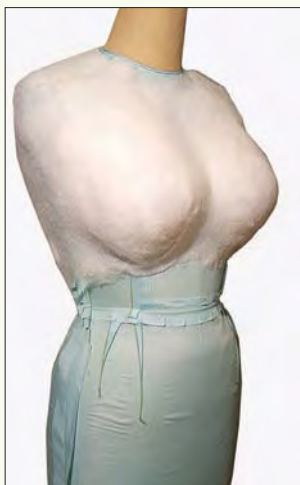
*Build batting layers by fusing one at a time.*



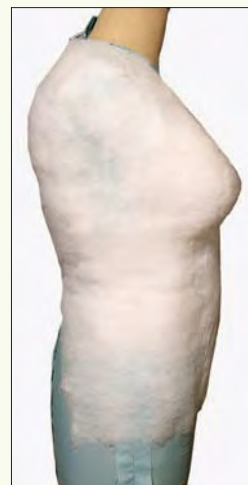
**3 Form the bust.** Use shaped pads as needed. Raglan shoulder pads worked perfectly to build up the bust. First pin them in place to get the proper position and contour. Then use fusible batting to secure them to the foundation.



**4 Apply more batting to round out the bust area.** Check frequently for the correct width and depth, based on the caliper measurements.



**5 Work down the torso and adjust the seat.** The model's flat seat means the foundation doesn't need much padding there; however, she has more fullness in the abdomen, so batting is layered there to create the correct foundation shape.



**6 Sculpt the batting with your iron.** Press as you add layers. The iron removes some of the loft. Keep padding the figure and checking widths and depths until you get a slightly exaggerated version of the figure you're re-creating.



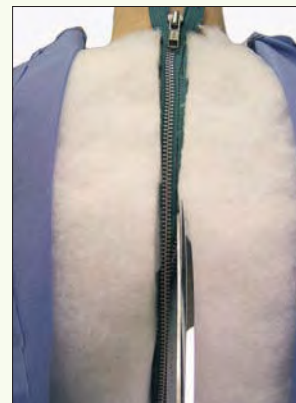
*Cover the entire foundation. The batting becomes a sturdy base that holds everything together.*

**7 Check the fit.** Zip the cover onto the batting. You can see there is more fullness needed in the bust and at the shoulder near the neck. Remove the cover to add batting in these places.



*Put the shell over the padded foundation; fine-tune the fit.*

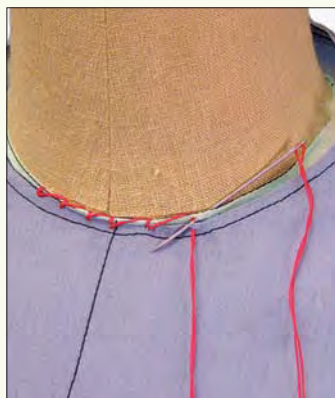
**8 Trim around the foundation zipper.** Cut an opening in the batting that is  $\frac{3}{4}$  inch to 1 inch wide along the zipper, to avoid catching the batting later when the form is in use.



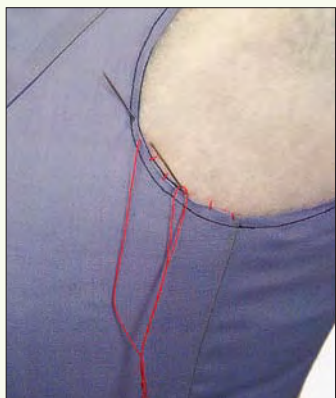
# Make it removable

Sew the layers together at the neckline, armholes, and around the zippers. Then add a few rows of basting stitches to serve as guides at the center front and side seams. When the layers are secure and well-marked, the body double is removable.

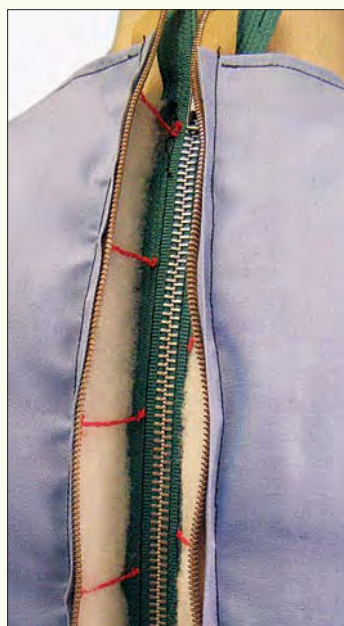
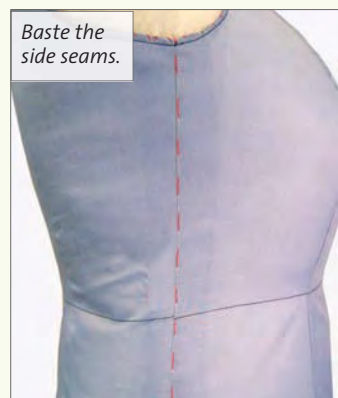
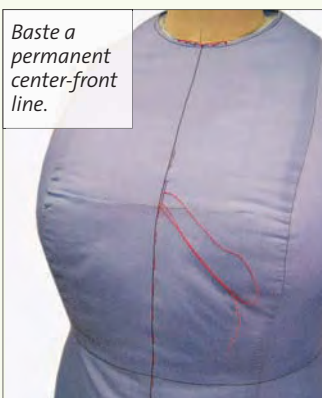
**1** **Stitch the neck.** Secure the center front where the two layers lie next to each other.



**2** **Fell-stitch the finished edges of the armholes to the batting only.** This holds the cover in place at the shoulders.



**3** **With a long running stitch, sew the cover to the batting outside and inside along the center-front line and both side seamlines.** Use thick thread, such as pearl cotton. Whenever possible, catch only the batting—not the foundation layer—underneath.



**4** **Hold the cover zipper in position.** Make chain swing tacks every 2 inches to 3 inches along both sides of the opening. These tacks hold everything in position when taking the body double on and off the form but won't compress the padding along the center-back line.

**5** **Make a rolled hem or pink the body double's lower edges.** The inner and outer edges don't necessarily get sewn together, as the circumference of the cover might not match the circumference of the foundation.



**This technique enables people with different shapes to share the same dress form and still have a custom fit.**







# FIT STRATEGIES

- ♦ Muslin Refined *p. 38*
- ♦ Smart Fitting *p. 44*
- ♦ Fine-tune the Tissue *p. 51*
- ♦ The Best Custom Pants *p. 56*



A white muslin garment prototype is shown on a mannequin. The garment features a wide, draped neckline and a fitted bodice. It is held together with numerous red and white pins and has visible hand-stitched lines in brown and blue thread. The mannequin's neck is visible, with the text "SUPERIOR MODEL FORM CORP" printed on it. The background is a solid teal color.

*A perfectly fitted, well-proportioned muslin helps you create a beautiful finished garment (Vogue 8630).*

# Muslin

## Refined

A couture method leads to exquisite garments

BY SUSAN KHALJE

**M**uslin may be an inexpensive fabric, but a muslin test garment is worth its weight in gold. Time perfecting a muslin is time well spent. Without it, your efforts are, at best, a gamble; with it, your sewing path is clear. Working out fit and proportion issues at the experimental phase enables you to confidently proceed to work with the fashion fabric.

A muslin (toile) is the essential first test or trial run for any finished couture garment. The word “muslin” can refer to the fabric or, as it does in this case, the working garment, which is typically made from muslin fabric. Unbleached muslin is affordable and easy to find in most fabric stores, but be sure to select one that’s sturdy enough for pattern and fitting purposes. If your design calls for fabric that stretches, the fabric for your muslin also must stretch. Therefore, match your muslin’s weight and stretch to your desired fashion fabric; use knit for knit garments and heavy fabric for heavyweight designs.

Consider the muslin your fit and design laboratory. To begin, locate and mark the seamlines on your commercial pattern, and then use transfer paper to put the marks onto the fabric. (I’ll show you a method that ensures perfect accuracy.) Next, cut out the muslin and thread-trace the seamlines for a visual and tactile reference during construction; this will help you accurately align and fine-tune seam and dart placements later. After it has been assembled, fitted, and adjusted, the muslin is ready to function as a pattern.

Sewing and altering a muslin test garment is essential to developing a beautifully fitted couture garment. It enables you to assess fit and design proportions and try out unfamiliar techniques without risk of damaging expensive fabric.

Once your muslin is adjusted correctly, it becomes a valuable source of information that will last for years.

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*Adapted from Threads, no. 151.*



## Let the seamlines guide the way

To begin, draw the seamlines on your commercial pattern to guide your stitching and fitting process. Then steam and press the muslin, aligning the selvages to maintain the grainline.

### DETERMINE THE SEAMLINES

A wide seam allowance gives you plenty of leeway in fit and design and is essential to making adjustments. To add seam allowances, you have to mark the seamlines on the muslin; therefore, you first have to locate and mark them on your commercial pattern. With the advent of multisize patterns, seamlines are no longer printed on commercial patterns; typically, they're  $\frac{5}{8}$  inch from the cutting lines, but always check the pattern instructions. Measure in from the cutting line using a ruler, and mark all the seamlines on your pattern.

Before you move on to the fabric, make any necessary adjustments, such as length or size alterations, to the paper pattern. You'll refine things later, but if there are changes that you know you'll have to make, such as bodice and sleeve-length adjustments, now is the time to make them.

### PREPARE THE MUSLIN FABRIC

Unless you're working on a particularly wide skirt or bias garment, 45-inch-wide unbleached muslin fabric is sufficient and is easier to handle than wider fabrics. Don't get anything too thin or too thick; some muslin is so thick that it's difficult to pin through, and that's too inflexible for your purposes.

It isn't necessary to prewash the muslin fabric, but you must steam it thoroughly so it doesn't shrink. Press it carefully, and be sure to align the selvages perfectly. Pin the selvages together to ensure that the fold is on the vertical straight of grain.

## Transfer your marks meticulously

Use transfer paper to mark all of the important pattern information on the muslin. Then, using thread in a contrasting color, thread-trace the marks so they're visible on the fabric's right side.

### USE DRESSMAKER'S CARBON TO MARK THE MUSLIN

Transfer all the stitching and registration lines to the muslin: grainlines (lengthen them so they run the full length of the pattern piece), notches, darts, waistline, bust apex, pocket-placement lines, design details, hemlines, center front, center back, boning placement, buttons, buttonholes, etc.

I use large (26-inch-by-39-inch) sheets of Professional Transfer Paper (RichardTheThread.com). You can transfer information by sandwiching a folded piece of carbon between two layers of fabric, but I use a more accurate method.

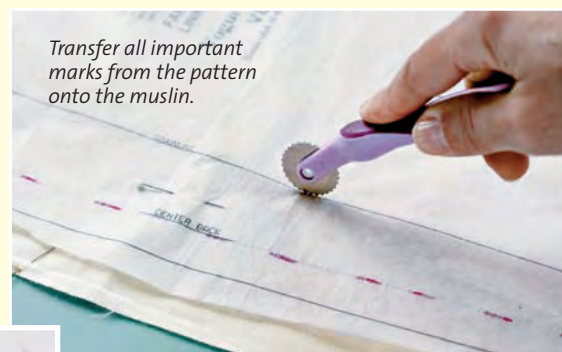
Pin the pattern pieces to the muslin, paying strict attention to grainlines. Then, roughly cut out each muslin section. There's no need to measure seam allowances exactly, but make them at least 1 inch wide. Remember, it's the seamline, not the cutting line, that's critical. Allow extra fabric at the neckline, the base of the bodice, the bottom of the sleeves, and other areas for fitting purposes.

Next, lay a double layer of muslin with the pattern pinned to it on top of a sheet of dressmaker's carbon (colored side up). With a tracing wheel, carefully trace the seamlines and all of the above-mentioned marks to transfer them to the bottom muslin layer.

Then, unpin the pattern and set it aside. Reinsert the pins in the



*Using large sheets of professional transfer paper saves time.*



*Transfer all important marks from the pattern onto the muslin.*



*Trace your previous marks to mark the garment's other side.*

double layer of muslin, and then flip the fabric over. The newly marked piece will now be on top. Mark the second piece with the tracing wheel and paper as you did before, using the marks you just made as your guide.

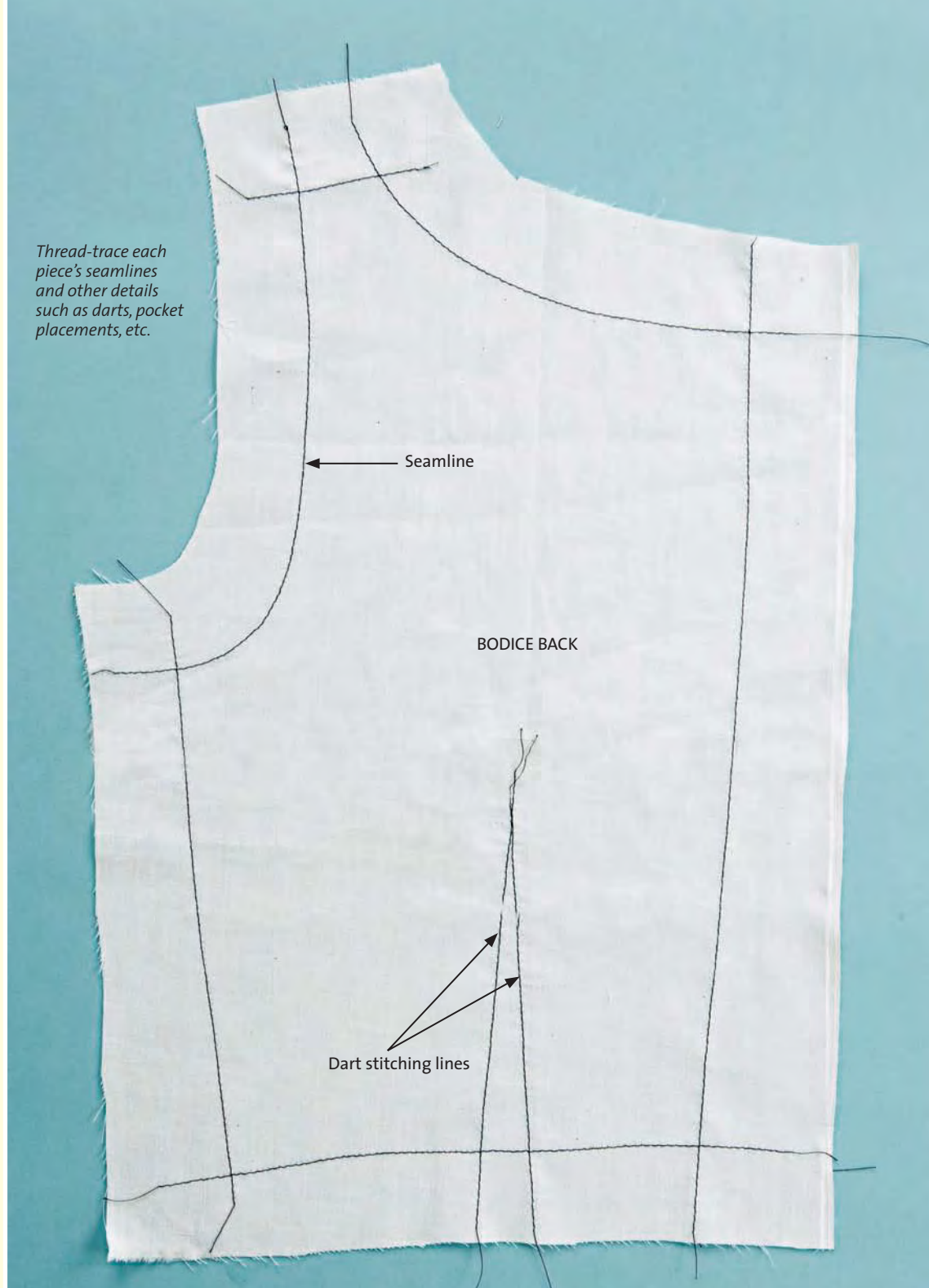
Confirm that you've marked everything. This technique enables you to mark both pieces without the layers shifting during the process. You do have to mark each piece individually (instead of two at a time), but it's all about accuracy and control here. This method ensures both.

## THEN THREAD-TRACE THE MARKS SO THEY SHOW ON THE OUTSIDE

The carbon tracings appear on the inside of each muslin piece, but they won't show on the outside. Once the muslin is tried on, the carbon markings are unavailable to you; therefore, you have to transfer that information to the muslin's right side. Using contrasting dark thread and long stitches, machine-thread-trace over the marks; it's quicker than hand sewing, and the thread tracing strengthens each muslin section.

Each thread-traced line must be independent and reach the edge of the piece. The lines should cross at the corners; don't simply turn the corner to start an adjacent line. A pattern can have five or six lines around its perimeter, as well as darts, the waistline, the apex of the bust, the center front, etc. It's unnecessary to thread-trace the notches; you'll see those markings on the inside as you assemble the muslin. When you're finished, write the name of each pattern piece, the wearer's name, and an arrow indicating the top of each muslin piece.

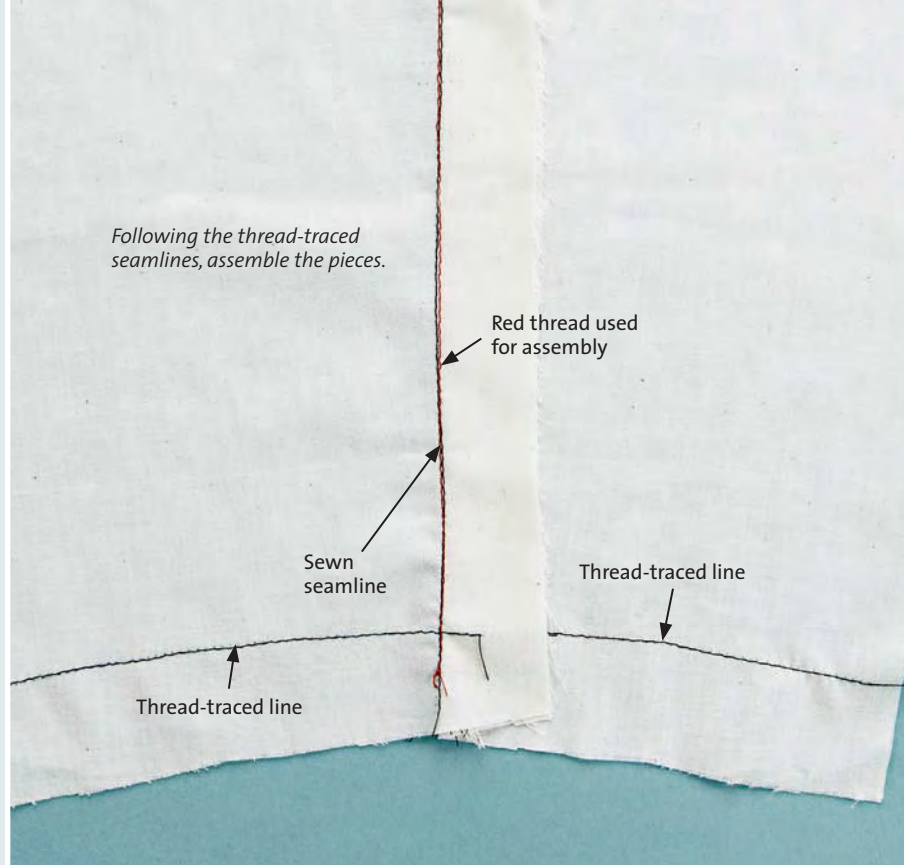
*Thread-trace each piece's seamlines and other details such as darts, pocket placements, etc.*



**Tip**

**BIGGER IS BETTER.** When marking and assembling a muslin, use long machine stitches because they're quick to sew and easy to remove during fitting and muslin disassembly.





## Assemble, fit, and fine-tune the muslin

Put the muslin together. Then, using the extra seam allowance you added, adjust the garment's fit and style. Once it's perfect, use your muslin as the finished pattern.

### BASTE THE MUSLIN PIECES TOGETHER

After each section has been thread-traced, baste the muslin together by hand or machine. If you're hand basting, be sure to secure the beginnings and ends of each seamline. You will be tugging on the muslin as you work, and if your stitches aren't secure, it won't take much to pull them apart. With right sides together, sew from raw edge to edge without back tacking. Some people like to sew the muslin together so that seam allowances are on the garment's outside and easier to modify, but I feel it's more important to be able to assess fit and proportion by seeing the true

silhouette. Having the seam allowances on the inside—as they would be on the finished garment—is visually cleaner.

With all of your points of reference clearly marked in contrasting thread and visible on the muslin's outside, you can adjust seams and darts, bust apex placement, etc., and make sure that grainlines are as they should be. The muslin also tells you where you might need to add boning and helps you clearly mark the waistline. Take this opportunity to apply stay tape to certain areas, such as V-necklines. Raise or lower a neckline, alter the line where the skirt attaches, change the size of the sleeve cap or armhole, tighten or loosen a sleeve, and more, as desired.

### Tip

#### USE CONTRASTING THREAD.

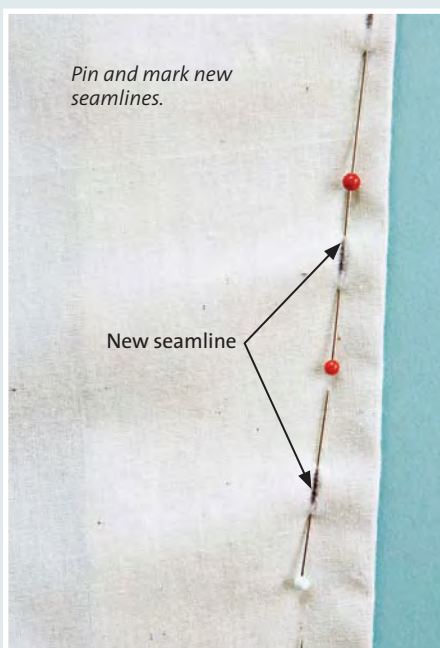
Sewing the muslin together with colored thread makes things easier when it comes time to take the muslin apart. Some sewers like to use a color-coded system—black for thread-tracing, blue for assembly, red for corrections, and so on.

### FIT THE MUSLIN AND EXPERIMENT WITH DESIGN DETAILS

After the fitting is complete, look carefully at the adjustments you've made and make sure they're accurately and clearly marked on the muslin. Then, sew along the newly marked lines and recheck the fit. At this point, you might be tempted to clip some seam allowances, but do so as little as possible until you're sure the seamline is in the right place; it's hard to pin a clipped seam allowance accurately. Here are a few fit and design adjustments you may need to make:

#### Take in loose seams.

If a section is too loose, pin it to fit, and mark the new seamline.

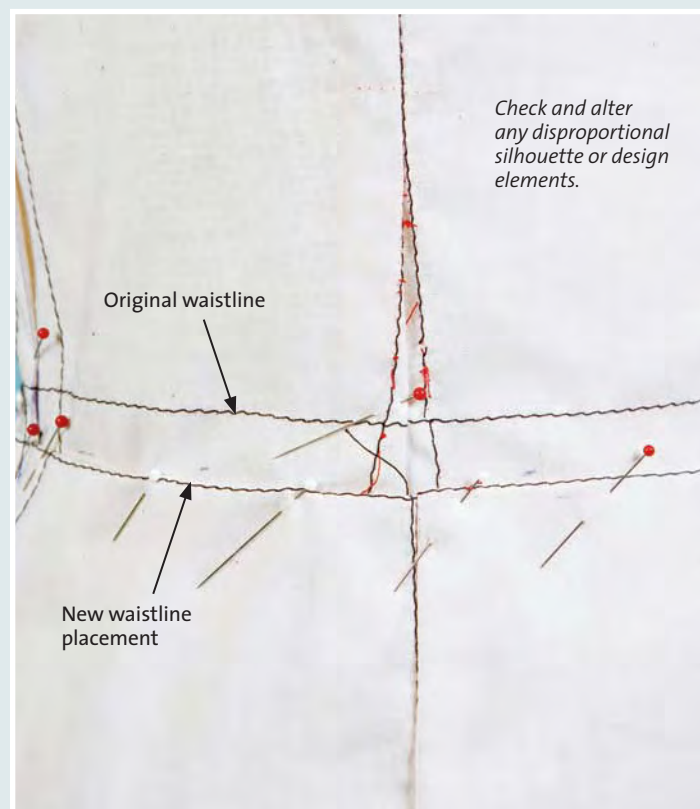


#### Loosen tight seams.

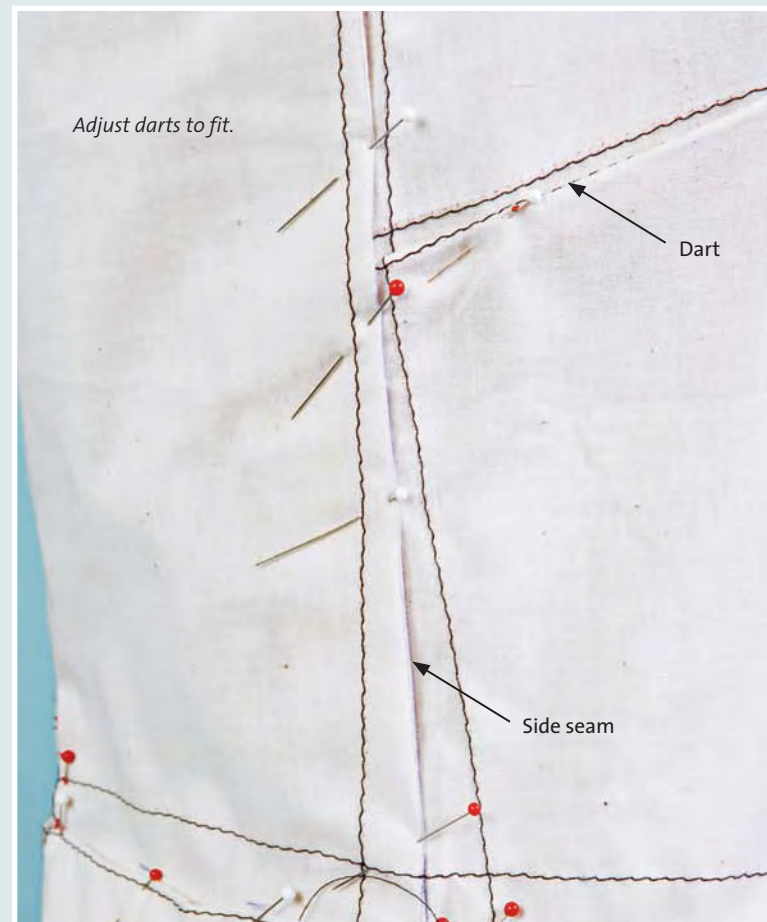
If a section is too tight, open the seam, and then pin and mark the new seamline.



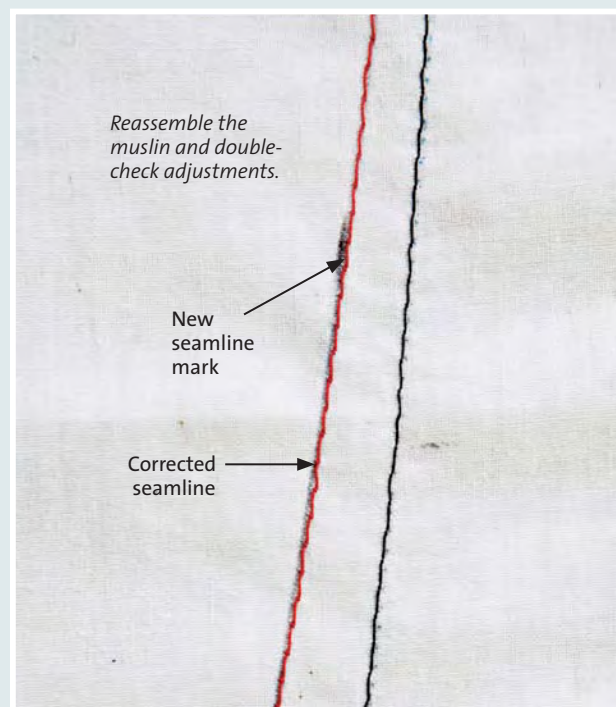
**Adjust design lines.** Assess the design elements and adjust them as necessary. Below, the waistline was lowered, which altered the dress proportions.



**Double-check darts.** To adjust darts, pin them in place during the fitting, and then mark any changes carefully.



**Resew the muslin.** After you mark the new seamlines and darts, sew them again, and then recheck the fit.



## FINALLY, USE YOUR MUSLIN AS THE PATTERN

When you're happy with the corrected muslin (and this may take a second, or even a third, fitting), carefully disassemble the muslin to keep distortion at a minimum. Then give the muslin a final press.

The muslin is now your pattern. Use it for cutting the underlining(s), the fashion fabric, and the lining. Don't forget to reverse the pattern pieces for the lining—it's a mirror image, not an exact copy.

When you're working with expensive fabric, such as fine lace, this full set of accurate pattern pieces helps you decide how much material to purchase (take the muslin to the store), how to position motifs, and where to cut the lace. You can also easily create a single-layer layout with this full set of pattern pieces. And if the muslin has been fitted on someone who is less than perfectly symmetrical, having a full set of pattern pieces is essential. If the two sides are identical, you can use half the muslin, and cut the fabrics doubled. If the two sides are different, however, you need to use the entire set of muslin pieces, and do a single-layer layout.

The final pattern you create from your muslin will help you assemble a garment that looks professional, fits perfectly, and has the style you will be proud to wear.





# Smart Fitting

A simple way  
to assess and solve  
your fit challenges

BY KENNETH D. KING

**H**ow does fitting work into your sewing? Is it a practiced discipline, a sewing mystery, a miracle, or a clothing necessity? Sooner or later, everybody needs to learn a few fitting tricks. It's easy enough to see when a section of the garment doesn't fit, but where to make the correction isn't always obvious. I'll show you how to apply three basic principles to fit almost any garment to any body and how to fit your patterns exactly at the place where they don't. This approach doesn't negate other fitting methods; it just gives you the tools to reason through any fitting problem on your own.

## HOW TO ANALYZE A GARMENT FOR FIT

Every fitting process begins with evaluating how the body fills a garment. Understanding how to fit your garment involves understanding that there are three possible fit-problem scenarios: An area is too large, an area is too small, or an area isn't shaped right.

If the garment is too large in one area, reduce the amount of garment fabric in that region; this is principle 1—"net loss." Next, if the garment is too small in an area, you need to add fabric to that area; this is principle 2—"net gain." These conditions can exist simultaneously in the same

garment, so sometimes, you may have to subtract fabric at one location and add it at another; this is principle 3—“no net change.”

Understanding these principles enables you to alter the pattern at the point of the fit problem by adding or subtracting from the original and adjusting for distortion. A good example of this is correction for a swayback: Since the fabric bunches up at the waist, and the hem rises as well, you have to remove fabric at the waist and add fabric at the hem.

After fitting alterations are made, there may be disjointed seamlines and curves that end up a little too pointed or otherwise distorted. The act of truing them is based on another type of “no net change” principle, but that takes place only after the fit is corrected.

#### FIT THE MUSLIN, THEN THE PATTERN

To start this process, make a muslin, put it on, and begin to pin out any fullness and unevenness to form a smooth silhouette. For garments that hang from the shoulders, adjust the muslin from the top down, as lower drag lines often disappear or diminish after the upper adjustments are made.

After you’ve fit the muslin, use a dressmakers’ tracing wheel and carbon to transfer the new information to the pattern copy. If necessary, take the muslin apart so the pieces lie flat on the paper to get an accurate copy. Some flat-pattern fitting methods involve cutting the pattern and shifting the seam edge to enlarge or reduce the pattern’s area, but I reshape seamlines and curves to reconcile the original garment style with the new custom fit. It’s the extra step that will make it look like it was draped to your body.

In this article, I apply the three basic pattern-fitting principles to a bodice sleeve and back; I make a muslin, and read the wrinkles; then I start at the top of the garment and work my way down. As this system unfolds, you’ll see pattern pieces morph into new shapes that allow for curves and fullness or leanness and length that standard patterns don’t. Once you get a feel for it, you’ll find this method of fitting patterns an uncomplicated and versatile way to achieve a perfect custom fit that looks like it was draped to your body.

*Adapted from “Smart Fitting Series, Part 1: Sleeve & Back,” in Threads, no 147.*

## The three basic principles of pattern fitting

Apply these three principles to fit your patterns perfectly. Each principle has a predictable result. Study the drag lines in your muslin to determine which principle to apply. Note that you may need to apply multiple principles while fitting a single garment.

### 1 NET LOSS

If an area is too large, subtract fabric.

### 2 NET GAIN

If an area is too small, add fabric.

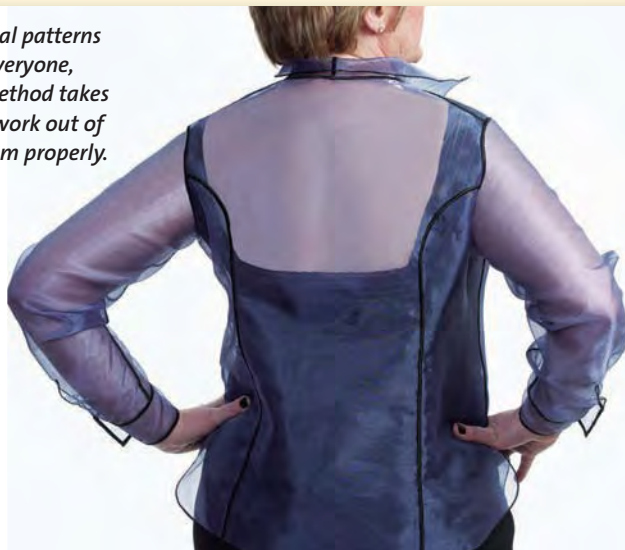
### 3 NO NET CHANGE

If an area is the wrong shape, redistribute.



*Pin the problem right where it occurs, and then apply one of three principles to fix it.*

*Commercial patterns don't fit everyone, but this method takes the guesswork out of fitting them properly.*

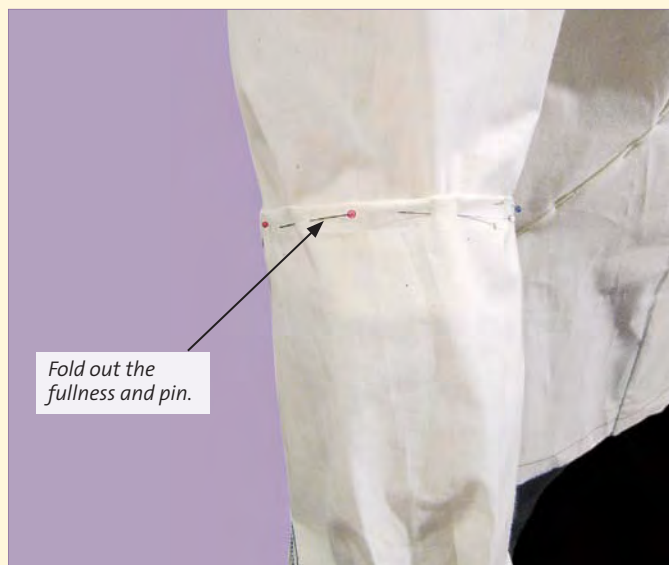
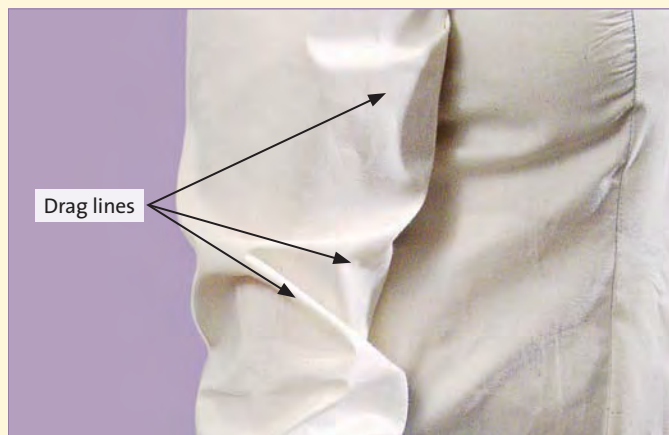




# Remove excess sleeve length

Start by reading the muslin. The sleeve on this muslin is too long for the figure. The drag lines cross the arm, indicating the need to fit for a net loss.

**1 Fold out excess fullness.** To remove the excess fullness in the sleeve, fold it out until the sleeve hangs with a minimum of ripples. Don't over-fit; the arm needs room to bend comfortably.

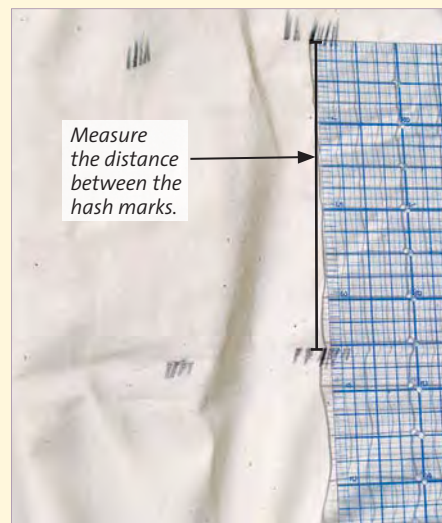


**2 Mark the fold on the muslin.** Hash-mark across the folded area with a pencil.



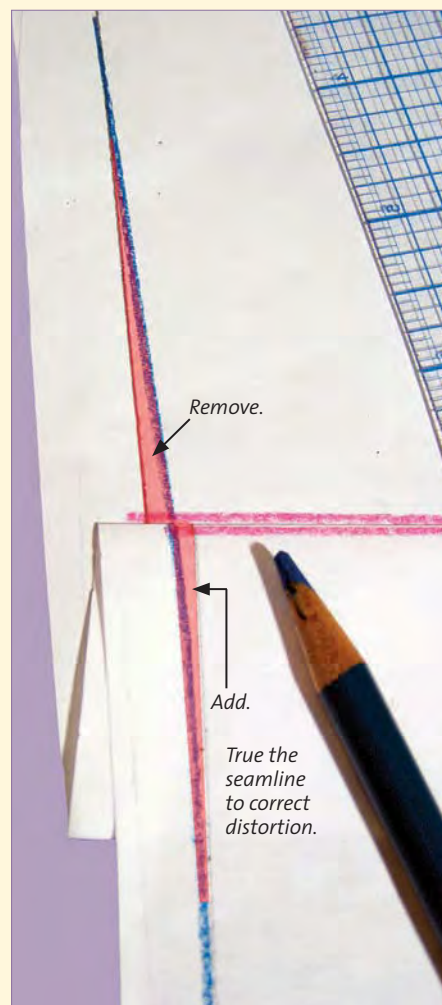
**3 Measure the area to be removed.**

Unpin the alteration, and smooth the muslin sleeve out on a table. Measure the distance up from the cuff and then the distance between the hash-marked rows.



**4 Transfer this information to the sleeve pattern copy.**

Fold out the excess area based on your measurement across the pattern. The alteration throws off the seam alignment slightly, which is easily corrected with a ruler. Truing the seam is how you correct for distortion. You can see where area is removed from one side and added to the other for no net change overall.



# Lose area in the bodice back

The horizontal drag lines on the bodice back below indicate there's too much fabric, so once again, you need to fit for a net loss.

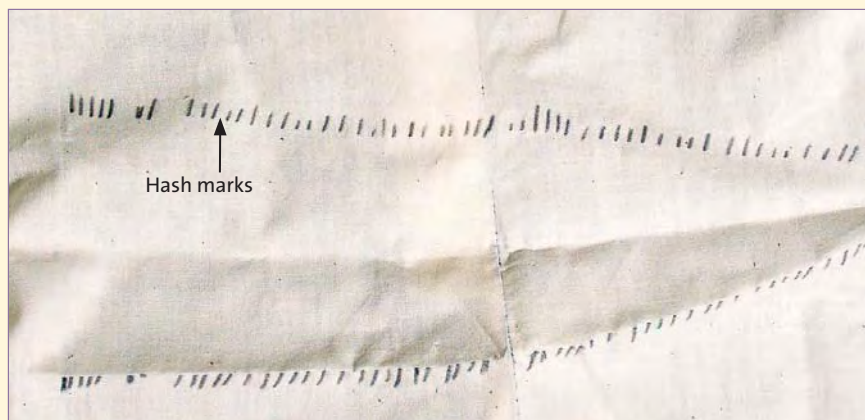
**1 Pin the excess into a dart.** Begin at the center back, and work around the bodice to the side seam from under the shoulder blades, pinning the excess fabric into a horizontal dart. Then have the wearer move her arm, to see whether there's still room to raise it.



**2 Continue to pin.** Pin out the excess from the center to the side seams. Make sure the hem does not rise with the alteration and it's level with the floor. If it rises, measure how much, and add that length at the hem when altering the pattern.



**3 Mark the folds.** As you did on the sleeve, mark the fitting folds with hash marks and a pencil. Then remove the pins.

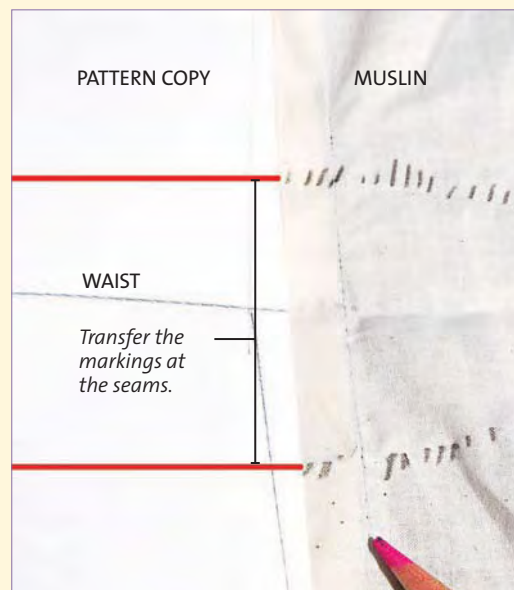
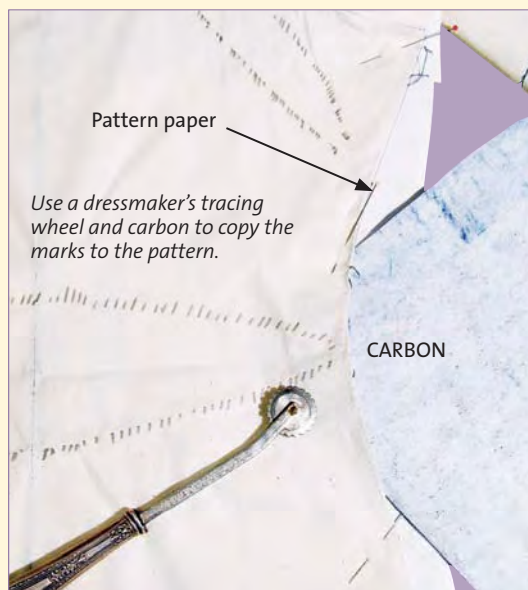


*To see this fitting technique brought to life and to learn how to apply it to any garment, check out Kenneth D. King's Smart Fitting DVD. For more information, turn to page 10.*

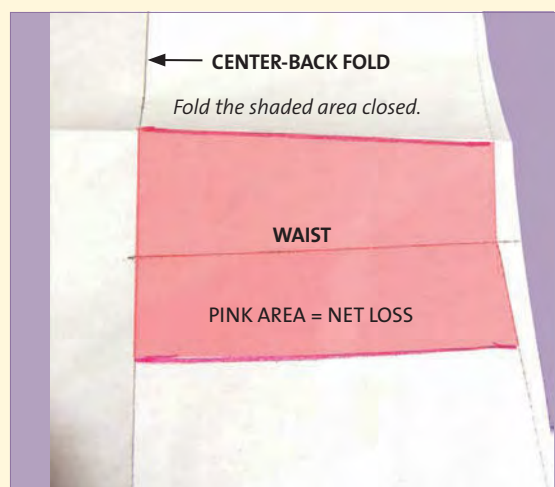
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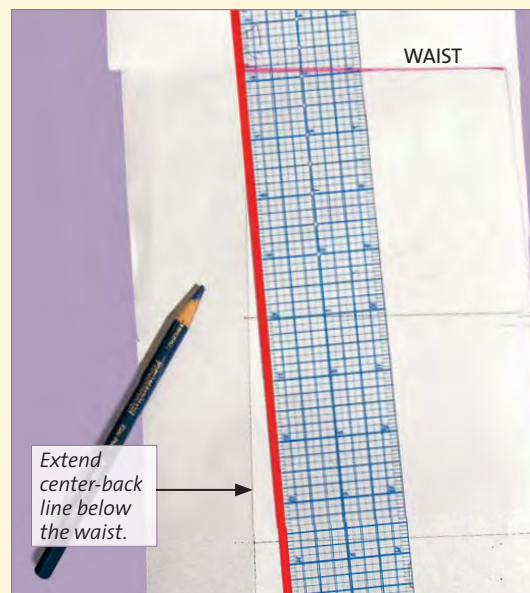
**4 Transfer the information to the pattern.** Remove the side-seam stitching from the muslin to make transferring the information to the paper easier. Start with the back side panel; place the pattern copy under the muslin, and align the seamlines and other marks. Pin the muslin to the paper, and use a dressmaker's tracing wheel and carbon to copy the marks from the muslin to the pattern. In some areas, you can dispense with the tracing wheel and carbon entirely and just lay the pattern next to the seam on the muslin to mark the alteration on paper, as shown at right below.



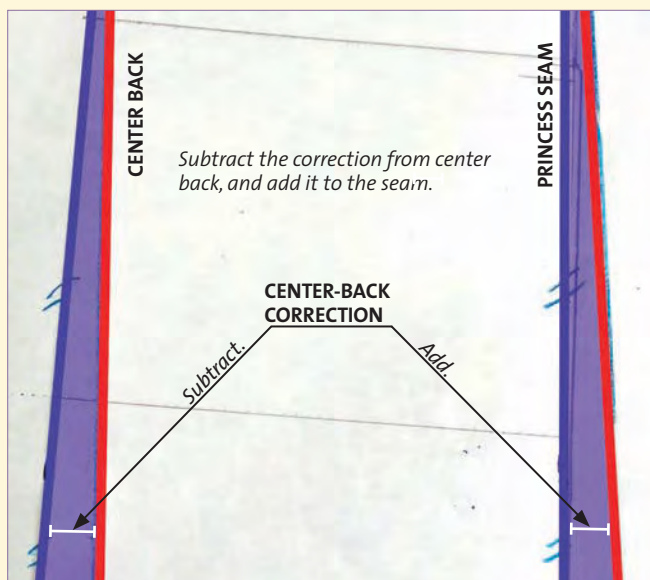
**5 Remove the excess from the pattern.** The shaded area below shows the net loss on the center-back panel. Fold the area closed, and tape.



**6 Identify any distortion created by the alteration.** In this case, the alteration bent the center-back foldline to the left. To compensate, extend the center-back line below the waist, using the line above the waist for reference.



**7 Correct the distortion.** Remove the area outlined in blue from the pattern at the center back, and add it back to the pattern at the princess seam. Extend the hem at the princess seam the same amount as you trimmed off the center back to correct the distortion (no net change).



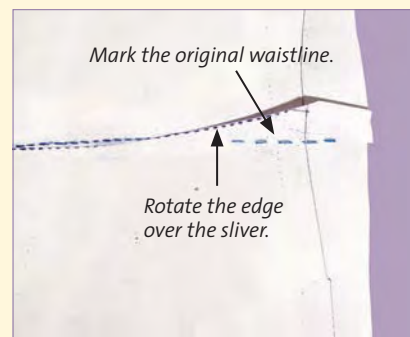
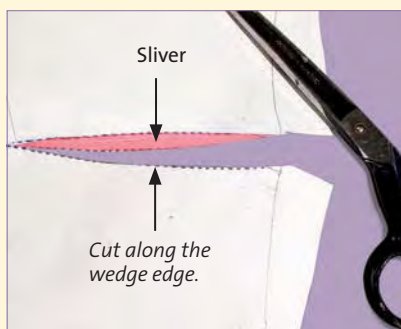
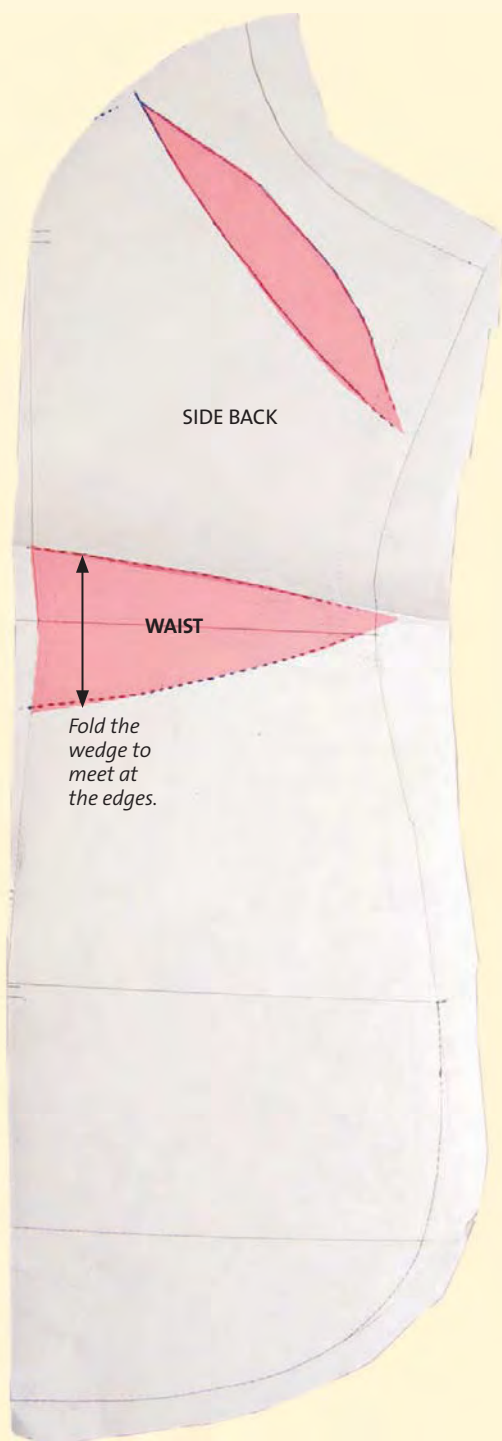
# Use transferred information to shape the side-back pattern

The shaded areas represent the net-loss alterations that were pinned out on the muslin and transferred to the pattern on the side panel. Begin with the easier alteration—the wedge-shaped section at the waist.

**1 Fold out the net loss on the side-back wedge edges.** If the wedge edges don't align because one is slightly curved, fold the wedge as close as possible, and then remove the wedge sliver that's left.

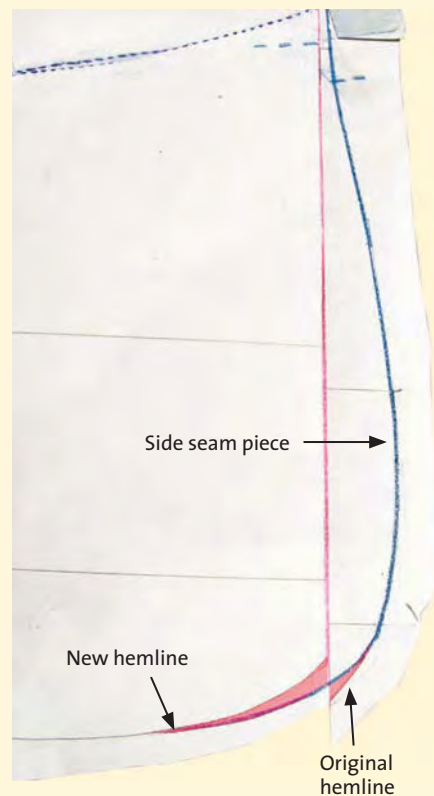
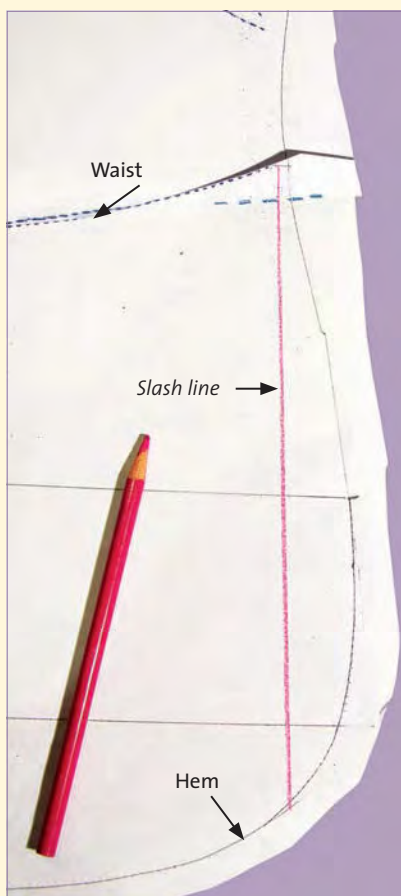
**2 Remove the remaining sliver.** After the wedge is folded out, a sliver remains (shaded area). To remove the sliver, cut the paper along the lower curve, as shown below.

**3 Cover the opening.** Mark the original waistline, and rotate the cut edge to cover the sliver, as shown below.



**4 Correct for the distortion.** First, draft a slash line from the waist to the hem, as shown below. Then, cut the paper on this line from the hem through the waist.

**5 Redraft the hem curve.** Slide the side-seam piece down until the original waist point matches the new waist on the pattern. There will be a mismatch at the bottom. To correct for the distortion at the hem, split the difference and redraft the curve for no net change—whatever you trim off one, you add back to the other.

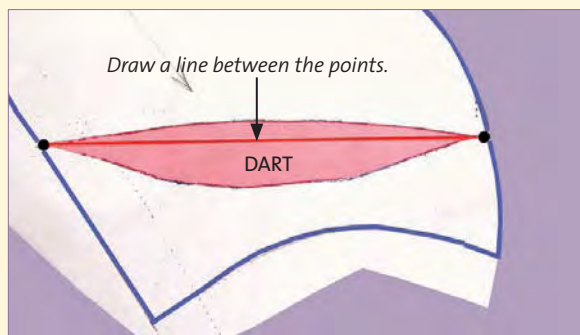




# Use a grid under the arm to alter the pattern

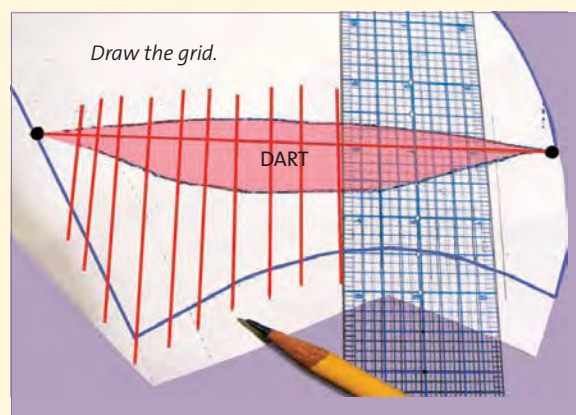
When the drag line doesn't cross a seam, there's another method of altering, which I call "the grid." Below, I demonstrate how it works on the shaded area that needs to be removed from that pattern region. This will be a net loss, and it affects the outline of the pattern when the alteration is finished.

**1 Draw the baseline.** Draw a straight line between the end points of the marquis-shaped dart.

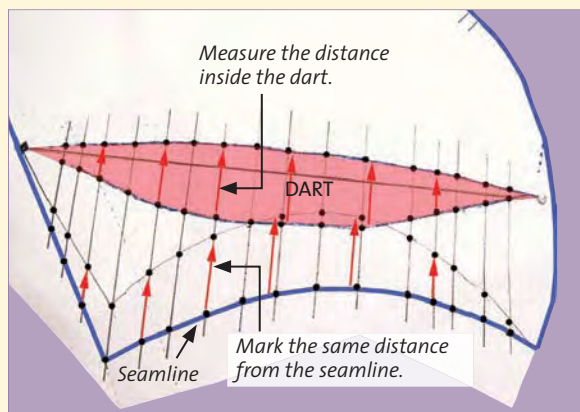


**2 Draw grid lines.**

Draw grid lines perpendicular to the baseline that pass through the entire marquis shape and extend through the nearest seamline. The grid lines shown at right are  $\frac{1}{4}$  inch to  $\frac{3}{8}$  inch apart.

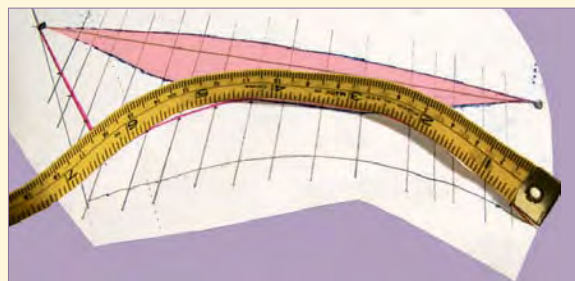


**3 Mark the new stitching line.** Measure the length of each grid line inside the dart lines. Then, mark that distance in from the stitching line (shown in blue), on the same grid line, toward the dart, as shown at far left. The direction is shown with the red arrows and marks a dot. Then connect the dots for the corrected stitching line.



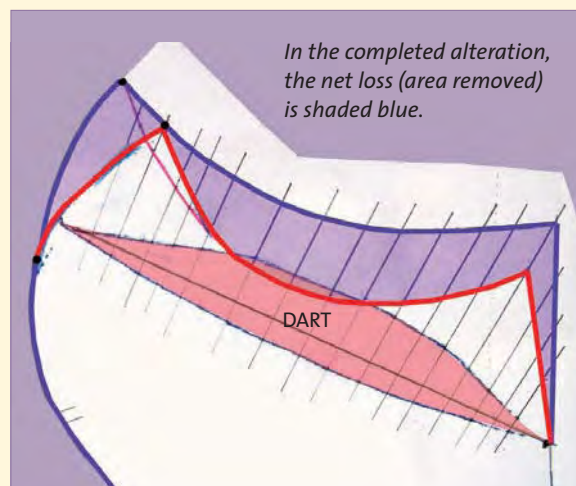
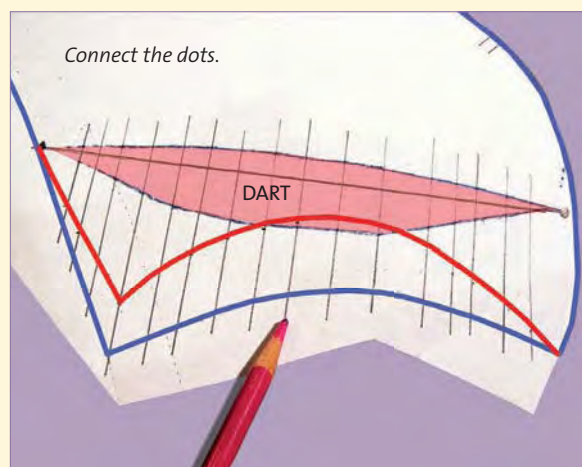
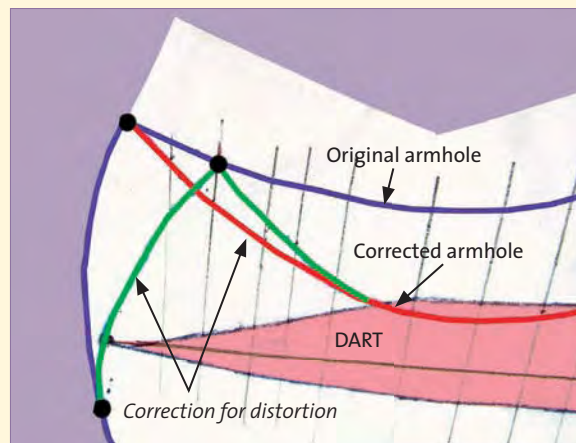
**4 Compare the line lengths.**

To correct for distortion, measure the original stitching line length and compare it to the new line length.



**5 Correct the distortion.**

The corrected armhole line (shown in red, at right) needs to be brought back to the original armhole length (shown in blue, at right). To do this, find the difference between the two lines, measure that distance in from the princess seam on the original armhole line, and redraft the armhole and princess seams to this point. The green line, shown at right, represents the correction for distortion.



# The Best Custom Pants

Don't alter somebody else's pattern—draft your own

BY CLAUDETTE GRANT

**N**othing flatters like a good fit. And you can take the guesswork out of fitting pants by custom-drafting your own pattern from the start. It sounds complicated, but with a few simple measurements, a ruler, pattern paper, a pencil, and my map, it's as easy as working a crossword puzzle. It doesn't take artistic or sewing skill to make a perfect pattern. You just draw a line, and along it, mark points that correspond to your body measurements; then square the lines. (Squaring means drawing a line at 90 degrees to the line containing a referenced point.) Follow these steps until you have the pattern you've been looking for, and be sure to add seam allowances.

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*Adapted from "The Best-Fitting Pants—Ever," in Threads, no. 134.*

## MEASURE UP

Exact measurements are the building blocks for your pattern. Just wear undergarments or a leotard when you take your own. Here's a way to take them without a sewing buddy's help:



**1 Inseam:**  
Stand on 1 inch of the tape measure with the heel of your foot, and measure to the crotch. Subtract the 1 inch.





**2 Waist:**  
Measure your waist circumference.

**3 Side seam:**  
Stand on the tape measure with 1 inch under your foot, and measure up to your waist. Subtract the 1 inch.

**4 Hip circumference:**  
Measure the fullest part of your hip.



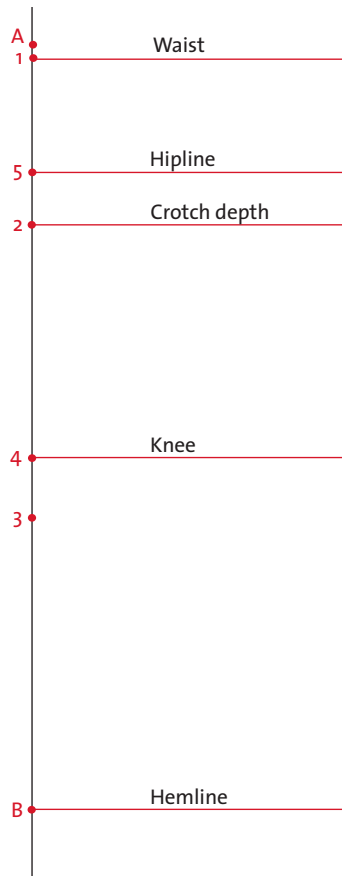
**5 Crotch depth:**  
Tie a piece of elastic around your waist. Sit on a firm, level surface, and use an L square, tape measure, or a ruler to measure from the elastic to the surface. Add 1 inch for ease.

**6 Ankle:**  
Measure the hem circumference of your favorite pants (not shown).

continued >>>

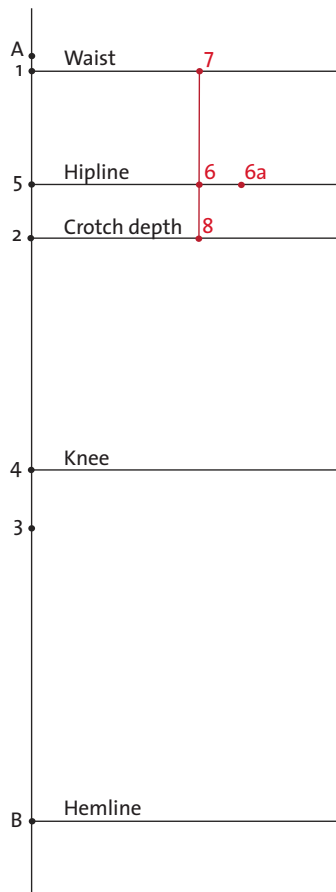
# Draft the front

Start with a vertical line drawn at least 4 inches from the left edge of a large sheet of paper and several inches longer than the side-seam length. Label a point at the top of the line as "A." Measure down the side-seam length plus  $\frac{5}{8}$  inch, and mark a second point labeled "B." (This is the hemline.)



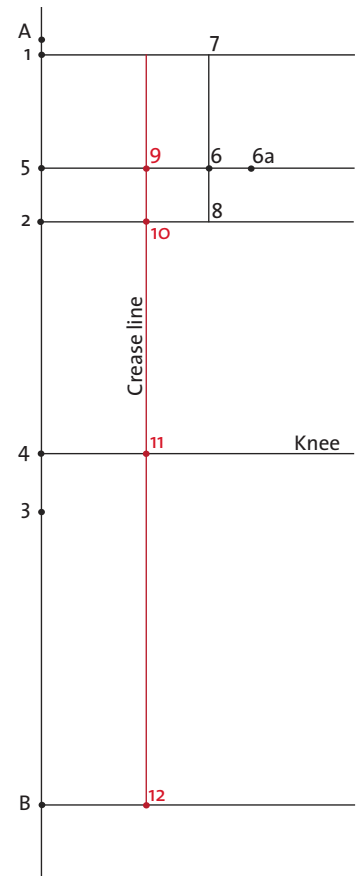
## A. MARK POINTS

- From point A, measure down  $\frac{5}{8}$  inch, and mark point "1." This is the waist.
- From 1, measure down the crotch depth, and label "2."
- Mark "3" halfway between B and 2.
- From 3, measure up  $\frac{1}{10}$  of your inseam length, and mark "4" as the knee position.
- Take  $\frac{1}{10}$  of half your hip circumference, and add  $1\frac{1}{4}$  inches. Mark that distance up from 2 as "5." This is the hipline.
- Square lines out from 1, 2, 4, 5, and B.



## B. ADD CIRCUMFERENCE MEASUREMENTS

- From 5, measure out one-quarter of the hip circumference minus  $\frac{3}{8}$  inch, and mark "6." Square a line up and down to lines 1 and 2.
- Mark the intersecting "7" and "8," as shown.
- Fix 6a from 6 by dividing half your hip circumference by 10 and adding  $\frac{1}{4}$  inch.



## C. ESTABLISH THE CREASE LINE

- Center a mark between 5 and 6a. Label it "9."
- Square a line through 9 up to the waist and down to the ankle. This is the crease line.
- Mark "10," "11," and "12," as shown, at the crease line intersections.

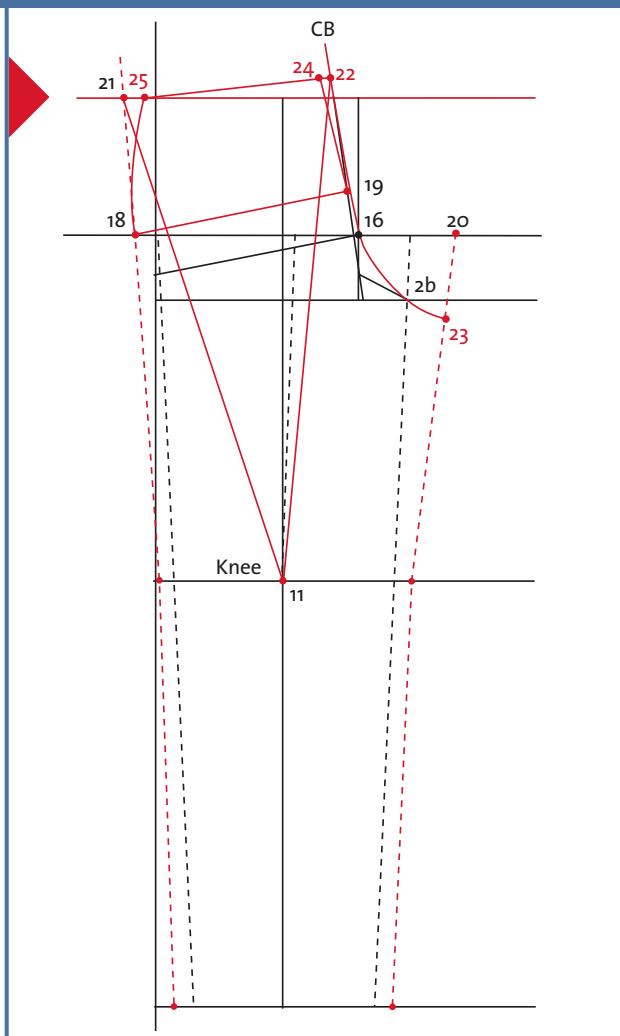




**Draft the pant back over the pant front. You can draw right on the front in a different color and trace copies later to use as patterns, or you could tape paper you can see through over the front draft.**





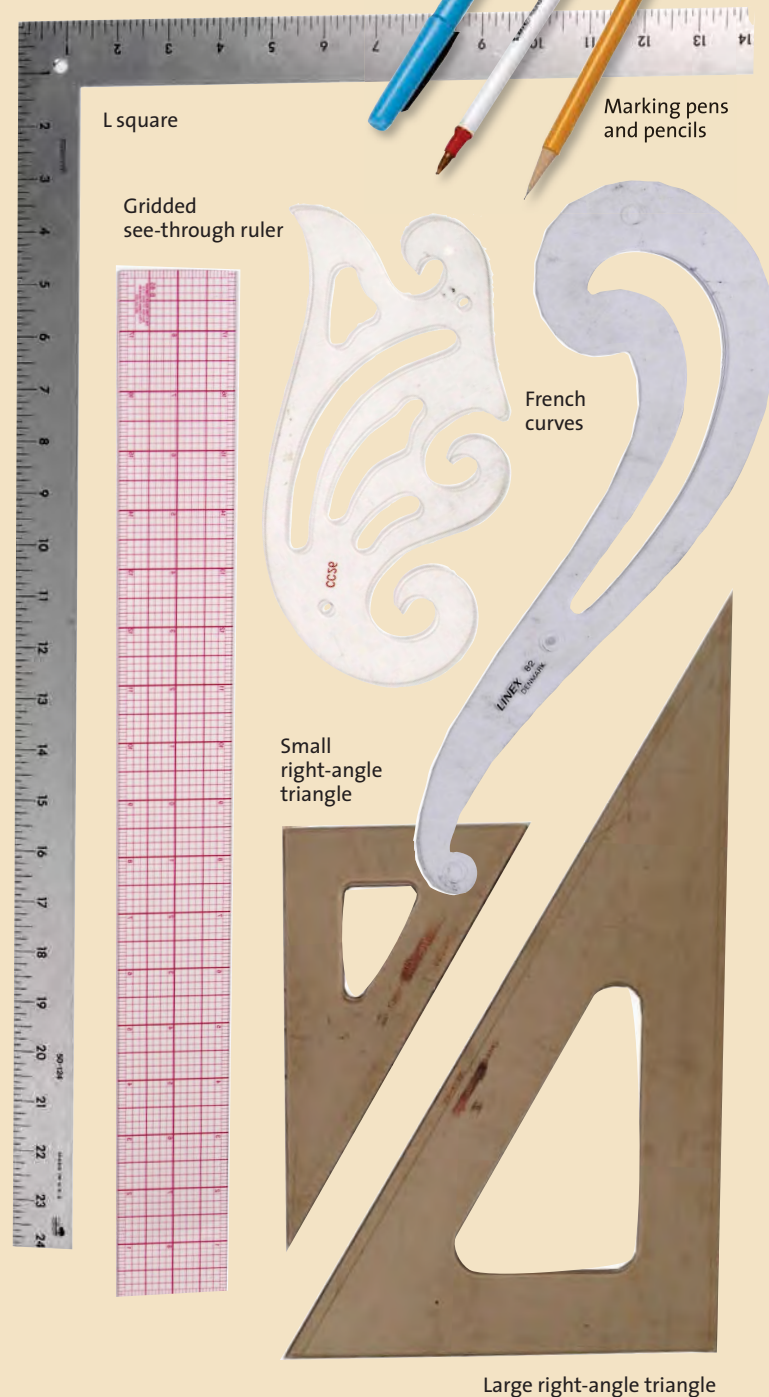


### C. FIND CENTER BACK AGAIN

- Measure from 21 to 11, and mark “22” that length from 11 to the CB line.
- The front inseam length from the knee to 2b is the same on the back minus  $\frac{1}{4}$  inch. Label that “23.”
- At 22, go in  $\frac{1}{4}$  inch to  $\frac{3}{8}$  inch. Label that “24.”
- Draw a line from 24 to 19. Curve a line gently from 16 to 23 for the back crotch.
- From 24 to 21, find one-quarter of your waist minus  $\frac{1}{4}$  inch, add the desired dart depth, and mark as “25.” From this point, gently curve to 18.

## GET THE RIGHT TOOLS

Investing in some pattern-drafting tools makes the drafting process much easier.



## TEST FIT WITH A MUSLIN

Trace the draft to make a first pattern to test the fit. Add seam allowances and a hem allowance. Cut an inexpensive, stable fabric to test, and perfect the pattern on your body. Correct your pattern from this fitting. Now you have a master pant pattern that fits and can be modified for style changes.

# FOCUSED FITTING

- ♦ Start at the Shoulders *p. 64*
- ♦ Get the Right Armhole *p. 70*
- ♦ The Perfect Sleeve *p. 76*
- ♦ Add a Bust Dart *p. 82*
- ♦ Full & Fabulous *p. 86*
- ♦ Scale It Down *p. 92*











# Start at the Shoulders

Your shoulder slope affects the fit of every outfit, so alter patterns to match your body

BY JUDITH NEUKAM AND CAROL FRESIA

**Y**our shoulders are like a clothes hanger: Every top, jacket, and dress you put on hangs from them. If you want your clothes to look better on you than on a hanger, you need to perfect the fit in the shoulders. Basically, you need to match the garment's shoulder slope to yours.

The slope of the shoulders is the angle starting at the base of the neck, just below your ear, to the shoulder point—in other words, from where a short necklace would fall at the side of the neck to where you'd like the seam of a set-in sleeve to lie. If your shoulders are more square or more slanted than the garment's, you'll see evidence everywhere, from the neckline to the upper chest, the back, the sleeves, and even the hemline.

We'll show you how to pinpoint your shoulder-slope problems and to trace the silhouette of your

body to make a master template of the shoulder area. We then demonstrate how to use the shoulder template to alter garment patterns.

## SHOULDERS CAN BE SQUARE OR SLOPED

If your garments lie flat around the neck and hang smoothly over the top of the shoulder and the upper chest and back with no wrinkles or pulling, the slope of the pattern probably matches your shoulder shape well. For many of us, though, a standard pattern droops or pulls, creating wrinkles we'd rather not see. Fitting problems are usually caused by either square or sloped shoulders. Learn how to read those wrinkles and diagnose your shoulder-slope fitting issues on page 66. And don't forget to make adjustments to the back and front pieces of your pattern (pages 68 and 69).

On square-shouldered figures, a garment's

neckline may stand away from the base of the neck at the back and sides. The upper torso may display horizontal wrinkles across the collarbone region and just below the back neck.

On sloped-shoulder figures, you're likely to observe vertical wrinkles and drooping from the outer end of the shoulder down the sides of the torso, or diagonal wrinkles from the neckline to the armhole. Looseness at the shoulder seam, or an armhole that stands away from the shoulder point, is another telltale sign of sloping shoulders.



**CHECK YOUR WORK.** Once you've corrected the shoulder slope of a garment, make a test garment to check the fit of the new shoulder area.

### SPECIAL SHOULDER ISSUES

Asymmetrical wrinkles indicate uneven shoulders. Many of us have one "normal" shoulder and one that's more sloped or square. If this is the case for you, you'll need to fit the right and left sides of your garments independently. In most cases, we suggest fitting for the higher shoulder and padding the lower shoulder to match.

Shoulder wrinkles can be confusing—they sometimes mimic the symptoms of a fitting problem in the neck, sleeve, back, or bust. But we promise that by correcting the shoulder slope on your garments first, you will solve other apparent fitting issues at the same time. That's a burden no one would mind shouldering.

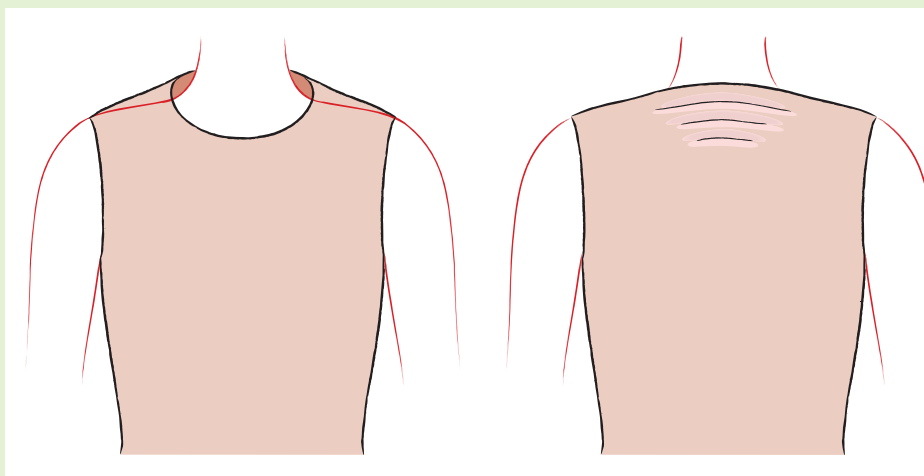
*Adapted from "For a Great Fit, Start at the Shoulder" in Threads, no. 127.*

## WEBextra

Learn more about shoulder slope at [ThreadsMagazine.com](http://ThreadsMagazine.com).

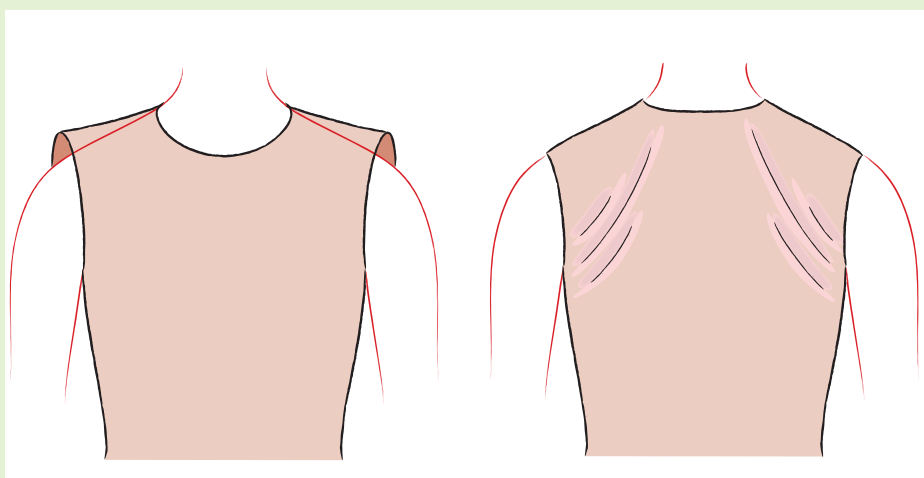
# Diagnose shoulder-slope fitting problems

Folds, wrinkles, and drag lines in the upper bodice hint strongly that the slope in the pattern is wrong for your shoulders. Put on an existing top that's your size, and assess the fit.



### SQUARE SHOULDERS

A relatively high shoulder point scoots the armhole up, leaving the shoulder seam and neckline unsupported. Thus, the neckline stands away from the neck or horizontal wrinkles form across the upper torso in front or back.



### SLOPING SHOULDERS

When the shoulder point is low, the armhole might droop or gape on top and be tight under the arm. Tightness under the arm may cause diagonal wrinkles to form from the neckline to the armhole.



# Find your shoulder slope, then use it

Determining your shoulder slope is as easy as tracing your silhouette onto a sheet of paper—and you'll have an instant, custom-fitting tool. Enlist a friend to help.

## PREPARE THE PAPER

Draw a line down the center of the paper, which will be perpendicular to the floor. Hang the paper on a wall so that the upper edge is a few inches above the top of your head.

## STAND AGAINST A WALL

**Wear a tight-fitting top or underwear.** Stand with your back against the paper, your feet slightly parted, and your arms hanging naturally at your sides. Align your body so that the line is centered at the top of your head and between your legs.

## TRACE YOUR SHAPE

**Enlist a friend to trace your torso.** To establish the outline of the figure, have her keep the pencil perpendicular to the wall (for clarity, we had our model slant her pencil in the photo) along the side of the body and draw around the body. For a shoulder-slope tracing, trace from the waist up, including the sides of the neck. Don't worry if the pencil line looks a little wobbly. Step away from the paper and draw over the pencil line with a marker, smoothing out small bumps in the original tracing.

## USE THE TRACING AS A SHOULDER TEMPLATE

**Remove the tracing from the wall, and lay it out on a table.** Lay your garment pattern over the tracing, aligning the center front or center back along the vertical line and matching the neckline end of the shoulder seamline to the drawing. Compare the pattern's shoulder slope with yours. You'll see instantly whether you need to raise or lower the outer end of the shoulder seam. Here, the pattern's seamline slopes at a noticeably steeper angle than the shoulder line.

### YOU WILL NEED:

- Large piece of paper (3 feet wide by 4 feet high, or larger)
- Pencil
- Markers
- A friend

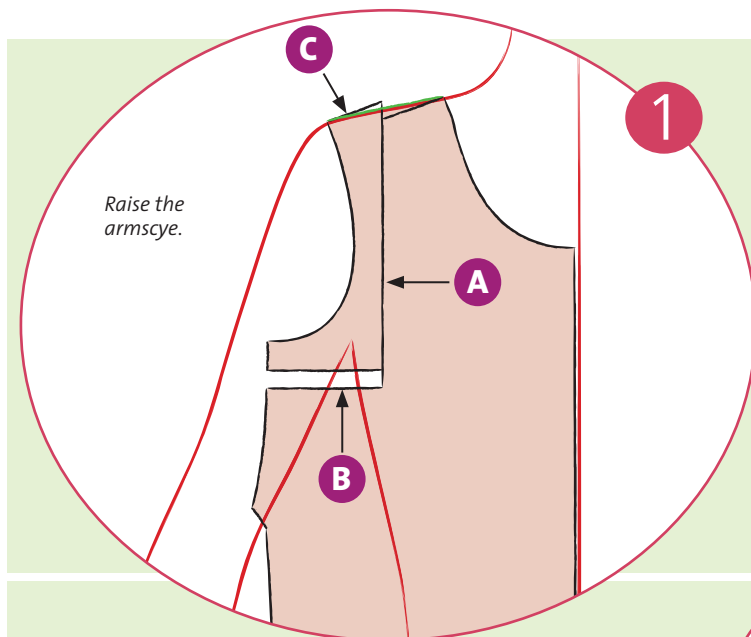


*Have a friend draw your outline, from neck to waist. This silhouette becomes a shoulder template you can use to assess—and correct—the slope of garment patterns (below).*



# For square shoulders, angle up

Square shoulders need a seam that slants less steeply from the neck to the shoulder point than it does on the pattern piece.



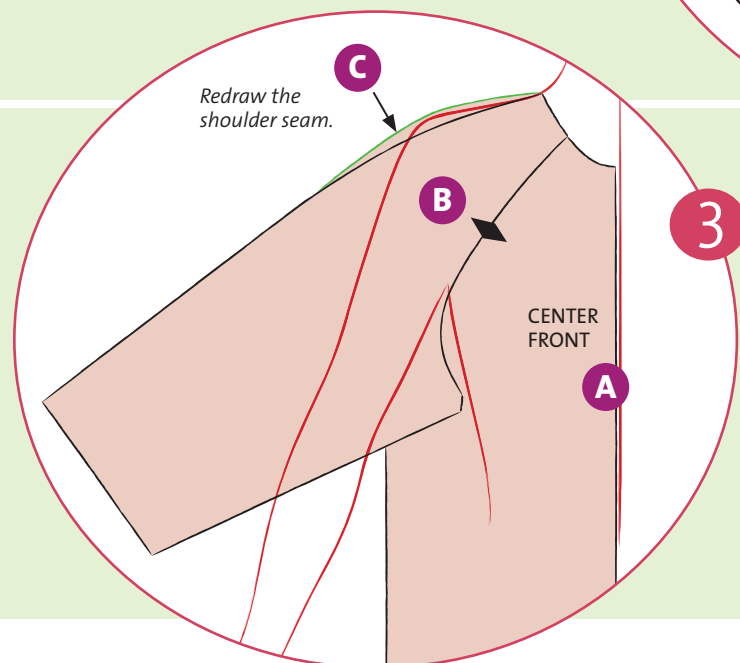
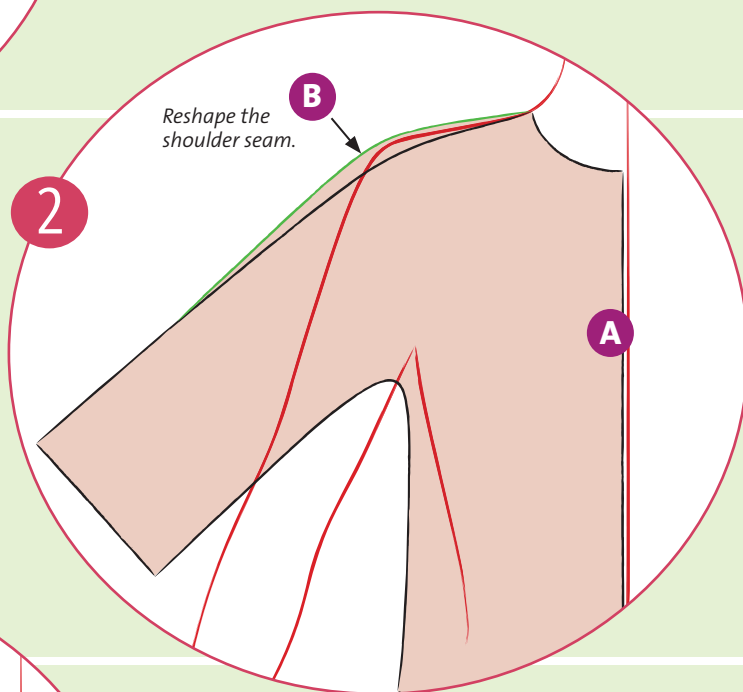
## Make an L slash for set-in sleeves

- A** Cut around the armhole, as shown at left, keeping the vertical cut parallel to the grainline and the horizontal cut perpendicular to it.
- B** Slide the armhole section up as needed to meet the shoulder point on your shoulder template. Tape into position.
- C** True the shoulder seamline by connecting the ends with a straight line.

## Increase the shoulder shaping in cut-on sleeves

Even if a cut-on, or kimono, sleeve has enough ease to accommodate a square shoulder, it can pull uncomfortably if the shoulder shaping is too shallow.

- A** To fix this, lay the bodice section of patterns with cut-on sleeves over your shoulder template, aligning center fronts.
- B** Redraw the shoulder seam to follow your shoulder line.



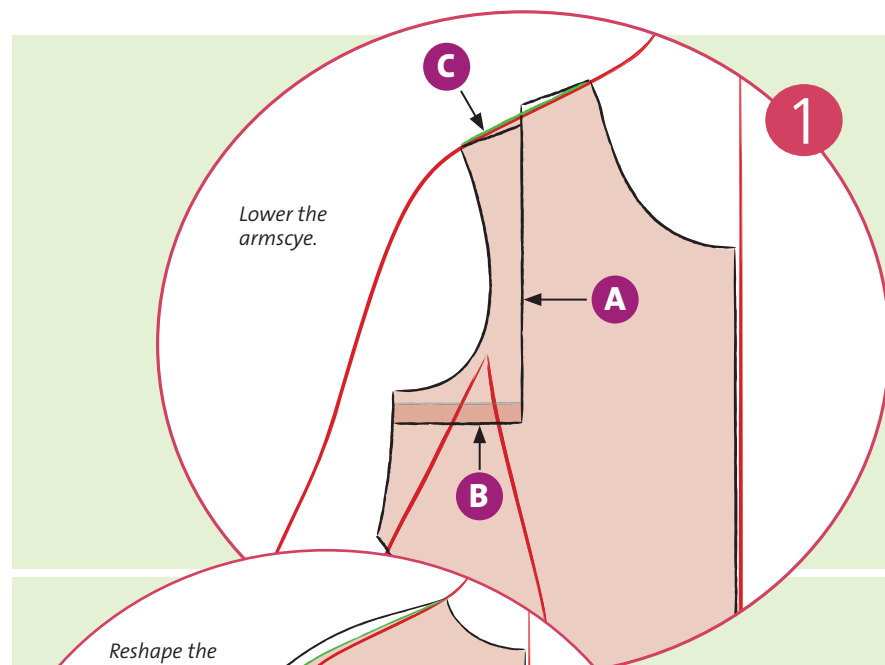
## Work from the center front or center back to adjust raglan sleeves

- A** Lay the garment-front pattern over your shoulder template, aligning center-front or center-back lines.
- B** Lay the raglan-sleeve pattern out, aligning the upper raglan notches.
- C** Redraw the shoulder seam to add room for a square shoulder.



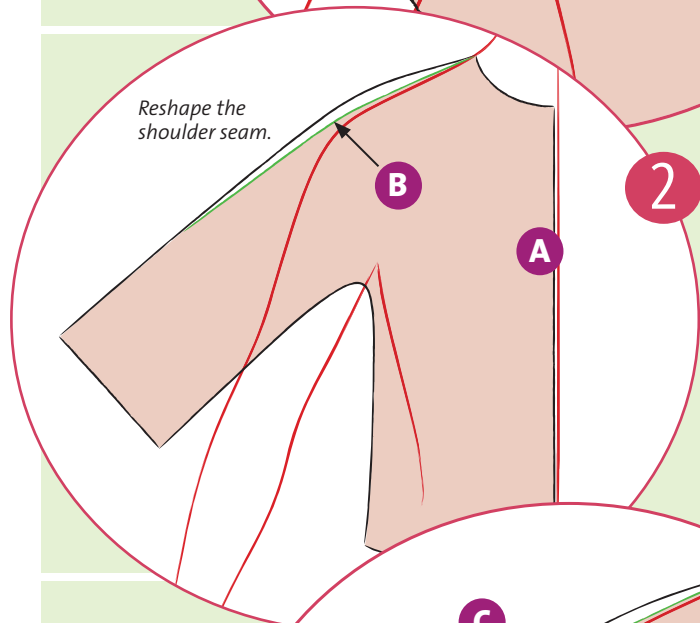
# For sloped shoulders, angle down

Sloped shoulders need a seam that slants more steeply from the neck to the shoulder point than it does on the pattern piece.



## Make an L slash for set-in sleeves

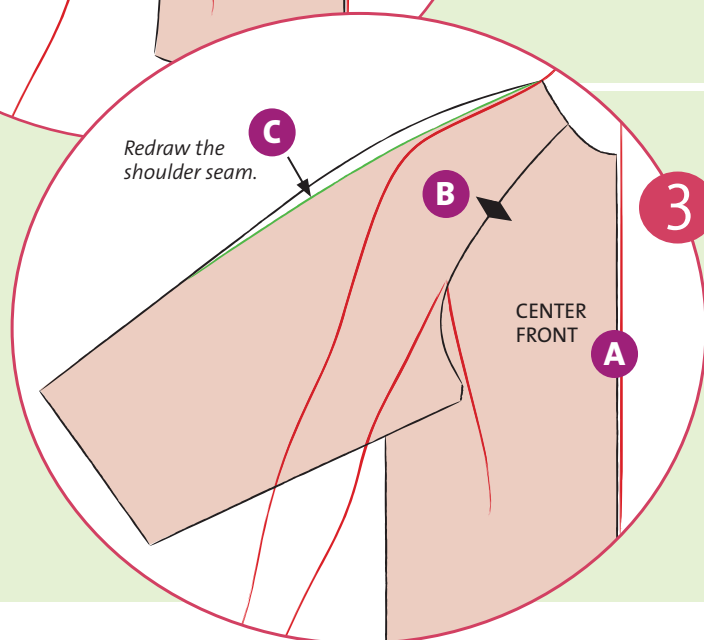
- A** Cut around the armhole, as shown at left, keeping the vertical cut parallel to the grainline and the horizontal cut perpendicular to it.
- B** Slide the armhole section down as needed to meet the shoulder point on your shoulder template. Tape into position.
- C** True the shoulder seamline by connecting the ends with a straight line.



## Minimize the shoulder shaping in cut-on sleeves

With sloped shoulders, too much of a curve in the upper sleeve seam of a cut-on sleeve can lead to unattractive folds of fabric.

- A** Solve the problem by laying the bodice section over your shoulder template, aligning center fronts.
- B** Redraw the shoulder seam to follow your shoulder line.



## Work from the center front or center back to adjust raglan sleeves

- A** Lay the garment-front pattern over your shoulder template, aligning center-front or center-back lines.
- B** Lay out the raglan-sleeve pattern, aligning the upper raglan notches.
- C** Redraw the shoulder seam to reduce the shoulder ease.



# Get the Right Armhole

Use a muslin to adjust bust, back, and shoulder—and your armhole almost takes care of itself

BY SARAH VEBLEN

**T**here's more to fitting an armhole, also known as an armhole, than you may think: It requires fitting the bust dart, shoulders, and side seams. And the only way I know to successfully fit an armhole is to use a muslin.

A muslin is a test garment in inexpensive fabric, initially sewn without facings or edge finishes. You pin-fit the muslin right on the body. The object is to make the fabric skim the body with no signs of wrinkles or strain lines. Although becoming a fitting expert can take years of practice, I'm going to give you a straightforward method of how to fit an armhole and develop a well-fitting bodice muslin that accurately reflects the shape of the body.

Follow this order when fitting: bust, back, underarm, shoulder seam placement and slope, shoulder point to underarm, and side seams. Then adjust the pattern tissue using the fitted muslin as your guide. Such a completed pattern can be used as a reference to position darts and establish the armhole shape in future patterns. You'll end up with a perfect pattern for a closely-fitting bodice with or



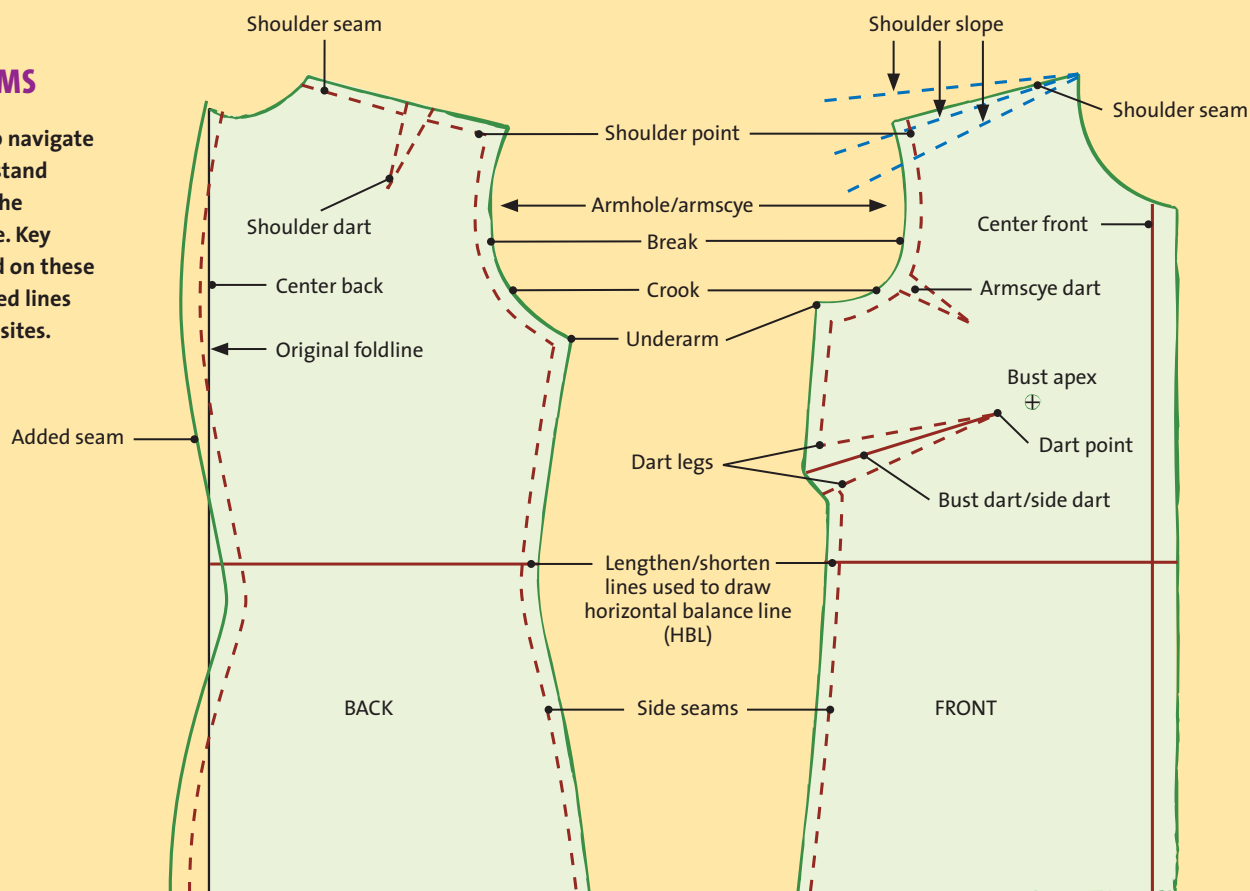


### Same measurements, very different figures

People with identical bust and over-bust measurements often fit into the same size and style pattern differently. The shape of your body depends on where you carry your flesh and dictates the shape of an armhole. A muslin is the testing ground—it's the perfect place to sort out fit issues.

## GLOSSARY OF TERMS

Use this glossary to help navigate your pattern and understand the fitting process and the terms used in this article. Key landmarks are identified on these pattern pieces. The dotted lines indicate possible fitting sites.



without set-in fitted sleeves. Just because fitting can be complicated, don't let it scare you away.

### YOU'LL NEED A PERSON, A PATTERN, AND SOME WOVEN FABRIC

Select a fitted blouse pattern intended for woven fabrics that includes bust darts in the side seam or armhole. Make sure the finished bust measurement printed on the pattern is between 1½ inches and 2½ inches greater than your actual full bust measurement to allow enough wearing ease. (Wearing ease is the difference between your body's measurements and the finished garment's measurements, which is necessary so you can move in the garment.) Use a stable woven fabric without spandex, and follow the pattern to make your sleeveless, collarless muslin. Sew the seams using a long machine stitch, and use a thread color that contrasts with the muslin fabric so that you can easily see to clip and release seams during fitting.

You'll need an assistant for the fitting process. Consider hiring a dressmaker to help you. Plan on making several muslins to get the right fit; the results are well worth the effort.

### A MUSLIN TELLS YOU MORE THAN YOUR MEASUREMENTS ALONE DO

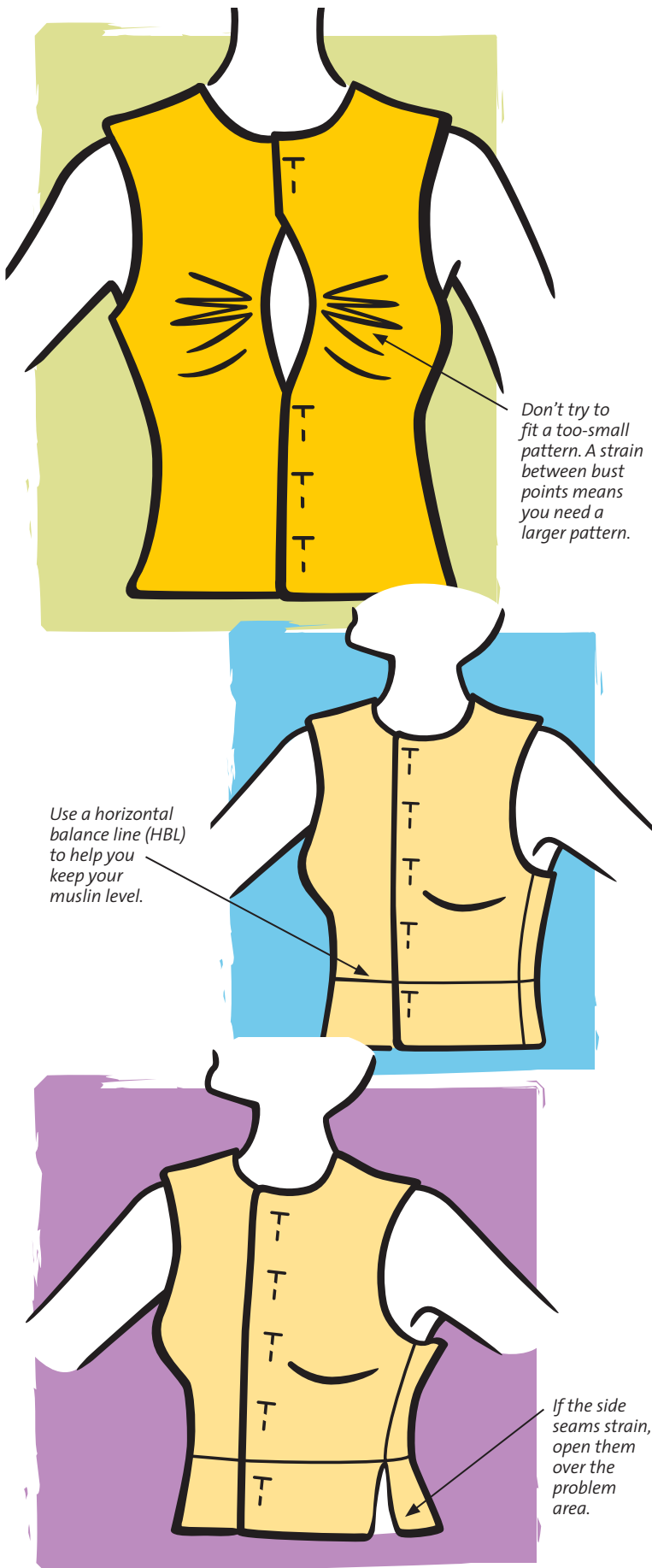
The first muslin serves as the rough draft for blocking out the major fitting changes. I always make at least one additional muslin to check my first fitting results. If you're a beginner, it's better to make more muslins with fewer changes to each than to try too many changes at once.

Don't try fitting a muslin that's a size too small because the tightness distorts the overall fit. For example, if you get a strain line between the bust points (top left illustration), start over using a larger size pattern.

It's important to make sure the bodice stays level around the body and doesn't dip in the front or back during the fitting. I draw a horizontal balance line (HBL), on the face of the muslin so I have a point of reference that I can easily see while fitting (middle left illustration). I often use the lengthen/shorten line between the waist and underarm rather than at the hem) as my HBL. While fitting, periodically check the level on the front and back HBL. If the back HBL dips, pin a wedge out of the upper back to level the line.

### STAND BACK AND READ THE MUSLIN TO ASSESS THE FIT

To get started, study the general fit of the muslin and make any obvious adjustments. If the side seam strains over the hip, open both side seams from the hem upward until the muslin falls nicely (bottom left illustration). If the shoulder seam is too loose, pin out the excess fabric. The muslin should fit without strain but not be loose and baggy. Remember to get a pattern that reflects the shape of the body. You'll want to develop a fitting muslin that fits like a second skin—snug but not tight. Add





design and additional wearing ease later.

It's usual to fit only one side of the muslin after making the HBL level. If the person is particularly asymmetrical, overfitting can accentuate an uneven body. In general, if one side of the bust is larger, fit the larger side; if one shoulder is higher, fit the higher side, and adjust the low shoulder with a pad.

### ASSESS HOW THE MUSLIN FITS AT THE BUST

Darts contour the fabric to accommodate the swell of the bust while keeping the garment looking trim. Anyone with a full A-cup or larger benefits from properly placed bust darts, which make the center front of the garment fall straight to the waist and not swing away from the body. This results in a more flattering silhouette. The correct bust dart also keeps the armhole from gaping.

Some women have bust tissue under their arms, other women carry it only in front. Experiment with positioning the angle of the dart until it's most flattering. The dart placement alone can visually slenderize the figure.

I prefer to use side darts in a base pattern, such as this, but pinching out a dart in the armhole to eliminate the gape and then moving the dart to a better location later is a good approach. Read the muslin, and use your fingers to ease up any drag line—in this case, a diagonal fold of fabric occurs between the bust apex and the side seam—into the side bust dart.

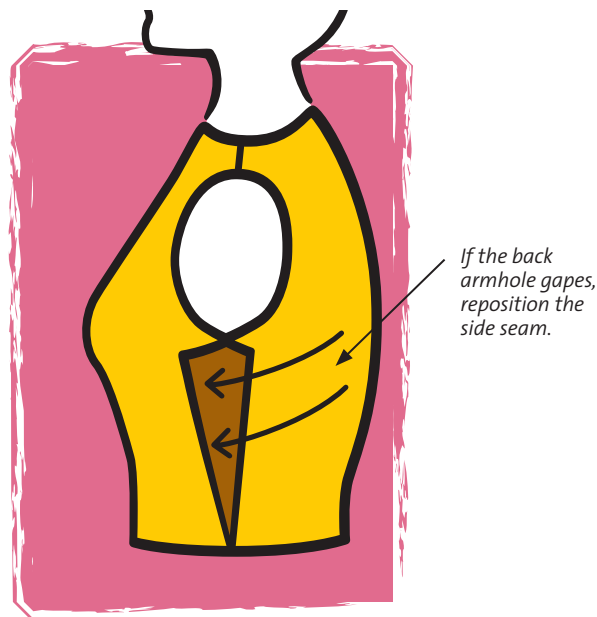
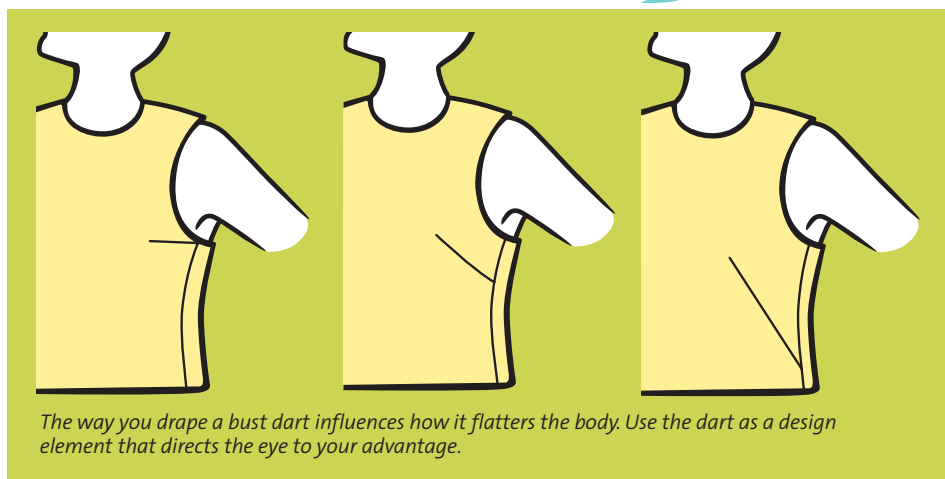
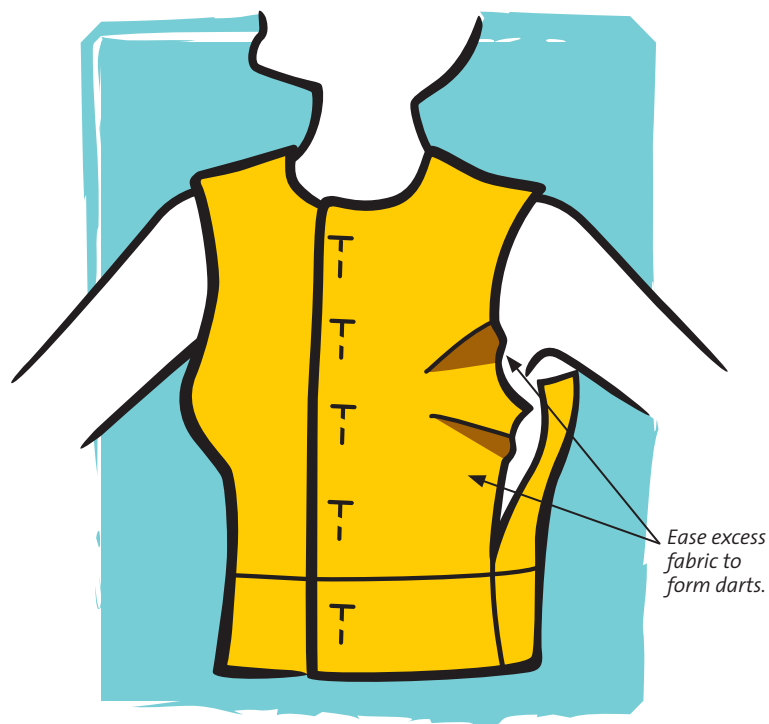
Set the point of a dart closer to the apex for a smaller bust, farther away for a full bust. Don't be surprised if your dart seems larger than usual, as long as you're getting a smooth fit. A very large dart may be needed to fit a very full bust. If this causes an unattractive bubble at the dart point, two parallel darts will solve the problem. Pin in the required dart(s) that best fit the bust.

Increasing the size of a side-seam dart lowers the front armhole. Fill the vacancy with a small piece of fabric to bring it up to the original height and redraw the armhole seamline (top right illustration on page 72)

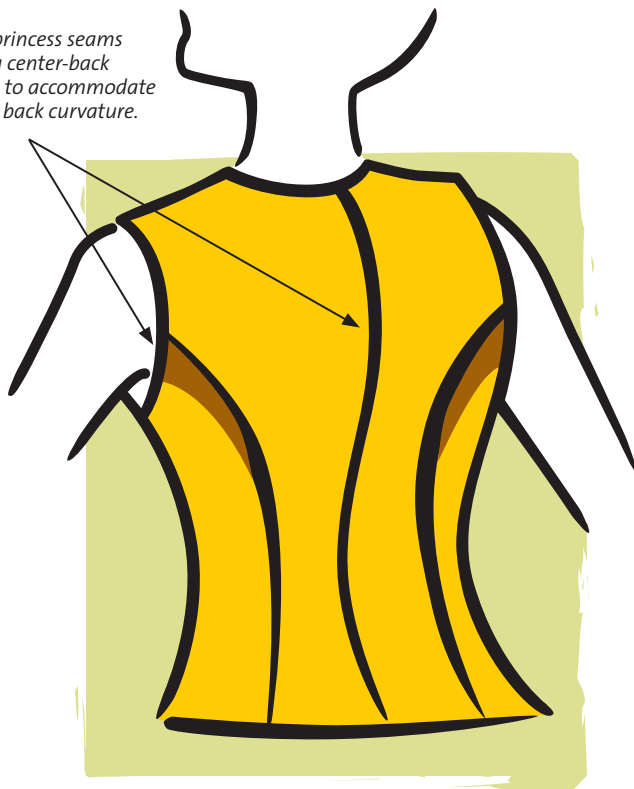
Stand back and evaluate whether the dart point hits in a pleasing place on the bust. If the dart is too low, it looks matronly, and if the dart is too high, it can look unflattering, as well. The way you drape the dart influences how it flatters the body. Decide whether a slanting or straight dart fits you best.

### DART CORRECTIONS ON THE BACK SHOULDN'T END IN THE ARMHOLE

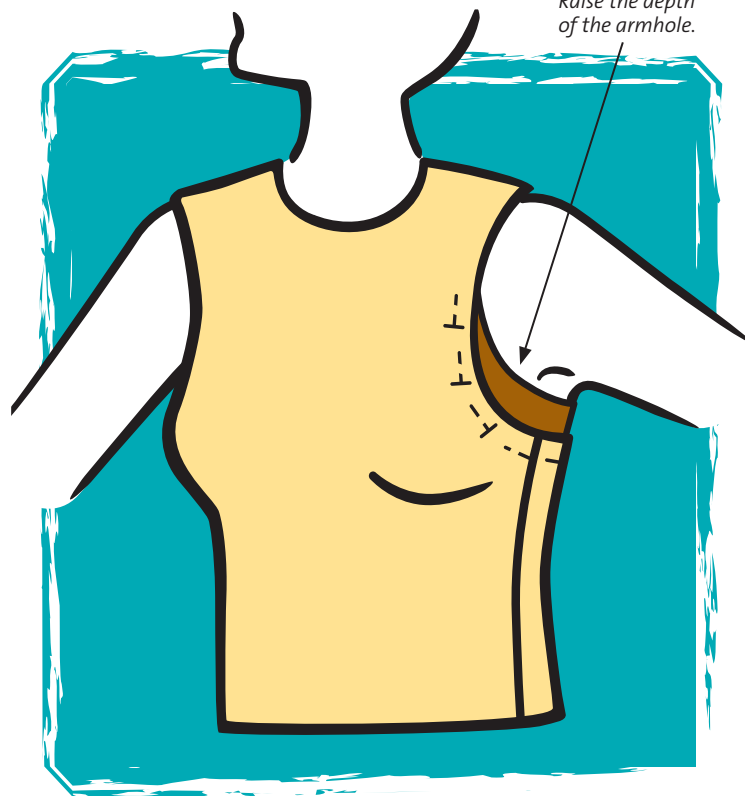
Now that you've adjusted the bodice front, check the back for excess fabric or undue strain at any point and assess the fit in the same way you did on the front. If the back armhole gapes,



Add princess seams and a center-back seam to accommodate extra back curvature.



Raise the depth of the armhole.



release the side seam and push the side back toward the front to diminish the gape and redraw the side seam. If there is considerable roundness in the back, adding darts at the shoulder seams or even adding a center-back seam for extra curvature is a good solution. If an armscye dart is needed to fit a muscular back, incorporate the dart amount in a princess line, as shown at left above (back armscye darts are not traditionally used). The object is always to reduce any excess fabric in the circumference of the armscye.

### MOST PATTERNS ARE CUT TOO LOW UNDER THE ARM

Now that you've draped darts to match your curves and removed excess fabric from the back of your muslin, the shape of your armhole has probably changed. Deciding where the armhole hits under the arm is partially personal preference.

Remember that an armhole cut high up under the arm is generally more comfortable because it allows a greater range of movement in a garment with sleeves; this is often counter-intuitive to a beginning fitter. A sleeveless garment is only ½ inch higher under the arm than a fitted garment with a sleeve.

If the armhole is cut too low under the arm, add a piece of fabric, and draw in a new depth. Alternatively, make a note to raise the underarm a specified amount on your pattern tissue. If you hold a ruler under your arm as high as is comfortably possible, the underarm seamline should fall barely below where the ruler is touching the flesh.

**We're accustomed to seeing a long gradual curve on commercial patterns, but that isn't the shape many of us need.**

### CHECK THE SHOULDER POINT AND SIDE SEAM

Changing the shoulder seam is a judgment call. The seam should lie along the top of the shoulder at a place that balances the body front to back and follows the natural slope of the shoulder. The shoulder point falls on the shoulder seam at the exact place the arm and shoulder come together—at the dent that forms when you lift your arm.

On the muslin, draw a line that falls from the shoulder point to the "crook" of the arm (where the arm attaches to the body) and then runs under the arm at the "break of the arm" (where the curve begins to go under the arm). Draw the curvature of the armhole on the muslin to follow the body curvature from the shoulder around the arm on the front and the back (middle illustration, page 75).

Check that the side seam hangs straight. Make adjustments by releasing and repinning the seam so that it's perpendicular to the floor. Assess if it divides the side of the body attractively.

### TRANSFER THE MUSLIN ALTERATIONS TO THE PATTERN

Mark the seam and dart lines directly on the muslin, and follow any instructions noted on the muslin during the fitting. Use a permanent marker, and always mark and concentrate on the actual seamlines. To reduce confusion, ignore seam allowances until later. The muslin is now a road map of the changes needed on the pattern.



## MAKE A WORKING RECORD OF ALL YOUR ADJUSTMENTS

Go back to your original pattern and transfer the muslin corrections to the tissue. I don't use the muslin as a pattern because fabric molds to the wearer's body and stretches with cuts across grainlines. Plus, it's easier and more reliable to walk and true seamlines in paper because paper doesn't stretch or distort.

Once the changes are made to your pattern, it may look substantially different from the original—especially in the front armhole. On a large bust, the armhole might now have an *L* shape. We're accustomed to seeing a long gradual curve on commercial patterns, but that isn't the shape many of us need.

Concentrating on the stitching lines, add new tissue to your pattern where it is needed. Pin in the new darts and walk the corresponding seams as described below in "How to walk and true a seam."

After the seamlines have been corrected and trued, draw and cut the new seam allowance while the darts are folded so the correct dart legs automatically form.

Now make your second muslin. This time, staystitch the armhole seams. The armhole is much higher now, and you'll probably need to clip the curves to the staystitching for a comfortable fitting (bottom right illustration). The new armhole curve should not be tight but should skim the body.

The second muslin will most likely require few dramatic changes. Follow the same steps as before, this time fine-tuning the fit and the position of the seamlines.

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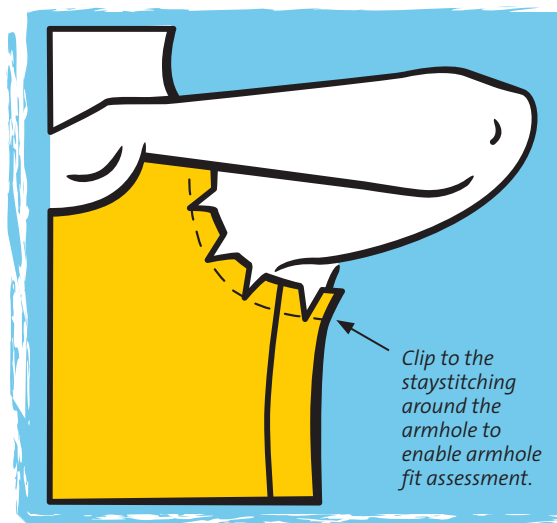
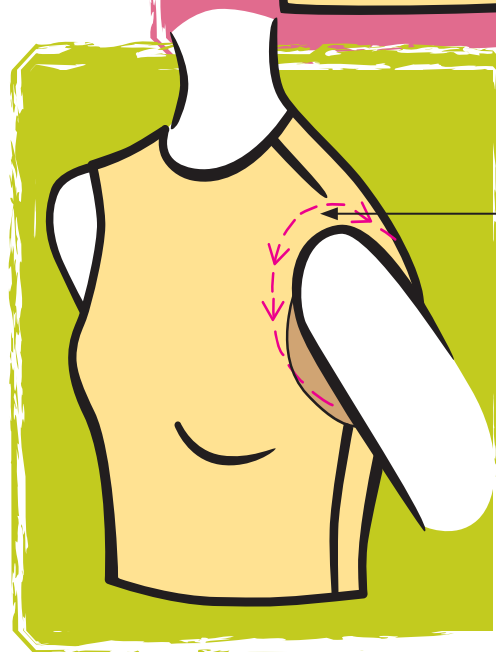
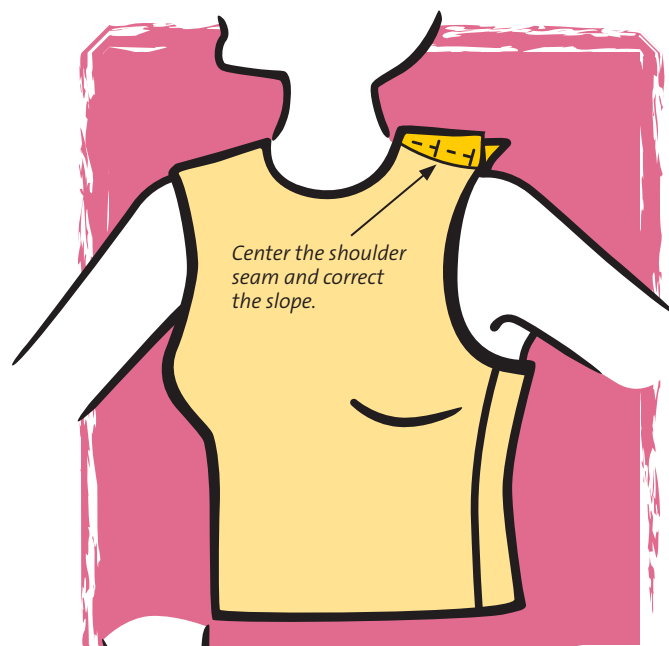
*Adapted from "To Get the Right Armhole. Fit the Bodice," in Threads, no. 117.*

## HOW TO WALK AND TRUE A SEAM

In the course of adding darts and making other fitting adjustments, you also have made multiple changes to the seams. Now you have to determine that both sides of a seam are the same length. To do this, you walk and true the seam.

To walk the seams on your paper pattern, first pin in the darts and then compare the stitching lines of adjacent seams (side front to side back, or shoulder front to shoulder back) in 1-inch increments from one end of the seam to the other. If the seams aren't the same length, use the horizontal balance line, notches, and key landmarks to determine where length should be added or subtracted. It is essential to compare actual seamlines, excluding the seam allowance; the seamlines must match in length to enable precise construction.

After walking the seam, true it by using a fashion ruler or French curve to blend any jagged seamlines that formed during the alteration process, by drawing a new, smooth line to bridge the gap. If you're unsure what the ideal blending line is, it's safe to split the difference between two lines—and remember, you're making another muslin and have another opportunity to fine-tune the fit and seamlines.



A stylized illustration of a light green bodice and sleeve. A yellow measuring tape is wrapped around the upper arm, and a teal band is wrapped around the lower arm. The bodice has a simple black outline for the neckline and armhole.

# The Perfect Sleeve

Start with two simple measurements and correct the sleeve cap

**BY SARAH VEBLEN**

**Y**ou've probably been told over and over never to change the sleeve cap because, if you do, it won't fit into the armhole properly. Let's venture into that sacrosanct sleeve cap and break tradition by fitting the sleeve cap to your arm instead of to your pattern's armhole. I'm going to lead you through the sleeve-fitting process, explain how much bigger a sleeve cap can be in proportion to the armhole opening, and show you how to draft an alternative sleeve to accommodate a fuller upper arm.

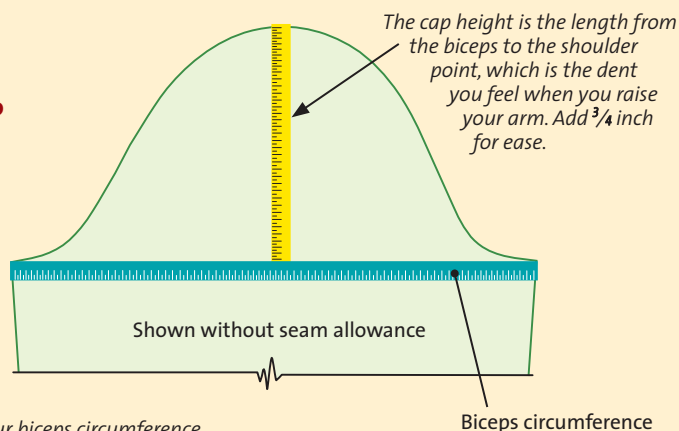
As for most custom-fitting projects, you'll need a pattern, a person to assist you with fitting, and muslin fabric to test the fit. When you're finished, you can combine the well-fitting armhole detailed in "Get the Right Armhole," page 70, with your custom sleeve for a beautifully fitted bodice.



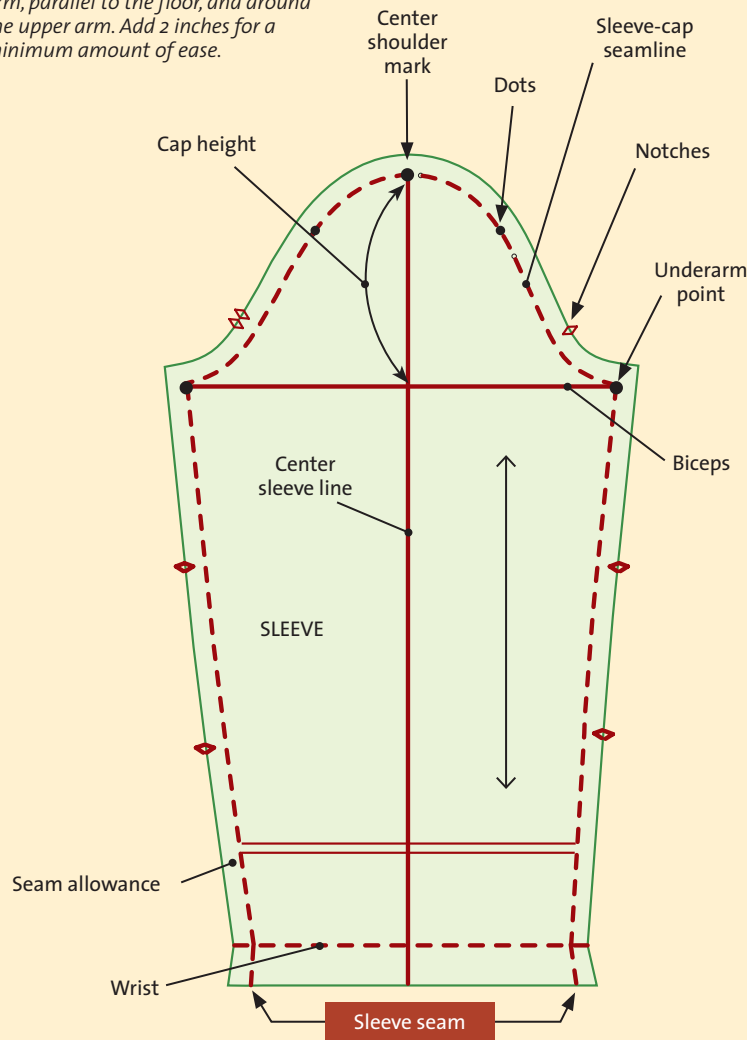
## Measure twice, adjust as needed

The length of your cap height and the circumference of your biceps are crucial to fitting a sleeve to any arm.

### SLEEVE CAP



To measure your biceps circumference, position your tape high under the arm, parallel to the floor, and around the upper arm. Add 2 inches for a minimum amount of ease.



### GET A TRULY PERSONALIZED FIT

Measure your upper arm, or biceps circumference, at the high underarm, and your cap height from the shoulder point (the exact point the arm and shoulder join—identified as the dent that forms when the arm is lifted) to the biceps, and add the prescribed ease. Now use these two measurements to adjust your sleeve pattern following the methods shown on pages 78 and 79, where I've illustrated a traditional method for enlarging a sleeve's upper arm and my two alternative methods.

A lot of people don't do this, but I'm more casual about adding to the biceps than traditional methods allow, and I'm not afraid to disrupt the circumference of the original sleeve cap. Many sewing books warn against changing the cap circumference to avoid sacrificing a smoothly set-in sleeve. Be daring: Follow my directions, and you'll discover a different approach to obtaining a flattering sleeve that affords a comfortable range of movement.

I rely on fitting sleeves directly on the person to get the correct cap shaping and a truly personalized fit. However, the cap shaping is usually relatively easy—fitting the biceps is where problems can arise. With a slender or trim arm, the biceps circumference remains relatively small, which means the length of the sleeve cap stays in proportion to the circumference of the armscye.

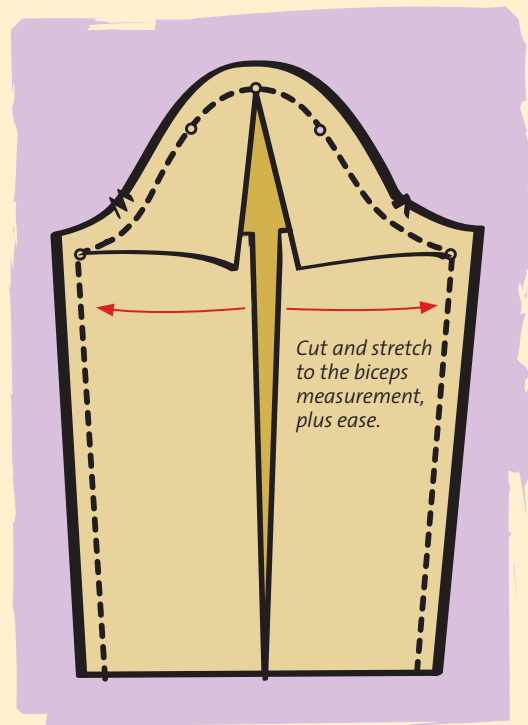
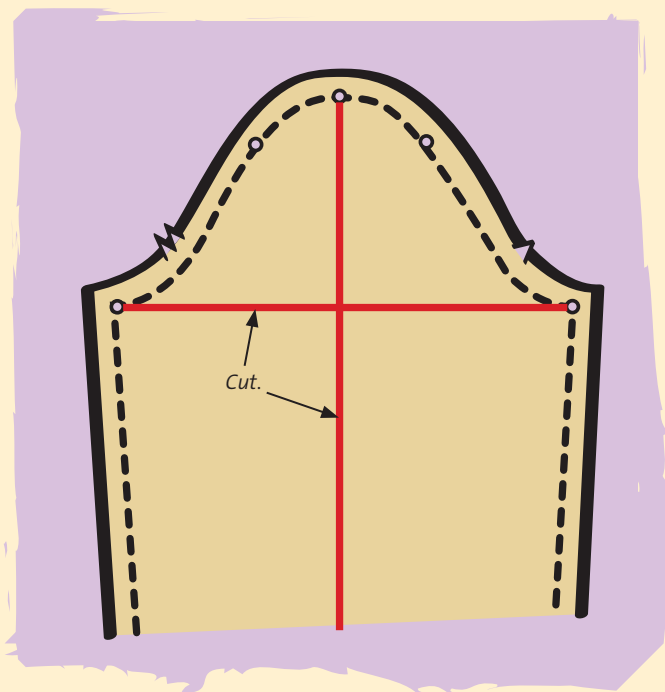
When I explained how to fit an armhole on pages 70 to 75, we increased the range of movement by raising the armhole under the arm. This higher armscye results in a smaller armscye opening. When the biceps is full, spreading the sleeve to accommodate the fuller upper arm also lengthens the sleeve cap. This longer sleeve cap can be difficult to set in, but I'll give you several tips to make it easy and give you an alternative sleeve that beautifully accommodates a full biceps.

# Three ways to make the pattern fit your arm

Each method has advantages.

## CUT AND SPREAD IS THE TRADITIONAL METHOD

Cut the pattern from the shoulder point to the wrist, and from the left underarm point to the right underarm point...



... then spread the two underarm points in opposite directions until their distance apart matches your biceps circumference. Even though this method maintains the original sleeve-cap length, it lowers the cap height.

## FIT WITH A SLEEVE ALREADY CUT TO YOUR MEASUREMENTS

Cut one muslin sleeve from your adjusted pattern piece. Staystitch around the armhole of your bodice muslin along the seamline, and use this row of stitching as a guideline when fitting the sleeve. Position the sleeve as if to set it in, but sew only the underarm 1 inch on either side of the side seam to anchor the sleeve. The rest of the sleeve will be custom fit.

Try on the bodice and sleeve. Start by pinning the center shoulder mark on the sleeve to the shoulder point on the bodice, then study the drag lines.

## DRAG LINES POINT TO THE PROBLEM

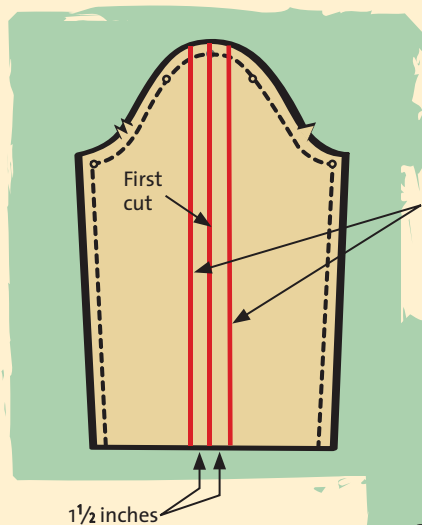
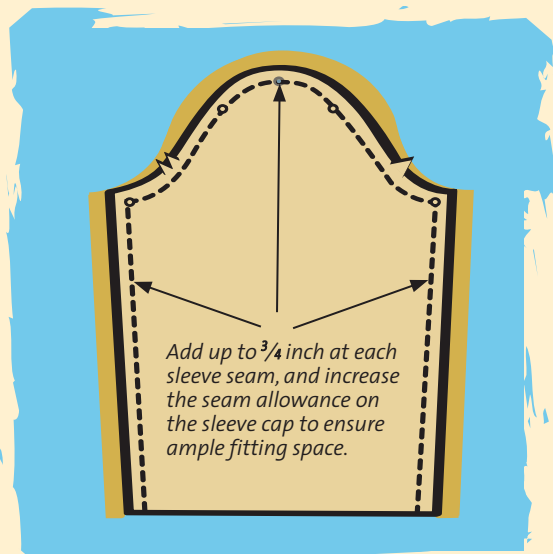
Drag lines form when fabric is forced to stretch, indicating that the garment is too tight, or when fabric near a mound of flesh requires more contouring. Learning to read a drag line is one of the keys to successful fitting. On a sleeve, one end of the drag line always points to the problem area.

If there is not enough cap height, drag lines will form diagonally from somewhere near the center top of the sleeve toward one or both sides of the sleeve. If this occurs, release the pin at the shoulder point and lower the sleeve cap, allowing the fabric to relax until the drag line disappears. The cap may need to be lowered only a slight amount ( $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch), but if it needs to be lowered enough that bare skin shows at the shoulder, patch over the exposed skin by adding extra fabric as needed to the sleeve cap seam.

When excess fabric forms wrinkles that look like a cowl neck or smiles of fabric down the arm, smooth those wrinkles by pulling the sleeve cap up into the seam.

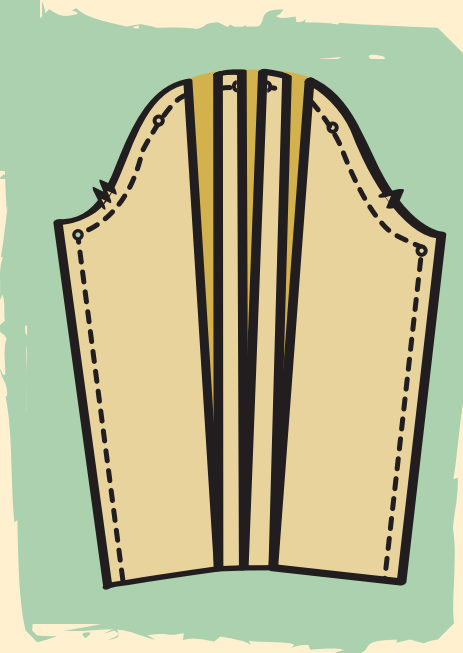
Once the sleeve has been fitted to remove drag lines or wrinkles, the original center point of the sleeve may no longer match the shoulder seam. Now that all of the drag lines are settled, mark the new shoulder point on the sleeve cap. Although this may feel like you're breaking the rules, what you're achieving is a custom fit.

## INCREASE SEAM ALLOWANCES FOR ADDED EASE



## VERTICAL CUTS EXPAND THE SLEEVE CAP

If more room is needed, cut from the shoulder point to the wrist and spread the pattern to add 1 inch. If you need to add still more room, cut parallel lines  $1\frac{1}{2}$  inches from the first cut and distribute the remaining amount between those two cuts by spreading the pattern as shown.



## SHAPE THE SLEEVE CAP TO YOUR ARM

Fit the sleeve cap to your bodice, with the muslin still on the body. Since the staystitching on the bodice follows the natural contour of the arm, pin the cap along this line of staystitching. To do this, fold the seam allowance to the inside of the sleeve and pin it into the armhole, making sure there is enough ease across the biceps and that no drag lines form. Ease the sleeve-cap fabric with your fingertips as you go; the ease in the sleeve cap forms a slight air pocket over the top of the arm, which both improves the look of the sleeve and allows greater movement of the arm. The sleeve cap will look like it has tiny gathers across the top; I'll tell you how to ease them in later.

Take the bodice off the body, and carefully mark the folded sleeve cap edge where it touches the staystitching guideline. Remove the pins and the underarm stitching and, using a fashion ruler, draw a new, smooth sleeve-cap seamline following your marked line as a guide. Rely on the fashion ruler to blend the uneven seamline and to blend the concave and convex cur-

vature, and then transfer this new seamline to your tissue paper sleeve pattern.

## WALK THE SLEEVE TO IDENTIFY EASE

Use the bodice and sleeve pattern pieces to walk the sleeve to the armhole. Start under the arm on the front side seam and compare the sleeve-cap stitch line to the armhole stitch line, moving toward the shoulder seam. When you reach the shoulder point on the bodice, place a mark on the sleeve cap. Then repeat the same process starting under the arm on the back side. Then measure the distance between the two marks on either side of the center top of the sleeve cap. This is the amount of ease you'll need to manage when setting in the sleeve.

If the distance is  $\frac{3}{4}$  inch to  $1\frac{1}{4}$  inches or less, which is normal, you are lucky. Even on difficult-to-handle fabric, this amount of ease is not hard to control. If the distance is closer to 2 inches to  $2\frac{1}{4}$  inches, you'll have to distribute this abundant ease more creatively.

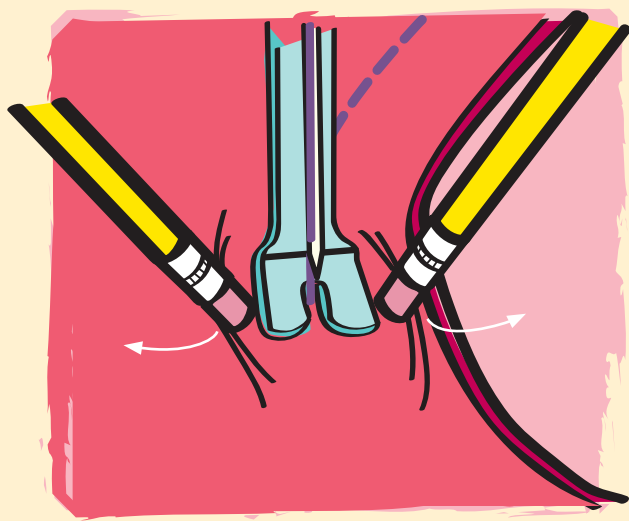
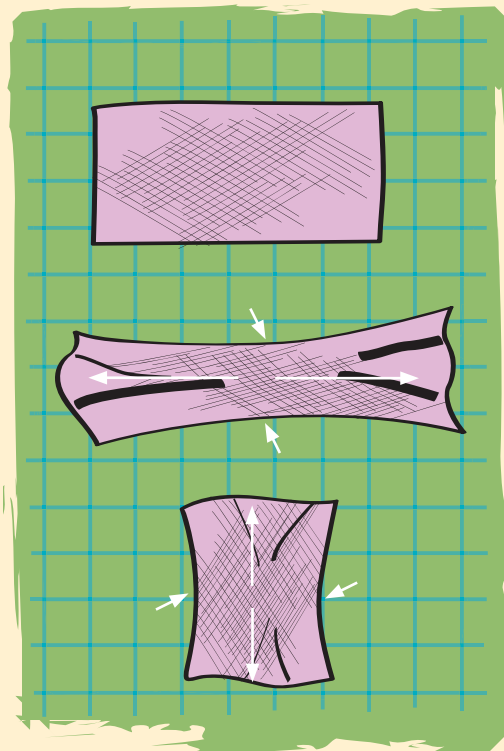
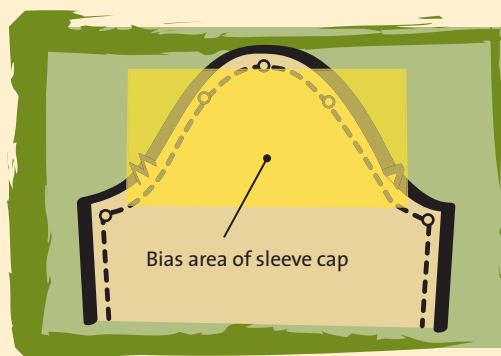


## Setting a sleeve—demystified

The length of a fitted sleeve cap's seamline is always longer than the armscye's seamline. This requires you to ease the sleeve cap into the armscye—a process of shrinking the longer length to fit the shorter one without any gathers showing. The process is easier when you understand how to manage three basic sewing elements: bias, edges, and curves.

### WORKING WITH THE BIAS SLEEVE CAP

Most of a sleeve cap's edges/seams are on the bias (see below). The beauty and frustration of working with the bias is that it can easily be made to stretch or shrink. For example, if a bias strip is stretched lengthwise, the narrow dimension becomes narrower. However, the opposite is also true: If the width of the strip is stretched, the length becomes shorter. The latter is the key to setting a sleeve, as it enables you to shorten the length of the sleeve cap. Instead of using gathering stitches, which can stretch the bias portions of the sleeve cap, try to manipulate the sleeve cap fabric into the armscye.



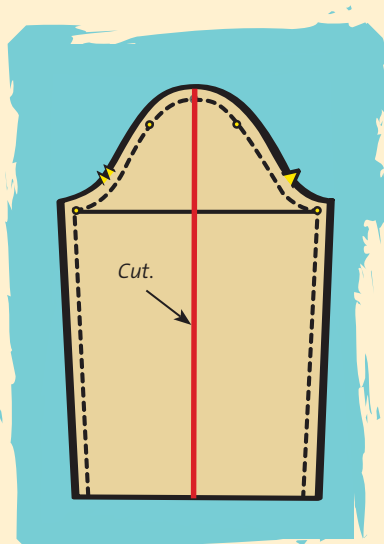
### KEEP EDGES ALIGNED AND SEW IN ONE STEP

Align the key marks (shoulder point, underarm seam, notches, and circles if present) as you position the right-side out sleeve inside the wrong-side out armscye. Start sewing at the underarm seam with the garment on the bottom. Don't make sharp pivots, but gently turn the fabric, keeping the edges exactly aligned and having the fabric just in front of the presser foot absolutely smooth and flat (which helps preserve the curvature of the armscye). To facilitate shrinking the bias portions of the sleeve cap, gently pull the fabric in a direction perpendicular to the stitching line on both sides of the needle and just in front of the needle. You can get good results using your fingers to manipulate the sleeve-cap fabric and guide the work all at once, or two pencils with erasers can facilitate the pulling action that shortens the bias.

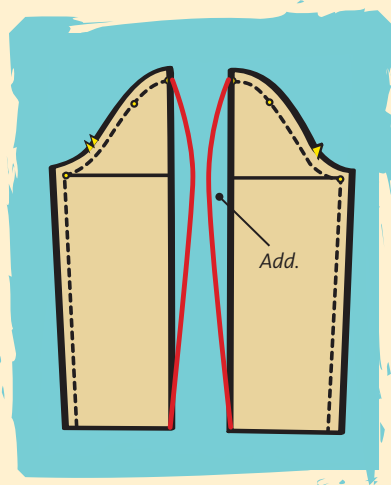
## A two-piece sleeve flatters a full upper arm

The beauty of a two-piece sleeve is that it provides fullness exactly where the flesh is.

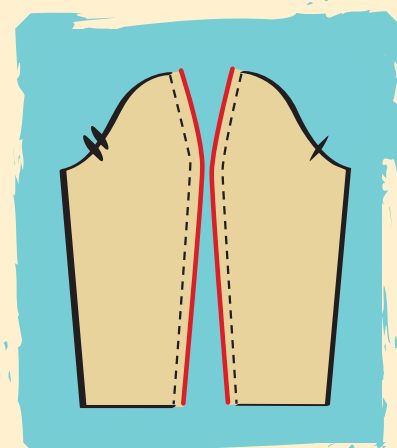
- 1** Cut the sleeve pattern in half along the center sleeve line.



- 2** On both sides, at the point where the center sleeve line intersects the biceps, add half the amount of the increase. Use a fashion ruler or hip curve to draw a gentle curve from the shoulder point through the biceps, tapering back into the original line below the elbow.



- 3** Add seam allowances.



With a larger amount of ease, I distribute it between the notches, and in some cases, below the notch toward the underarm seam.

This breaks another rule—easing below a notch is usually not recommended—but the technique works well when you’re developing a fitted sleeve for a fuller biceps.

Test your muslin sleeve cap by sewing it into your muslin arm-scy. If you can ease it successfully in muslin, it’s likely to cause you no problems in other fabrics.

The fabric you use in the final garment affects your easing success. Wool eases beautifully, and you can even shrink out some of the ease with steam. Dupioni, on the other hand, is usually difficult to ease. If you can’t distribute enough ease to result in a smooth, gather-free sleeve, an alternative sleeve style will solve the problem.

### ADD FULLNESS WHERE IT’S NEEDED WITH AN ALTERNATIVE SLEEVE

An effective way to bridge the flesh of a full upper arm is to put a seam from the shoulder point down the arm, splitting the sleeve

in half, as shown above. With this method, the biceps is increased without affecting the length of the cap seamline.

In a typical one-piece sleeve, the underarm seam is the only place to increase the circumference of the sleeve. By adding a seam to the outer arm, you build in an opportunity to alter the fit in another area of the sleeve.

Creating a seam on the outside of the arm also enables you to make a fitting adjustment where it’s needed. Often, the fullness of an arm is outside, not under the arm. An outside seam allows you to reduce the amount of fabric under the arm, creating a more flattering silhouette. A two-piece sleeve also is more comfortable and visually pleasing.

With these tips on fitting, permission to change the shape and size of a sleeve cap, and ideas for problem-solving with pattern adjustments, I urge you to explore other solutions for fitting the upper arm. There are many other creative sleeve variations. With practice, you’ll be able to match the sleeve variation with the fitting issues that any arm may present.

*Adapted from “How to Fit a Perfect Sleeve,” in Threads, no. 118.*

# Scale it Down



*The model in the center is the height of a standard commercial pattern. The two on either side hit vertical extremes in both directions.*



# Fitting petite figures requires more than a size change

BY KATHLEEN CHEETHAM

**W**e buy pattern sizes based on circumference measurements, but when it comes to pattern length, we're left to fend for ourselves. Most pattern companies draft their patterns for a woman 5 feet 6 inches tall. A big challenge for the petite sewer is making a pattern short enough for her tiny figure. If you're 5 feet or shorter, you can't successfully shorten a pattern designed for someone 6 inches taller, simply by removing the extra length at the hem. The extra length has to be subtracted throughout the body length. The same thing is true if you're 6 feet tall and adding length.

Surprisingly, our height doesn't necessarily reflect the way our proportions are distributed. Not everyone is short or long in the same place—we're short- or long-waisted, have a high or low rise in pants, and walk around on long or short legs.

Try the following size-down techniques to make your patterns fit your proportions right. I'm focusing on fitting the petite figure, but many of these techniques work just as well in reverse, if you're tall.

*Adapted from Threads, no. 163.*

## How to choose the correct pattern size

A body can be several sizes at once. It's common for a person to be one size above the waist and another below the waist. Find the size that comes closest to fitting, based on key circumference measurements.

### MEASURE THE HIGH BUST FOR TOPS

**1 Match the pattern to the high bust.** This is also the chest measurement; it starts you out with a pattern size that's in keeping with your overall frame and is easy to adjust everywhere else. To find your high-bust measurement, wrap a measuring tape snugly around your chest at the underarm level. Note your high-bust and full-bust measurements.

**2 Then determine the pattern's bust cup size.** This information is usually shown on the envelope back. It's much nicer to have a pattern that is drafted for your bust cup, but if that's not possible, choose your size based on the pattern's full-bust measurement using this formula: If your top pattern is drafted for a B-cup bust (as most patterns are, unless otherwise specified), add 2 inches to your high-bust measurement, and select the size that matches that dimension. If the pattern is drafted for a C cup add 3 inches, and for a D cup add 4 inches. To reduce fullness at the bustline, see page 96.

### DETERMINE PANTS SIZE WITH THE HIP CIRCUMFERENCE

**1 For pants, choose your size according to the greatest hip circumference.** If there is disparity between your measurements and the size chart, select the size that is most in keeping with your body's overall frame.

**2 If you need more or less room in other areas of the pattern,** such as the waist, blend sizes with multisized patterns, as discussed on the bottom of page 94.

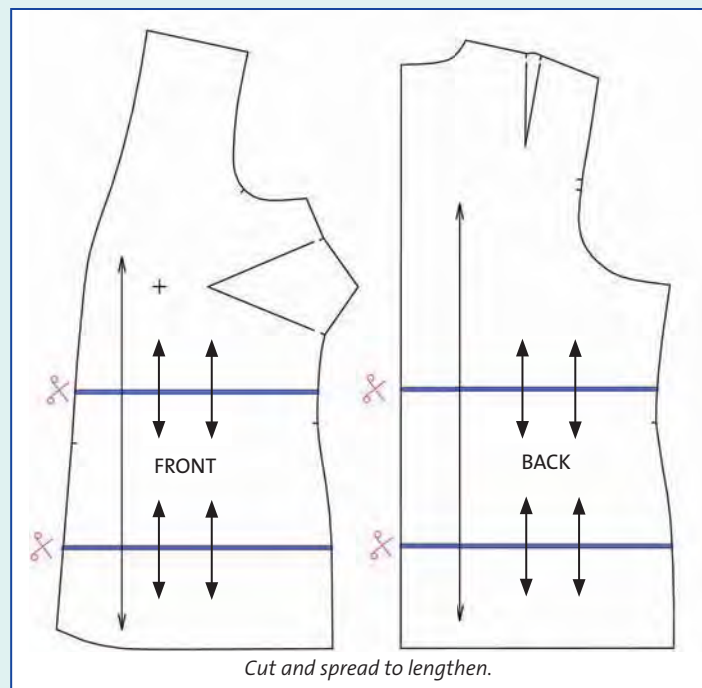
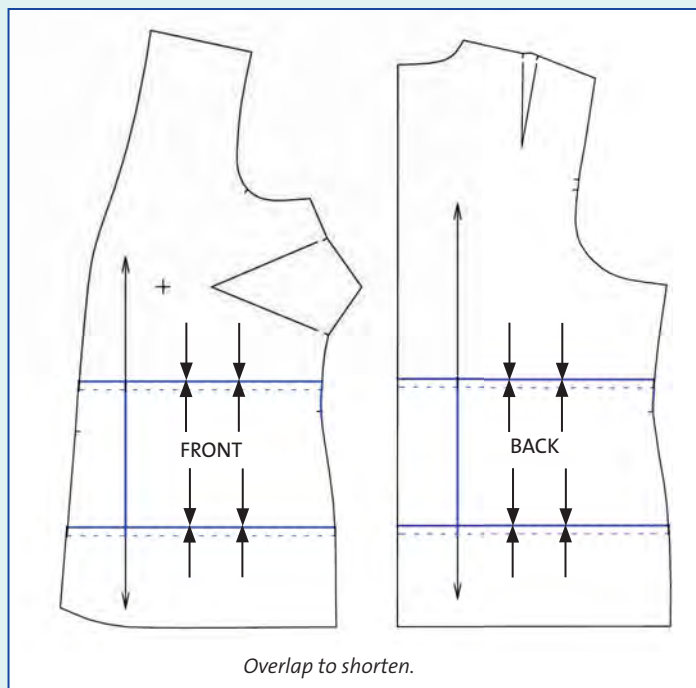
*Whether you're tall or short, you need to select a pattern size based on your circumference.*



# Shorten the pattern tissue to your proportions

It's tempting to shorten a pattern by trimming a little (or a lot) off the bottom. But if you've tried this before, you know the result is a garment that looks out of proportion. No matter your height, the lengths of your individual body parts are unique.

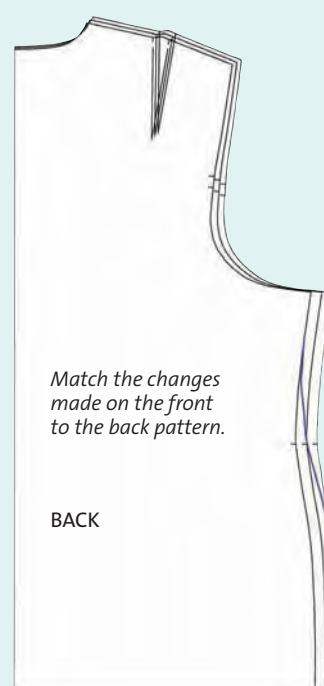
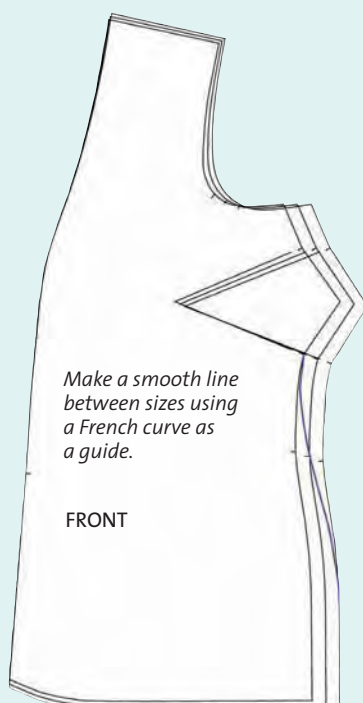
Compare the length of your back (center neckline to waist), crotch depth, and legs to the measurement charts given on your pattern (or measure the pattern) and shorten the tissue pieces within these specific areas, distributing the length to be subtracted. For accuracy, cut the pattern tissue on the shorten/lengthen line, and slide the pieces along the grainline.



## Blend sizes on a multisized pattern

With multisized patterns, you can blend from one size to another and customize a fit for small or full body sections. You'll notice on some multisized patterns that, as size increases, so does the length. This isn't true of the body—if you gain or lose weight, your height doesn't change. If you increase circumference, you don't have to increase the length, too.

Mark the size that corresponds to your circumference measurements, and then taper from one size to the other using a French curve as a guide to make smooth transitions, as shown. This technique works for tops, jackets, skirts, dresses, and pants.



# Grade to a smaller size

Creating a smaller size accurately can be as easy as connecting the dots when you use a multisized pattern as a guide. A multisized pattern has a range of at least three sizes printed in a nested fashion on one pattern tissue. To create a size not offered in the pattern, measure and mark the incremental change between the size lines marked on the pattern, and continue the sequence. By grading in this fashion, you carry all of the ease adjustments for the pattern to the new size you are making.

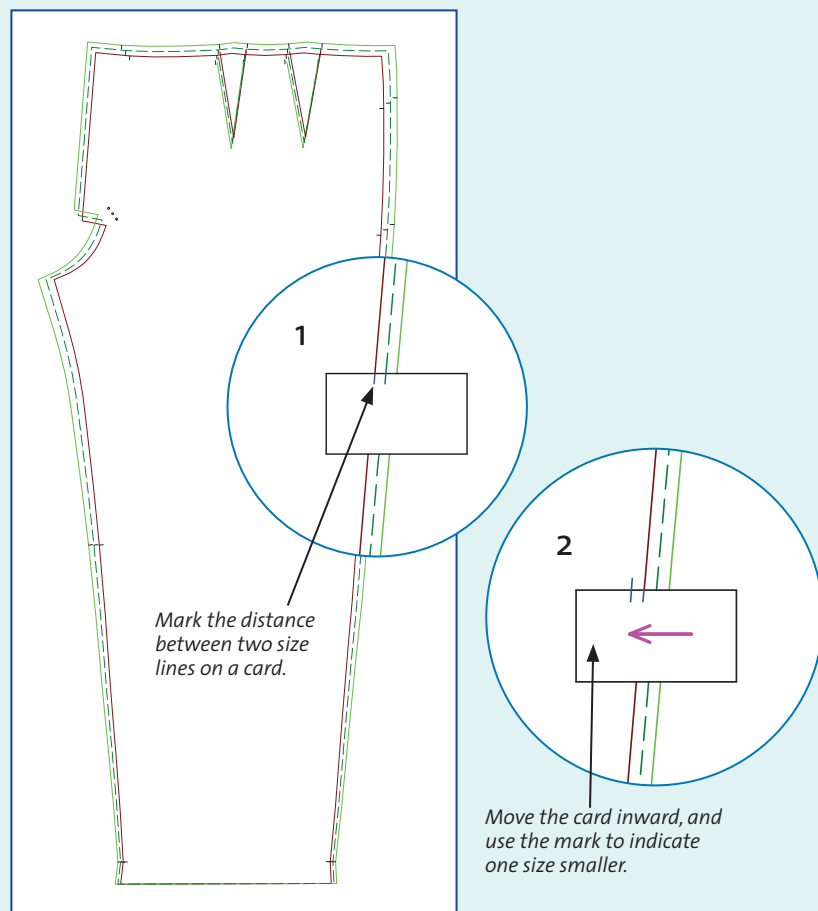
## MEASURE AND MARK THE INCREMENTAL CHANGE

**1** You can use a ruler or the blank side of a business card to quickly measure and mark the distance between size lines.

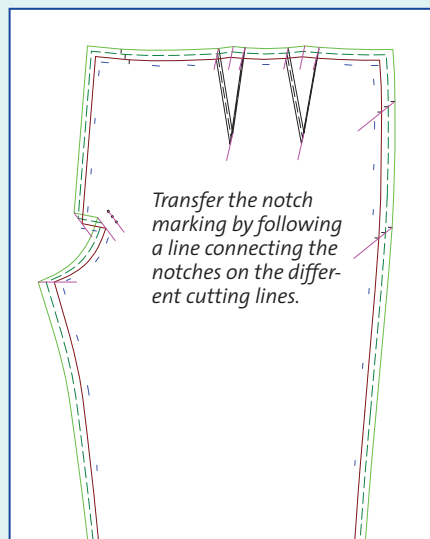
To begin, place your card anywhere on the pattern's parallel cutting line. Mark the innermost distance between the two smallest size lines on the card. This represents the grade from one size to the next at that location. Note that the grade changes throughout the pattern.

**2** For a size smaller, move the card inward, aligning your first mark to the inside line and transferring your measurement to the pattern tissue.

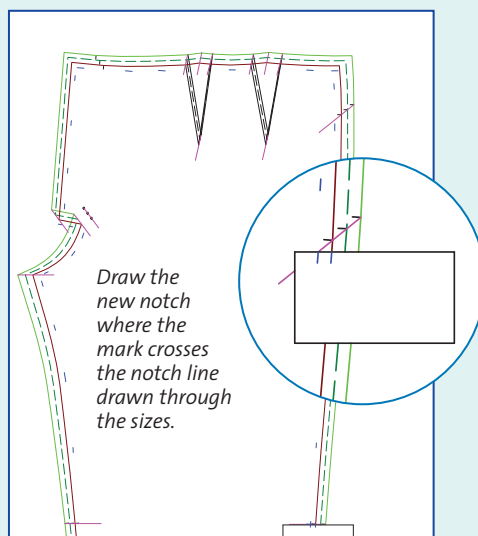
**3** Continue measuring and marking all the way around the pattern piece. Adjust the increment of change at each new location.



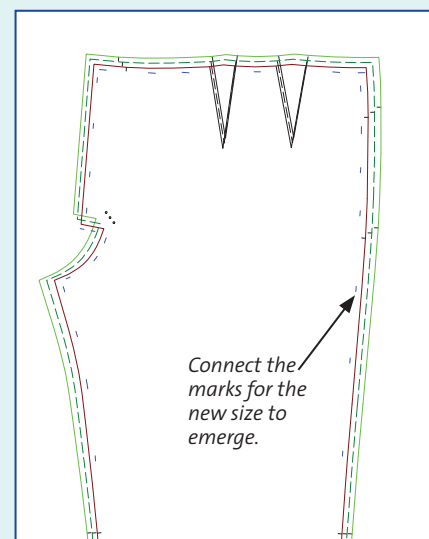
## TRANSFER NOTCHES



**1** To transfer points, notches, darts, and dots accurately, use a ruler or straightedge as a guide to draw a line through them.



**2** To locate the new notch placement, slide down the card you used above until the new mark meets the guide line. Continue in this manner to accurately place notches, points, darts, and dots.



**3** Connect the dots for your completed pattern piece. Repeat this quick grading process on the remaining pattern pieces for a new small size just for you.

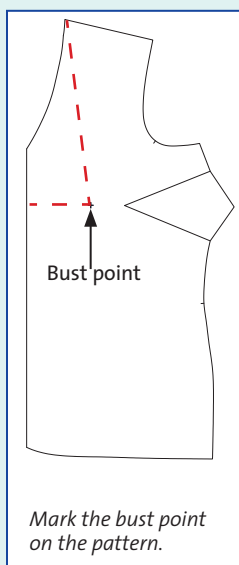


# Slash and pivot to adjust the bustline

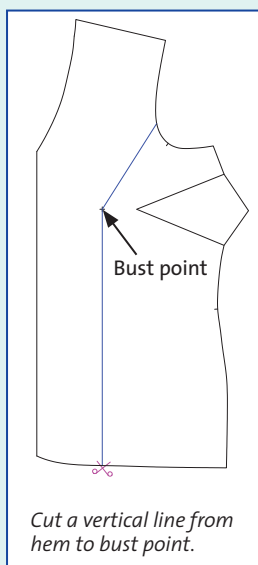
With this advanced technique, you can reduce the fullness at the garment's bustline without affecting the fit at the shoulders, neckline, and back.

## REDUCE THE DART WIDTH

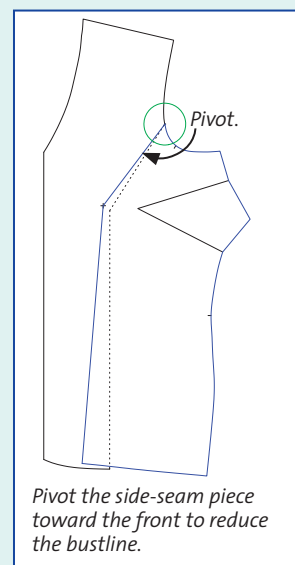
**1** Mark the bust point (sometimes called the apex) on the pattern. Measure on your body from the shoulder at the neckline to the bust point and then the distance to the center front. Transfer this position to the pattern.



**2** Cut a vertical line from the hem to the bust point mark and then diagonally to, but not through, the armhole.

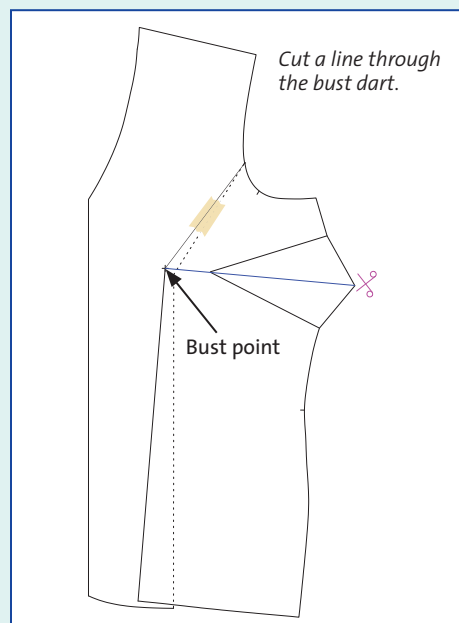


**3** You're working with half of the pattern, so at the bust point, overlap the pattern tissue by half the amount you wish to reduce the total bust circumference. To find that amount, subtract your bust measurement from the given bust measurement on your pattern size. For example, if you want to reduce the circumference  $1\frac{1}{2}$  inches, overlap the pattern by  $\frac{3}{4}$  inch.

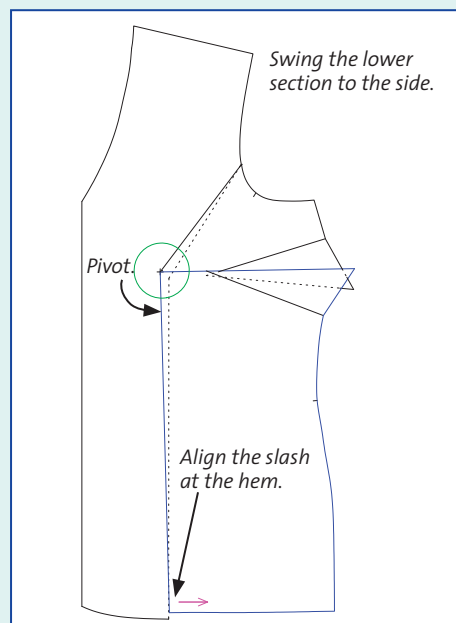


**4** Place a pattern weight on the upper section of the pattern, or secure it to the table with tape on the upper-chest section only. In addition to overlapping at the bust point, the pattern has moved over at the hem edge. We'll correct that hem overlap in the next step.

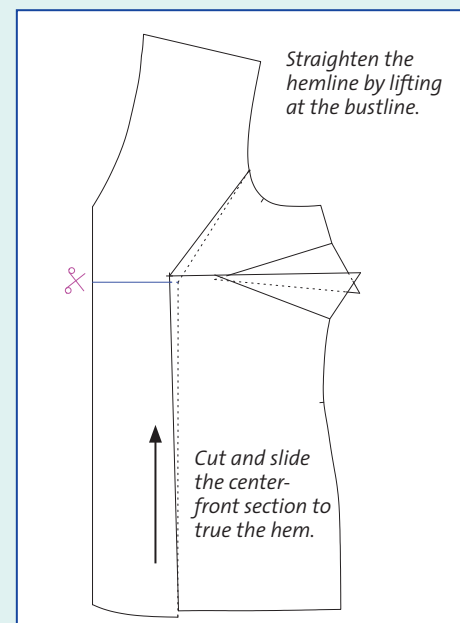
**5** Cut a line through the bust dart all the way to, but not through, the bust point, leaving a little paper hinge.



**6** Swing the lower section away from center front until the pieces touch at the bottom of the slash. Now the bust dart is much smaller—better for you.



**7** Eliminate the excess length. Cut the center-front section horizontally at the bust level, and slide the lower front straight up until the hemlines meet. Secure the cut pattern in place with tape.



## INCREASE THE DART LENGTH

**1 Make the dart closer to the apex.** You can also eliminate excess fabric for a smaller bust by having the sewn dart finish closer to the bust point. You can apply this correction with or without reducing the dart width first. Refer to this chart as a guide for the distance the sewn dart point should sit from the bust point.

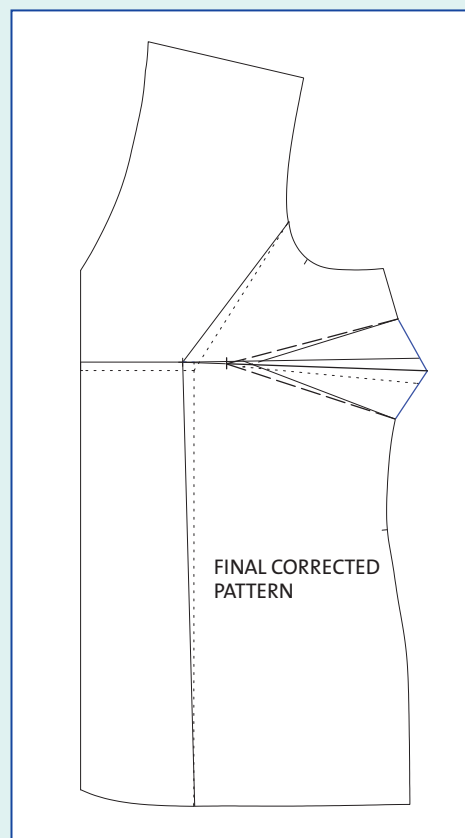
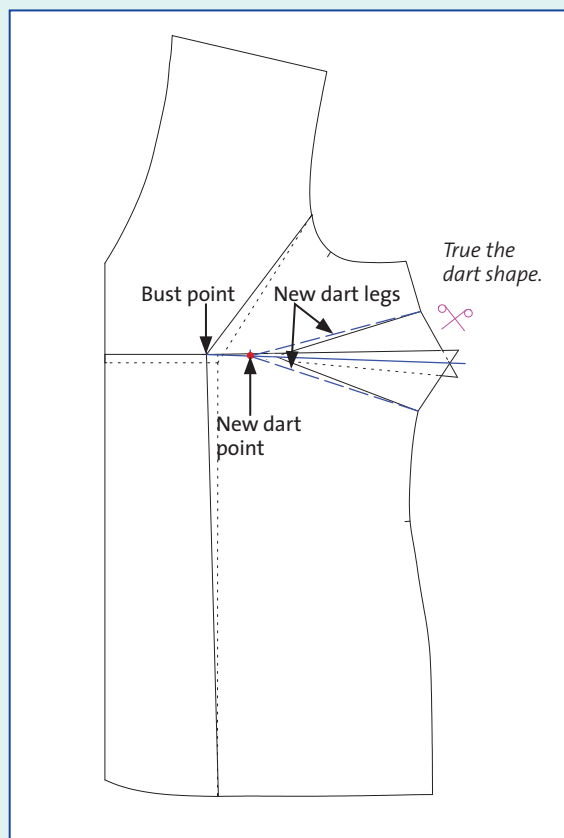
Cup size	Distance: bust point to dart point (inches)	(centimeters)
AA	½	1.25
A	1	2.5
B/C	1½	4.0

*You can always make the perfect pattern size for your shape.*

**2 From the side seam, draw a line through the middle of the dart legs to the bust point.** On this line, based on the chart above, measure and mark the distance your sewn dart point will sit from the bust point.

**3 Redraw the sewing lines of the bust dart** beginning at the original dart legs at the side seam, and finishing at the new dart point.

**4 An easy way to true the dart shape at the side seam is to fold the dart in place** as it will look once sewn, first along the center line, then along the sewing lines. Once the dart is folded in position, (the pattern paper will cup a little) use a ruler as a guide to redraw the side seam. Trim the excess pattern paper, and you'll have the correct shaping along the side seam.



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# Fitting

## What's Inside...

People come in all shapes and sizes, and being able to create garments that fit and flatter the figure is one of the top reasons to sew. With this collection of *Threads* fitting articles, you'll learn the easy-to-understand strategies you need to become a fitting pro in no time.

