

Patternmaking

PATTERNMAKING is the design of a template for an article of clothing. Patternmakers have a unique language for the techniques and tools they use, including flat pattern, draping, trueing, toile, and French curve. Fashion designers use all these techniques and tools to create patterns. Patternmaking is a skill that takes practice. The more you “play” with patternmaking techniques (making adjustments, correctly using the appropriate tools, and drafting a basic template), the more rewarding patternmaking becomes. An ability to create customized patterns will take your sewing to a new level.



Paper patterns.

Objective:



Identify patternmaking tools and techniques.

Key Terms:



awl	grading	prototype
blending	hem gauge	ratio
block pattern	hip curve	rotary cutter
computer aided design (CAD) software	lining	sewing gauge
craft paper	measuring tools	slashing
cutting mat	muslin	sloper
dart	notcher	tailor's chalk
draping	pattern	tailor's square
dress form	pattern drafting	toile
ease	pattern markings	tracing wheel
facing	pattern weights	trueing
flat pattern	patternmaker	vary form curve
French curve	patternmaking	
	proportion	

Patternmaking Tools and Techniques

PATTERNMAKING TOOLS

A **pattern** is a template used to create an article or articles of clothing. **Patternmaking** is the design of a template for an article of clothing. A **patternmaker** designs or creates the pattern templates for different clothing designs. These patterns are laid out onto fabric. The fabric is then marked and cut to the specifications of the pattern. Finally, the fabric is sewn to resemble the original clothing design. Several alterations and adjustments can be made during the sewing of a pattern.

Approaches

There are two basic approaches to making clothing patterns: flat pattern and draping.

Flat Pattern

Flat pattern is a pattern created by cutting fabric on a flat surface in two dimensions (length and width); most lines are at right angles.

Draping

Draping is working with fabric on a stand or on a manikin to find out what the fabric wants “to do.” You create a rough shape on the mannequin and mark, notch, and make notes about each element (e.g., sleeve, bodice, skirt, cuff, etc.). Then, the pattern is traced onto flat fabric using different techniques when creating a pattern template.

Sketching

A patternmaking drawing can be a 2-dimensional sketch that illustrates the length and width of



FIGURE 1. This patternmaker has several muslin patterns from which she produces garments.

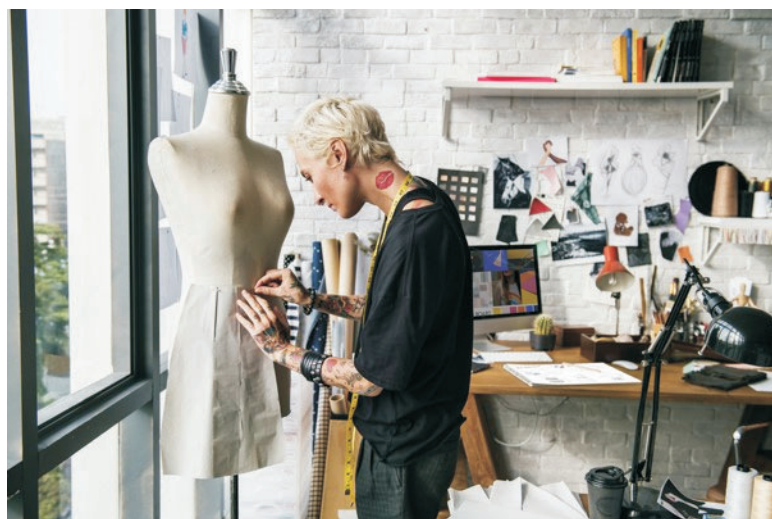


FIGURE 2. This fashion designer is draping a skirt-muslin on a dress form.

a design pattern. A 3-dimensional sketch illustrates, length, width, and depth. This dimensional sketch adds volume to the length and width measurements and is accomplished by adding curves or darts to more realistically depict the finished garment. A 4-dimensional model is a prototype that involves draping fabric onto a dress form or a person. While you are creating the illusion of length, width, and height, you are also able to add space or gravity—that 4th dimension—to see how a pattern will “wear or hang” on a person.

Measuring Tools

Measuring tools are instruments used to calculate size or shape to create an accurate pattern. They can be in the form of metric units, (e.g., meters and centimeters) or as imperial units of the legacy system (e.g., yards, feet, and inches). These tools are used to collect measurements from a person, form, or model. They are also useful in drafting patterns. **Pattern drafting** is the process of producing a pattern by collecting and using specific measurements from a person, a form, or a model. Measuring tools are essential to ensure a correct fit for an article of clothing. Drafting tools are essential for creating sketches and pattern templates to ensure a proper fit. Some necessary drafting tools used to sketch or to create a pattern template include:

Rulers

A clear 18" plastic ruler is used by a patternmaker to create clear and concise markings, such as legs of darts and seam allowances. A tape measure allows you to precisely measure around curves or corners. A yardstick is used to measure fabric, hem lengths, and to check the grain line. A **tailor's square** is a two-armed ruler, shaped like an L used to draft or scale down an existing pattern. It is often referred to as an L-square in which the long arm measures 24 inches and the short arm measures 14 inches.

- ◆ Curves: A **French curve** is a measurement tool that creates necklines, armholes, and other curved lines. A **hip curve** is a measurement tool that creates long, slightly curved, measurements for hips, thighs, and lapels; inch measurements are on one side and centimeters on the other. A **vary form curve** is a scale (ruler) that bends to shape a variety of pattern template items: armholes, necklines, and side seam curves.
- ◆ Gauges: A **hem gauge** is a ruler used to measure hemline folds to allow hemming on the grain line. A **sewing gauge** is a 6-inch ruler with a movable marker used to measure short lengths, such as the width of a seam allowance.

Marking Tools

The most common marking tools are an awl, a notcher, a tracing wheel, and tailor's chalk.

Awl

An **awl** is a pointed tool used to pierce small holes in pattern pieces. Awl markings can indicate pocket placement, trim lines, buttonholes, or the end of darts. You can also use an awl for

piercing through and stitching two or more layers of thick fabric in place, such as leather (a task for which a machine may have trouble).

Notcher

A **notcher** is an essential pattern tool that creates pattern markings on fabric, such as darts, seam allowances, centerlines, and ease lines. You can also use it to help identify front pattern pieces from back pattern pieces.

Tracing Wheel

A **tracing wheel** is a tool with a blunt saw-tooth or a smooth edge wheel, used to transfer markings from patterns onto fabric. For the markings to transfer, you must use a special carbon transfer paper. A tracing wheel is used to mark pleats, darts, buttonholes, pockets, or appliqués. It is also useful for retracing patterns or transferring markings from draped muslin onto paper.

Chalk

Tailor's chalk is hard chalk or soapstone used to apply markings, such as seams, style lines, and darts, onto fabric or pattern pieces.

Drawing Tools

An assortment of pencils and pens are essential for drafting patterns onto the paper or transferring markings from fabric onto paper and vice versa. They are also used for sketching, drawing, and marking various pattern pieces and labeling pattern parts. An eraser is essential for removing unwanted markings on a pattern template. **Craft paper** is a strong, durable brown paper preferred by most designers for drafting and sketching patterns and templates. Designers may also use this paper because it doesn't tear as easily as other forms of paper, which is an advantage when draping pattern templates on a dress form. **CAD software** is computer software that creates precision drawings or technical illustrations in 2D or 3D models. CAD software that can be used for patternmaking and drafting include Adobe Photoshop, Illustrator, and Creative Cloud.

Cutting Tools

Scissors are essential to cut patterns, paper, and/or fabric. A rotary cutter is ideal for cutting through multiple layers of fabric. A cutting mat should be used when cutting fabric.

Scissors/Shears

There are several types of scissors and each has a specific purpose: applique, buttonhole, crafting, embroidery, pinking, tailors, etc. Scissors intended for use on fabrics are never used to cut paper. Cutting paper dulls the blade making it difficult to cleanly cut fabric. Shears (basically, scissors with longer blades) may be used, also.

Rotary Cutter

A **rotary cutter** is a hand-operated tool with a handle attached to a circular blade that cuts through multiple layers of fabric and a pattern without lifting. A shear or scissor can shift layers when it slides under them. Rotary cutters require the use of a mat to protect the cutting table and the blade.

Cutting Mat

A **cutting mat** is a protective work surface that saves your tables and counters from damage and increases the life of blades, especially rotary cutter blades. Most are printed with a right-angle grid and show a 45° diagonal line for bias cutting. They come in a variety of sizes.

Miscellaneous Tools

Pattern weights are weights that are used to hold down pattern paper (craft paper) so that the paper stays flat and in place. They weigh about three pounds and prevent the paper from moving when marking and tracing. Scotch tape is useful for mending errors in the drafting paper or to join two pieces of paper together to extend (alter) the pattern. It can also be useful when using the slashing technique. A stapler can help to make darts and prevent pattern pieces from slipping when marking or cutting. A staple remover eliminates the staples from fabric or paper during the marking or cutting. Straight pins fasten pattern templates onto fabric. Push pins can secure pattern pieces and help transfer markings from muslin patterns onto paper.

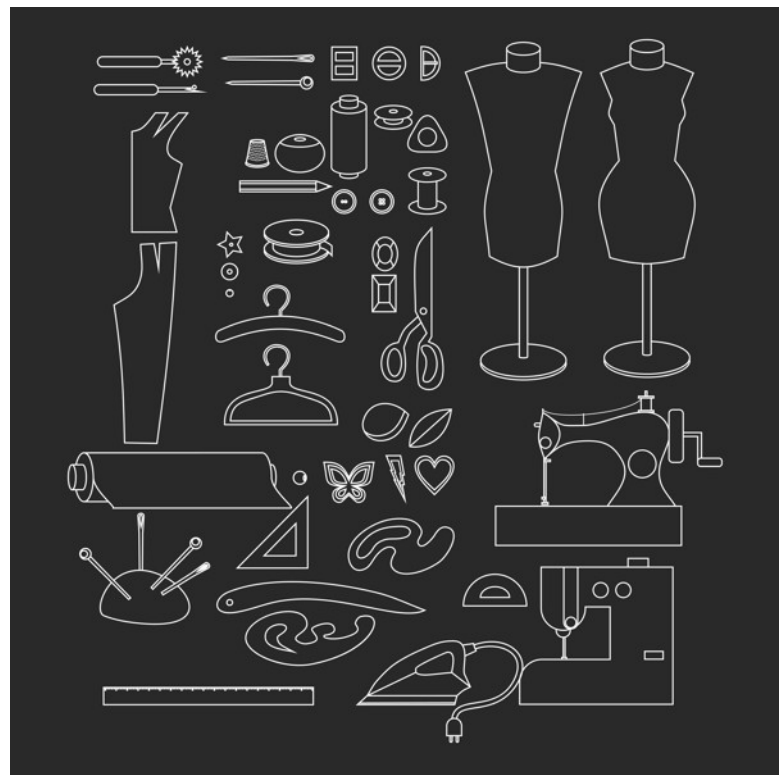


FIGURE 3. Can you identify these patternmaking tools?

PATTERNMAKING TECHNIQUES

A **prototype** is a sample or model that is produced from a concept, idea, or draft. A patternmaker must be able to produce a prototype in order to present the design to the client. Mathematics skills are necessary to create a pattern and to fit a garment. Reading a ruler or tape measure is essential to accurate patternmaking tasks.



FURTHER EXPLORATION...

ONLINE CONNECTION:

Start Making Patterns with the Right Drafting Tools

How do you begin making your own patterns? How do you learn to draft pattern pieces using the correct tools and equipment? Patternmakers alter and adjust commercial or custom patterns to create a perfect fit.

Visit the Clothing Patterns 101 website at <https://www.clothingpatterns101.com/drafting-tools.html> for more information.

Learn more about selecting the best paper, pencils, and tape for patternmaking. Explore the best scissors and shears for each patternmaking, draping, sewing, fitting, and finishing job. Review the rulers and curves and why accurate measuring and smooth lines are crucial to patternmaking. Read more about muslin and how it is used to create custom fit patterns and garments. Explore the plethora of marking tools and the wealth of specialty tools and supplies to make/draft a pattern. Then, review the steps to taking accurate body measurements.



This patternmaker is marking pattern pieces.

Measurements

Accurate body measurements are essential to creating flat patterns and customized fitted patterns. Several measurements are taken and it is best to have someone other than the client take the body measurements. Height, bust, waist, hips, inseam, and arm are the most common measurements but there are more. In order to fit a person for a pattern, you need a blueprint of the person being fitted. This includes several circumference measurements as well as vertical and horizontal measurements of the front and back of the person.

Ratio

Ratio is a numerical comparison that indicates the relative sizes of two or more quantities. The numbers can be any quantity: length, width, height, etc. In the clothing industry, a physical standard was adopted that embodies the idea of proportion. Using the standards for a “regular” body (versus a long or a short body) assumed to be upright: the ratio of the waist to the seat is 34 to 40 (or 34:40) and the ratio of height to waist is 68 to 34 (or 68:34). Regular length measurements for a woman are:

- ◆ Height = 5 feet, 8 inches
- ◆ Nape to waist = 17 inches

- ◆ In sleeve = 18 inches
- ◆ In leg = 32 inches

A regular girth measurement for a woman's bust is 38 inches. Waist = 34 inches and seat = 40 inches.

Proportion

Proportion is the relative size and scale of a design or pattern element, in relationship to other parts of the whole design or garment. The human body is the most universal standard of measurement. For example, an excessively large textile pattern can overwhelm the form of a garment or a decorative interior piece (pillow, wall covering, window covering).

Patternmaking Skills

To create a pattern template and/or a prototype, you may create a sloper or block pattern and then apply the skills of blending and trueing.

Sloper

A **sloper** is a basic paper garment pattern that is created for specific body measurements and does not include seam allowances, wearing ease, or any other design elements. It is a tool used as the first step toward making a block pattern. There are six basic slopers: front bodice, back bodice, front skirt, back skirt, sleeve, and pant.

Block Pattern

A **block pattern** is multiple silhouettes of basic, custom fitted patterns (slopers) from which other patterns, sizes, and styles can be created and mass produced. Block patterns are used in an industrial production setting. When creating blocks and slopers, it is important to “blend” and “true” a pattern.

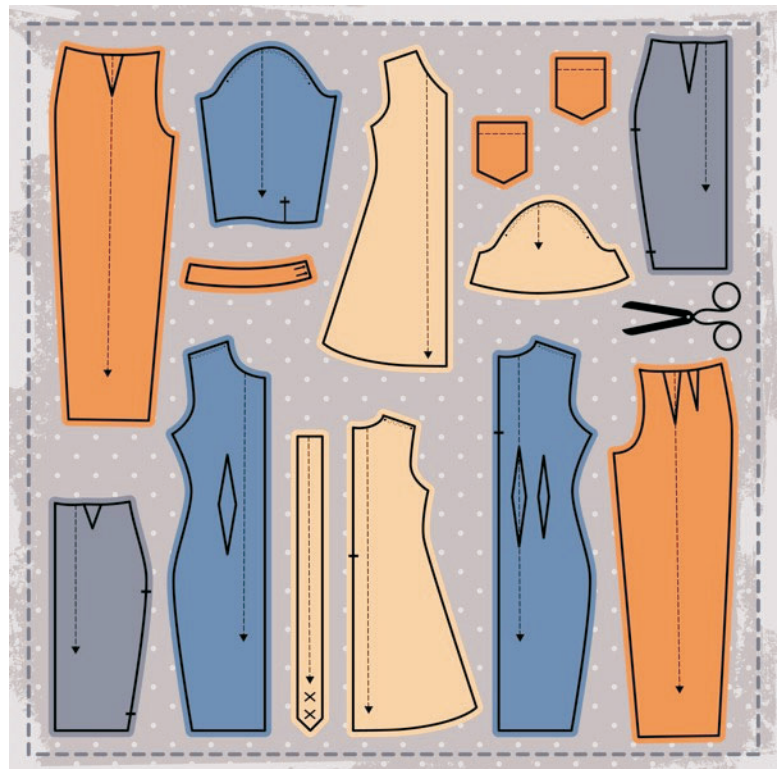


FIGURE 4. Basic sloper templates.

Blending

Blending is the process of smoothing and shaping angular and curved lines of a pattern ensuring all pattern elements “come together” and are clean.

Truing

Trueing is ensuring all the corner points of the pattern come to a 90° angle and that the seam lengths are even. Trueing also ensures that any darts, pleats, etc. come together to give a finished and even look. Blending and trueing help ensure the pattern is neat and that no inconsistencies are visible when sewing. Copying the original block or sloper pattern onto paper, when creating a new pattern, ensures the original pattern stays intact.



FIGURE 5. A patternmaker is shown blending and trueing a pattern.

Construction Skills

You must know how to manipulate darts, add or reduce fullness to a garment, change the size of a finished pattern, allow for wearing ease, and create new patterns from existing patterns or garments.

Dart

A **dart** is a fold or a tuck that comes to a point and gives a garment shape and better custom fit. You must manipulate darts to give a pattern or template a proper fit for the client. The process includes taking a basic sloper and adjusting the beginning and end point of the original dart to create a more flattering fit for the client. Standard darts are shown on the sides of the pattern, however, they can be placed virtually anywhere on the pattern to ensure that the fabric fits the natural curves of the body. Darts can also be used to add other features such as gathers and pleats.



FIGURE 6. Darts are marked in the armholes and the bodice of this pattern piece.

Slashing

Slashing is a cutting technique used to add or to reduce fullness. Slashing and spreading a pattern adds width or length to a pattern. Slash and closing is a technique to reduce fullness. Spreading the slash cuts creates an open or fuller pattern such as that of an A-line skirt or dress. Slashing is used to create ruffles, flounces, or pleats for a pattern. If a patternmaker is looking to close a slash to reduce fullness, it can be done by closing darts.

Grading

Grading is the process of changing the size of a finished pattern. The purpose of grading a pattern is to provide multiple body types and sizes at the same proportion, fit, and shape of the original flat pattern. Slashing and pattern shifting are the most common ways to grade an original pattern. Slashing, or cutting and spreading the pattern, is more accurate than pattern shifting. Shifting is the process of moving the original pattern horizontally and vertically along a central axis to change the pattern size.

Ease

Ease is the minimum amount of space that a garment needs to allow for comfortable body movement. Body measurements and garment measurements will differ to allow for wearing ease. A positive ease is used for loose fitting garment designs, while a negative ease is used for form-fitting designs. When designing patterns, it is important to include ease, whether positive or negative.

Existing Garments

New patterns are often created from an existing pattern or from garments. To do so, the garment seams are opened and each piece is marked with construction details that need to be considered when creating the new pattern templates.

- ◆ A **facing** is a piece of fabric turned to the inside of a garment that is used to finish the raw edges of the fabric. A facing hides construction details, supports the shape of the garment, and gives a garment a clean and polished look. Facings are mostly used to finish edges in necklines, armholes, hems, and any other garment opening.
- ◆ A **lining** is a layer of fabric that is stitched separately and then attached to the inside of a garment. Its purpose is to hide inner construction details and add shape and support to a garment. It also creates opacity and makes the garment more comfortable to wear.

Pattern Markings

Pattern markings are symbols on individual pattern pieces, that indicate how the pattern pieces should be sewn. Pattern markings fall into three general categories: fit adjustments, cutting guides, and construction. Grain line, fold line, and notches are basic pattern markings on all commercial patterns. Layout and cutting guides as well as construction markings are essential during the sewing process.

Fit Adjustments

A double line that is parallel to the grain line and is used to add or to take away length: lengthen or shorten here. Other fit adjustments include size selection lines (pattern tissue often has multiple size lines imprinted) and circumference measurements (e.g., a circle with crossed lines indicates where a pattern has been designed to land on specific body measurements).

Cutting Guides

The phrase “cut on fold” is common on patterns: center back fold or facing fold. Grain lines are marked on all pattern pieces to indicate how the pattern piece is to be laid out on uncut fabric, in relation to the selvages. Grain lines are usually placed parallel to the selvedge edge of the fabric.

Construction

Pattern markings for construction indicate how the pattern pieces are sewn together. They can show how to distribute ease, create darts, and where to gather. Crucial construction marks include: notches (triangular marks), dots, squares, and large triangles, darts (series of dots that create a triangle), tucks, pleats, buttons, closures, appliques, stitching lines, waistline markings, and pocket placements.

Helpful Markings

A pattern usually has markings that indicate the style number of the pattern and the pattern size. Individual pattern pieces have their name written on them, along with view letters. Patterns also have lining and interfacing information.

Fitting and Finishing

Patternmakers make a test garment of muslin (a toile) to ensure proper fit and design before cutting into the actual garment fabric. A dress form is utilized to design, drape, and fit garments.

Muslin

Muslin is unbleached woven cotton fabric that is inexpensive, plain, lightweight, and ideal for draping. It is better to use muslin than paper, because muslin is easier to alter and it is easier to create folds, tucks, and lines.

- ◆ Process: Patternmakers mark, pin, cut, and even sew the muslin fabric at this point in the fitting process. When the muslin pattern is perfected, it is unpinned and carefully marked and laid out onto paper. Then, the paper pattern pieces are laid out on and cut from selected (often more expensive) fabric.
- ◆ Toile: A **toile** is a garment made from inexpensive fabric to test a pattern before the actual fabric is used. Because a toile is commonly made from muslin, it has become com-



FURTHER EXPLORATION...

ONLINE CONNECTION: Pattern Drafting

Threads website senior technical editor, Judith Neukam, demonstrates “A Fast Look at Pattern Drafting,” <http://www.threadsmagazine.com/2013/02/05/video-a-fast-look-at-pattern-drafting>.

“Sewing 101: Pattern Drafting,” at <https://www.youtube.com/watch?v=8ebD9BxWHpQ>, demonstrates how easy it is to take an existing garment and make a pattern template.



Drawing, measuring, marking, and cutting tools are essential for creating sketches and pattern templates.

mon practice for patternmakers to refer to a toile as a muslin.” A toile is created to ensure the fit of a pattern before cutting more expensive fabric, such as silk or linen. Alterations are often made in the pattern pieces before cutting the expensive fabric.

Dress Form

A **dress form** is a three-dimensional model of the human body used to design, drape, alter, and fit garments or patterns. Dress forms are usually a torso constructed of a hard interior and a fabric or foam exterior (useful for pinning). Some forms are made to a client’s measurements, while others are adjustable. Dress forms are not mannequins. Mannequins have a hard outer shell and represent the entire body. Dress forms come in a variety of styles including torso, display, professional, bifurcated (that include legs), and adjustable. Dress forms are available in male, female, child, and infant models.

Summary:



A pattern is a template used to create an article of clothing. Although commercial patterns are available in multiple sizes and styles, they can be misleading and expensive. You must practice the skill of patternmaking. Sketching, making a flat pattern, altering a commer-



FIGURE 7. Which of these two images is a dress form and which image is a mannequin? What is the difference between a dress form and a mannequin?

cial pattern, and draping a dress form are skills you should develop as a patternmaker. If you master the skill of creating slopers, then you can make custom templates. Those templates can be rendered into several sizes and styles that are tailored to your measurements (or your client's measurements). Nothing fits better than a pattern that is custom designed for the person wearing it. When you learn to create custom patterns, you gain a new perspective to your sewing.

Checking Your Knowledge:



1. List and describe three measuring tools for drafting a pattern.
2. Differentiate between a sloper pattern and a block pattern.
3. Describe the importance of trueing and blending a pattern.
4. Describe the slashing technique when adding or reducing fullness to a pattern.
5. What is the purpose of creating a toile?
6. What makes common marking symbols important to patternmaking?

Expanding Your Knowledge:



What is a pattern card? What information is included on the card? What is the importance of a pattern card? How would you organize pattern cards? Visit the Isn't That Sew website at <http://isntthatsew.org/pattern-card/> to learn more.

Web Links:



A Self-Sewn Wardrobe

<http://fairfitstudio.com/blog/patternmaking-101-how-do-i-start-making-my-own-patterns>

A 3-D Plush Pattern from a 2-D Drawing

<http://laurenvenell.com/epic-how-to-make-a-3-d-plush-pattern-from-a-2-d-drawing/>

Patternmaking Methods

<http://textilelearner.blogspot.com/2014/03/garments-pattern-making-methods.html>

Free Sewing Patterns

<http://isntthatsew.org/free-sewing-patterns/>