

Learn How to Sew

Section 18.1

Fabric and Pattern Preparation

■ **Main Idea** A successful sewing project includes planning and preparation.

Section 18.2

Sewing and Serging Basics

■ **Main Idea** Sewing and serging skills allow you to achieve a professional quality in your sewing projects.





Explore the Photo

Planning is an important step in any successful sewing project. **What actions do you think you should take before you begin sewing?**



Writing Activity

Cause and Effect

How Did It Go? A cause is an event or action that makes something happen or not happen. An effect is the result of a cause. Ask, "Why did this happen?" to help you recognize cause-and-effect relationships. Write a paragraph about the results of a recent project or assignment you completed. What caused you to achieve your results?

Writing Tips To write an effective cause-and-effect paragraph, follow these steps:

1. Focus on how the cause created a specific effect.
2. Write a clear thesis statement, and be sure to include an introduction and conclusion.
3. Use transitional words, such as therefore, because, or so, between the cause and the effect.

Reading Guide

Before You Read

Predict Read all of the headings in this section. Think about what the headings mean. Predict what you think the section will be about.

Read to Learn

Key Concepts

- ✓ **Explain** why fabric preparation is important.
- ✓ **Outline** the steps in pattern preparation.

Main Idea

A successful sewing project includes planning and preparation.

Content Vocabulary

- selvage
- bias
- guide sheet
- layout
- marking
- ease


Academic Vocabulary

- determine
- transfer

Graphic Organizer

As you read, identify five steps you would take in preparing to sew. Use a graphic organizer like the one shown to help you organize your information.

Preparing to Sew
1.
2.
3.
4.
5.

 **Graphic Organizer** Go to this book's Online Learning Center at glencoe.com to print this graphic organizer.

Academic Standards



English Language Arts

NCTE 4 Use written language to communicate effectively.



Mathematics

NCTM Problem Solving Understand the meanings of operations and how they relate to one another.



Social Studies

NCSS IA Culture Analyze and explain the ways groups, societies, and cultures address human needs and concerns.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Many people enjoy sewing. Sewing gives you the chance to use patterns and your own creativity to create your own clothing and home fashions. If you have not sewn before, the information in this section can help make your sewing projects successful. You will learn how to prepare your fabric and pattern for sewing. These are important first steps in any sewing project.

Fabric Preparation

It is important to take the time to preshrink your fabric. Some fabrics will not shrink, while others may. Launder the fabric as directed. Cleaning instructions are located on the end of the bolt of fabric. Once the fabric is preshrunk, press it to get rid of wrinkles.

Check the Grain

After you have preshrunk the fabric, you need to check the fabric grain. The fabric grain is the direction that the yarns run in woven fabric. **Figure 18.1** shows where to find the selvages, grains, and bias on a piece of fabric and explains how to check the grain. The **selvage** is the tightly woven edge of the fabric that has no visible loose threads. Raw edges are the unfinished edges of the fabric. You can straighten the fabric by folding it on the true **bias**, or diagonal.



Reading Check

Explain Why should you prepare fabric before sewing?

As You Read

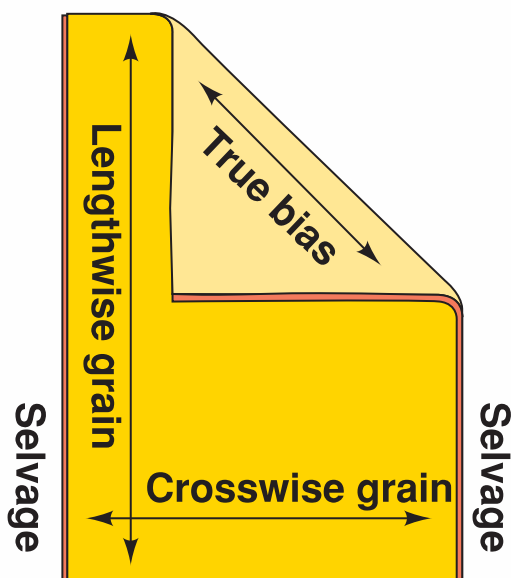
Connect Think about the steps you take before you begin a sewing project. What other things do you do in which you create a plan of action?

Vocabulary

You can find definitions in the glossary at the back of this book.

Figure 18.1 Finding the Grain

Take Time It is important for the lengthwise and crosswise threads in fabrics to meet at right angles when you sew. *What might happen if you forget to align the fabric grain before you sew?*



To test the grain, fold the fabric lengthwise so that the selvages are on top of one another. If the raw edges do not line up, do the following:

- For woven fabrics, clip the selvage and pull a crosswise thread. Cut along the line made by the pulled thread.
- For knitted fabrics, cut along one crosswise row of loops to straighten the edges.

Test the grain again by folding your fabric and matching selvages.

- If the crosswise ends match exactly and are at right angles to the selvage, the fabric is straight. The fold will be smooth and unwrinkled.
- If the edges do not match, the fabric is not straight. If cut that way, the finished garment will twist or hang crooked.



Organization Skills

Arrange Your Papers

Choose one place to put your papers for each subject. Create color-coded folders for each class. Arrange your papers in time order. Place assignments that are due first on top.



Pattern Preparation

Study the guide sheet inside your pattern envelope before you begin sewing. A **guide sheet** is a set of step-by-step instructions for sewing a pattern. The guide sheet, as shown in the photo, contains information on how to use the pattern, a diagram of the pattern pieces, an explanation of the pattern markings, and layouts. **Layouts** are diagrams of how the pattern pieces should be placed on the fabric.

After you have read through the guide sheet, you are ready to prepare the pattern pieces. **Figure 18.2** shows how to prepare pattern pieces and understand markings. **Markings** are symbols located on the pattern pieces.

Pattern Guide Sheets

Follow these steps to use a pattern guide sheet:

- Study the diagram of the pattern pieces.
- Circle the letters of the pieces needed for the garment that you plan to make.
- Circle the layout diagram that you will use for your size and style.
- Read through all of the pattern directions before you start to work.

To prepare your pattern pieces, cut apart the pieces you will use, but do not trim them. You will cut off the margins later, when you cut the fabric. Study each pattern piece, and refer to the guide sheet to find out what each marking means. If the pattern pieces are wrinkled, press them with a warm, dry iron.


 **Pattern Guide Sheets** Patterns show you how to put your project together. *What might happen if you do not read the entire pattern guide sheet before you sew?*



Figure 18.2 Pattern Markings

Marked Guides Pattern markings guide you throughout a sewing project. *What might happen if you did not follow the pattern markings?*

Dots are points matched for accuracy. If a shirt pattern shows a dot at the center of the back and a dot at the center of the collar pieces, match these dots to make the collar fit correctly.

Notches are v-shaped markings on cutting lines that show which seams are matched and stitched together to join seams evenly.

Place on folds are thin single lines on straight edges that mean to place the pattern on fabric fold. Do not cut on the fold line.

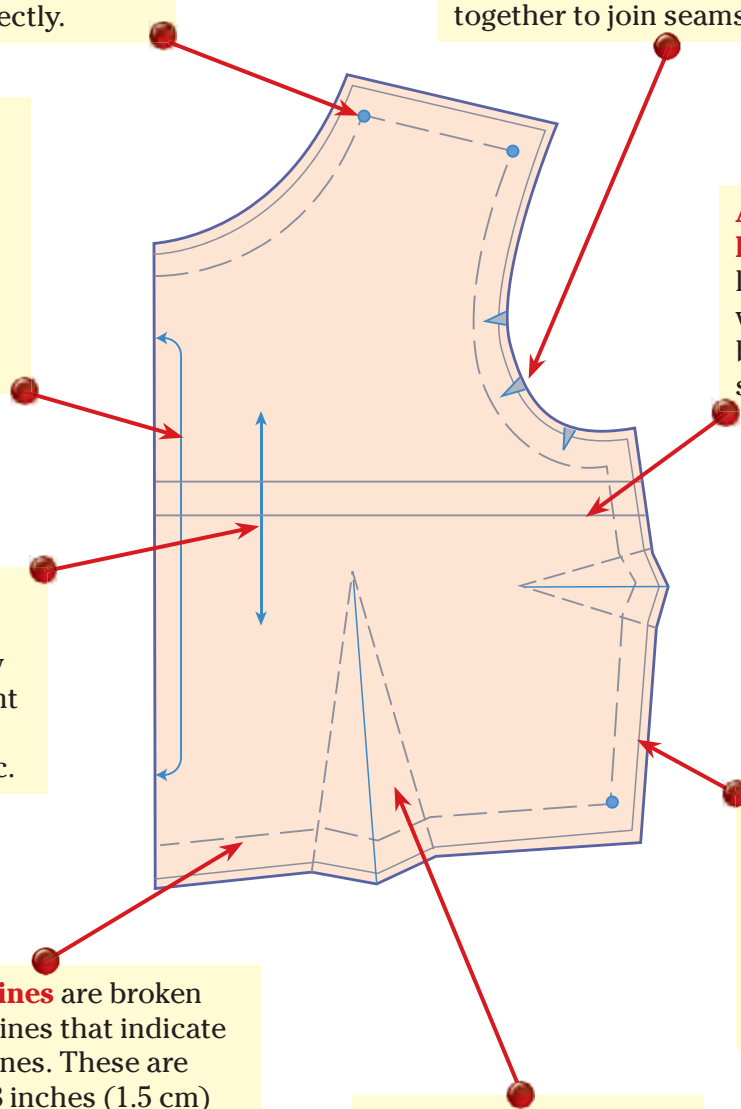
Adjustment lines are parallel lines that show where patterns can be lengthened or shortened.

Grain lines are double-pointed arrows that show pattern placement on the straight grain of the fabric.

Cutting lines are heavy lines, scissors symbols, or double lines along the pattern edge that show where to cut.

Stitching lines are broken or dotted lines that indicate stitching lines. These are usually $\frac{5}{8}$ inches (1.5 cm) inside the cutting lines and are often marked by a presser foot symbol or by arrows. These symbols show the direction to stitch fabric.

Darts are broken lines that indicate stitching lines. Solid lines show where to fold.





Organization Skills

Keep Lists Check your class syllabus each day for readings and assignments. Create a list of assignments for each day and estimate how long each assignment will take.



Check Pattern Measurements

Before you place the pattern pieces on the fabric, you need to make sure that the pattern you selected fits your body. To do that, compare your measurements with the body measurements listed on the pattern envelope. If you need to make any alterations, or changes to the pattern to make the garment fit, do it before you cut the fabric.

Length Adjustments

Use the two parallel lines labeled lengthen or shorten. Your teacher can show you how to do this. Be sure to make the same changes on both the front and back pieces of the pattern.

Width Adjustments

Determine, or figure out, how much ease is included in the pattern. **Ease** is the amount of fullness added for movement and comfort. The amount of ease depends on the stress that will be put on that part of the garment when it is worn. Your teacher can show you how to adjust the amount of ease.



Explain Why are pattern changes sometimes needed?

Pin the Pattern

Look at the layout on the guide sheet to see how to fold your fabric. Most layouts show the right sides of the fabric folded together. Lay the pattern pieces on top of the fabric. The lengthwise grain markings must be parallel to the selvage. Check them with a ruler as you pin. Do not cut out any pieces until they have all been pinned in place. Follow these steps to pin your pattern:

- Step 1** Pin the large pattern pieces that belong on the fold.
- Step 2** Pin the pattern pieces that have a grain-line arrow. To check the grain line, place a pin at one end of the grain-line arrow. Measure from the arrow to the selvage of the fabric edge. Position the pattern so that the other end of the arrow is exactly the same distance from the edge. Then pin the piece in place.
- Step 3** Place the pins diagonally inside the cutting line. This keeps the fabric flat and makes it easier to cut.
- Step 4** Place pins about 2 inches (5 cm) apart.
- Step 5** Double-check your pinned layout against the layout on the pattern guide sheet.

Cut Out the Pattern

It will be easier to sew straight seams if you cut the edges of the fabric evenly. Follow these steps to cut out your pinned pattern:

- Step 1** Place the fabric flat on the table. Use one hand to hold the fabric in place and the other hand to cut.
- Step 2** Cut with long, even strokes.
- Step 3** Cut in the direction of the arrows printed on the pattern's seamline. In this way, you will be cutting with the fabric grain, and you will not stretch the fabric.
- Step 4** Cut around the outside of each notch. Cut double and triple notches together with one long edge across the top.
- Step 5** Leave the pattern pieces pinned to the fabric until you are ready to stitch that piece.



Calculate Measurement

You need to increase the waistline of your pattern by 4 inches. How much should you increase the measurement for each seam allowance?

Math Concept Multiply Fractions To multiply fractions, multiply the numerators and multiply the denominators. Mixed numbers must first be changed to improper fractions.

Starting Hint Rewrite the whole number representing the increase as a fraction. Then multiply that fraction by $1/a$, with a representing the number of seam allowances. To increase a waistline by two inches, the formula would be $2/1 \times 1/4 = 2/4$. Then $2/4$ would be reduced to $= 1/2$.

Math For more math help, go to the Math Appendix located at the back of this book.

NCTM Problem Solving Understand the meanings of operations and how they relate to one another.



Cutting Patterns

Before you cut out your project, practice cutting fabric scraps.

Why are clean edges on the fabric pieces important?

Character Counts

Honesty

Susan is working on the final semester project for her sewing lab. The project is 20% of the final class grade. Susan needs to score at least 93% on her project to pass the class. Susan's best friend, Megan, who attends a different school, earned an A on her final sewing project. Megan offers to let Susan use her own completed project for the class. Susan has delayed in starting her project, and is now almost out of time to turn in her best quality work.

You Make the Call

Should Susan use Megan's sewing project and say that it is her own? Write a paragraph that explains what you think Susan should do.

Transfer Markings

After you cut out your pattern, **transfer**, or move, the markings from the pattern to the fabric. Markings must be visible as you sew, but they should never show on the outside of a finished garment. The lines and symbols on pattern pieces are important guides during construction. Markings include darts, pleats, tucks, dots, fold lines, and buttonholes. Hemlines need not be marked. Different marking methods may be used for different fabrics and types of marks. These include tailor's chalk, tracing paper, air-soluble pens, and water-soluble marking pens. When transferring markings:

- Always test your marking device on a fabric scrap to make sure the marks come out of the fabric completely.
- When using a tracing wheel and paper, choose a color of tracing paper that will show up on the fabric.
- Mark dots with an X.
- Mark the ends of darts with a short line.
- Mark each seamline so that you will know exactly where to stitch.

Section 18.1 After You Read

Review What You Have Learned

1. **Identify** reasons why pattern preparation is important.
2. **Name** five steps you would take in planning to sew.

Practice Academic Skills



English Language Arts

3. Write a detailed paragraph that discusses why fabric preparation is important.

NCTE 4 Use written language to communicate effectively.



Social Studies

4. Many fleece and wool garments are made in Peru because of the animals in the region, such as sheep, llamas, and alpacas. Conduct research to find three other types of contemporary or historical fabrics. List the geographic region and the types of garments or objects made from the fabric.

NCSS 1 A Analyze and explain the ways groups, societies, and cultures address human needs and concerns.



Check Your Answers Check your answers at this book's Online Learning Center at glencoe.com.

Reading Guide

Before You Read

Preview Choose a content or academic vocabulary word that is new to you. When you find it in the text, write down the definition.

Read to Learn

Key Concepts

- ✓ **List** ten basic sewing techniques.
- ✓ **Describe** what a serger does.

Main Idea

Sewing and serging skills allow you to achieve a professional quality in your sewing projects.

Content Vocabulary

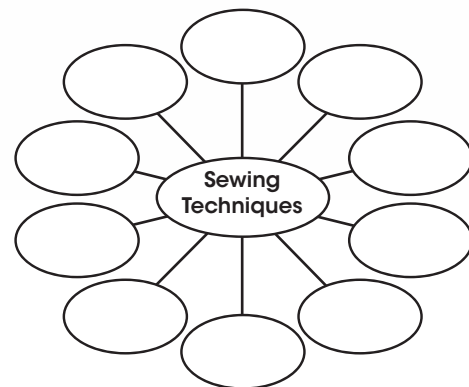
- | | |
|----------------------|----------------|
| ● staystitch | ● shank button |
| ● feed dog | ● cone |
| ● casing | ● looper |
| ● sew-through button | ● tail chain |

Academic Vocabulary

- | | |
|----------|-----------|
| ■ result | ■ product |
|----------|-----------|

Graphic Organizer

As you read, list the ten basic sewing techniques described in this section. Use a chart like the one shown below to help organize your information.



Graphic Organizer Go to this book's Online Learning Center at glencoe.com to print this graphic organizer.

Academic Standards



English Language Arts

NCTE 4 Use written language to communicate effectively.



Mathematics

NCTM Number and Operations Compute fluently and make reasonable estimates.



Social Studies

NCSS 1D Culture Compare and analyze societal patterns for preserving and transmitting culture while adapting to environmental or social change.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Sewing machines have come a long way since they were first introduced for home use in the late 19th century. Today's sewing machines are computerized. They can do all the traditional stitches, and some models can even embroider your own design onto a garment. This section will introduce you to basic sewing machine techniques, and you will become familiar with the parts and functions of an overlock machine, also called a serger.



Organization Skills

Develop a Routine

Set aside a specific time each day to work on homework. Create a place to study. Sit at a desk or table. Do not lie on your bed or listen to music. Choose a place with as few distractions as possible.



Vocabulary

You can find definitions in the glossary at the back of this book.

Beginning to Sew

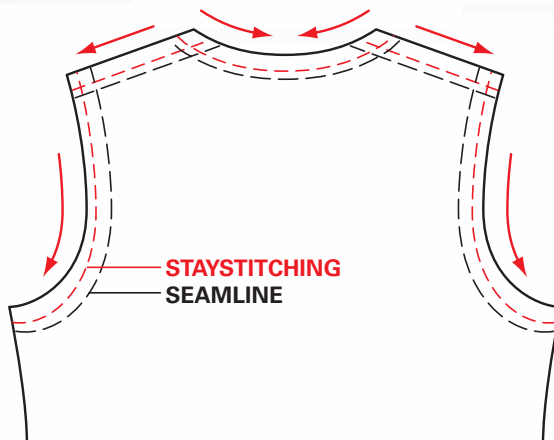
When you make a garment, the first step is to staystitch the seams. A **staystitch** is a row of stitching made very near the seamline within the seam allowance. Staystitching, as shown in **Figure 18.3**, prevents stretching and helps in turning under edges of hems and bands.

Stitch Straight Seams

You will sew most projects together by stitching straight seams. To sew a seam, place two pieces of fabric right sides together. Line up the edges so that they are even. Match all markings and notches, and pin the two pieces together. The heads of the pins should be near the outside edges of the fabric. For most sewing, pins should be placed about 2 inches (5 cm) apart. Now look at the throat plate on your sewing machine. The line markings show how far the needle is from the seam edge. Most seams are $\frac{5}{8}$ inch (1.5 cm) wide. Find the line on the machine that is $\frac{5}{8}$ inch (1.5 cm) from the needle. Keep the fabric edge against this mark as you sew and your seam will be straight. As you stitch, guide the fabric with both hands, but do not push it. The feed dog will move the fabric as you sew. The **feed dogs** are the parts of the machine that position the fabric for the next stitch. Operate the machine at a slow, even speed. Backstitch 2–3 stitches at the beginning and end of the seam.

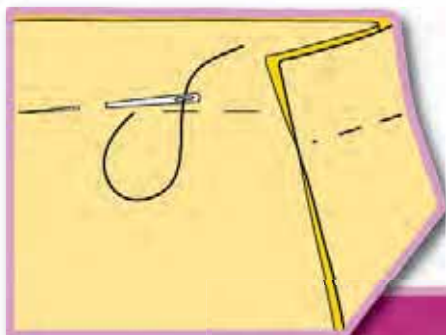
Figure 18.3 Prepare Seams

Prevent Stretching Before you begin sewing seams, always staystitch near the seams to prevent the seam edges from stretching and raveling. *What might happen to a garment if the seams are not staystitched?*



Sew by Hand

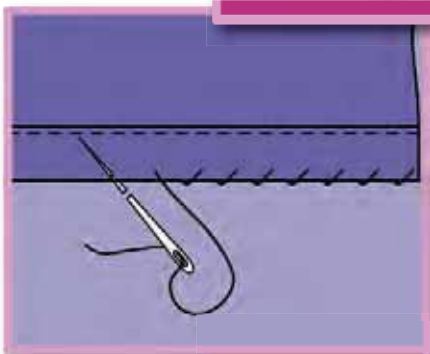
Some sewing must be done by hand. Hand sewing gives you more control than you have using a sewing machine or serger. Try these basic stitches.



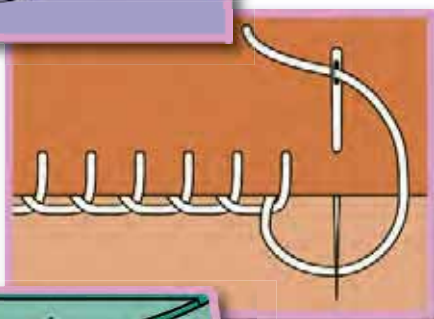
Basting Stitch The basting stitch is a temporary stitch used to hold fabrics together for fittings and for matching plaids and seams. To baste, pin fabric layers together and use even stitches.



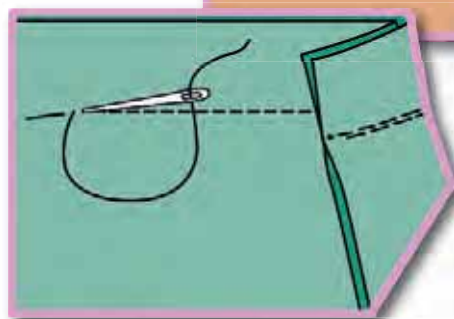
Slipstitch The slipstitch provides an almost invisible finish. Slipstitching is used on patch pockets, hems, linings, and trims. Slide the needle in one folded edge and out, picking up a thread of the under layer.



Hem Stitch This stitch finishes different hems, especially those with seam binding or a folded edge. A hem stitch is made by taking a tiny stitch in the garment, then bringing the needle diagonally through the hem edge.



Blanket Stitch The blanket stitch can be used as a decorative edge finish and as thread loops, eyes, belt carriers, bar tacks, and French tacks. Stick the threaded needle through the right side of the fabric and pull it out at the edge. Keep the thread from the previous stitch under the needle point, pulling the needle and thread through and over the edge.



Backstitch As one of the strongest stitches, backstitches repair machine-stitched seams and fasten thread ends securely. The backstitch is made by carrying the thread back half the length of the preceding stitch. Bring the needle through to the underside of the fabric. Insert the needle back at the beginning of the first stitch, and bring it out again one stitch length in front of the thread.

Stitch Curved Seams

With curved seams, you must guide the fabric with your hands so that the curves are smooth. You also need to keep the stitching an even distance from the edge of the fabric. The best way to learn how to sew curved seams is to practice. Start by stitching curves on a piece of paper. Then practice on scraps of fabric.

Turn Corners

Learning how to turn corners, or pivot, is another skill that takes practice. When turning a corner, follow these steps:

- Step 1** Slow down the sewing machine when you come to a corner.
- Step 2** Lift the presser foot. Turn the fabric, with the needle still in it. Put the presser foot back down again and stitch the next side. This keeps the sewing line straight and the corner sharp.

Add Seam Finishes

After stitching your project, you may need to add a seam finish. Seam finishes are treatments used on the seam edges to prevent fabric from raveling. The most effective seam finish depends on the type of fabric being used. If the fabric ravel only slightly, pink the edges with pinking shears. For greater protection against raveling, stitch $\frac{1}{4}$ inch (6 mm) from each edge before pinking. If your fabric ravel easily, use a zigzag finish. Some fabrics do not ravel and do not need seam finishes.



↑ Fabric Placement Keep the fabric edge against the mark on the needle plate as you stitch. *Why should you practice stitches on fabric scraps before you begin sewing?*



↑ Straight Stitch Stitching a straight line takes practice. *Why should you leave the needle in the fabric before lifting the presser foot?*

Make Darts

Darts are used to help shape fabric to the curves of the body. They are usually found at the bustline, waistline, elbow, or back of the shoulder. For darts to create the right effect, they must have the correct width and shape. Make sure that they are accurately marked, folded, and pinned before you stitch them.

Gather Fabric

When you need to fit a longer piece of fabric to a shorter one, you can gather the longer piece of fabric. For example, you might use gathering at the tops of sleeves or at the waist of a full skirt.


Ease Fabric

When one piece of fabric is only slightly longer than the piece that it will join, easing is used. Easing creates a slight fullness. To ease fabric, you need to pin it before you stitch the seam. Place the fabric right sides together, matching the notches and ends. Pin every $\frac{1}{2}$ inch (1.3 cm). When you stitch, place the longer piece of fabric on top and gently ease in the extra fullness. An eased seam should look smooth, without puckering.

Make Casings

You may need to sew casings if your garment has a pull-on waistband or sleeve band. **Casings** are fabric tunnels made to enclose elastic or drawstrings. When you draw up the elastic or drawstring, a gathered appearance is created.



 **Gathering** Two pieces of fabric can be fitted by gathering. *Where would you gather fabric in a garment?*

Types of Casings

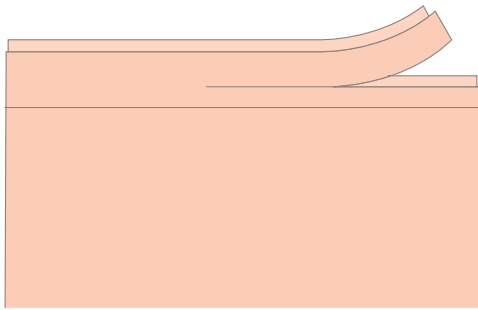
When you sew a casing, make sure that it is $\frac{1}{4}$ to $\frac{1}{2}$ in. (6 mm–1.3 cm) wider than the elastic or drawstring it will enclose. This will allow the elastic or drawstring to move freely through the fabric tunnel. The two types of casings are fold-down and applied. A fold-down casing is often used for pull-on pants and skirts. An applied casing is often used at the waistline. To make an applied casing, you need to stitch a separate strip of fabric or bias tape to the garment.

Make Facings

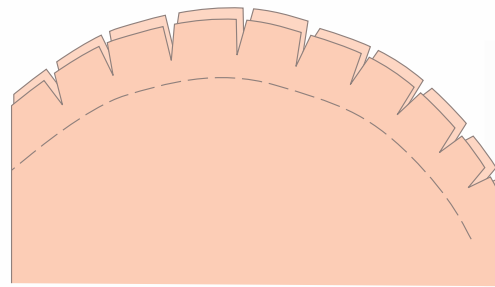
Facings are used to finish the raw edges of a garment. Facings are sewn around the edges of necklines, armholes, and some waistlines. You stitch facings to the right side of the garment and then turn them to the inside. To achieve a smooth appearance, trim and grade the seam allowance to reduce bulk. **Figure 18.4** shows you how to do this.

Figure 18.4 Adjusting Seams

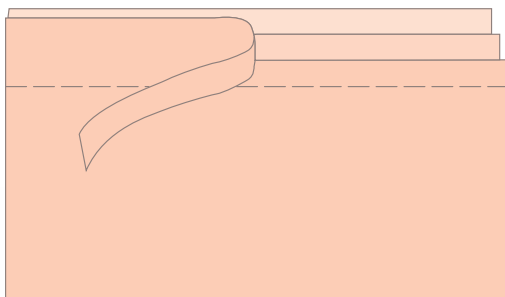
Reducing Bulk There are four ways to reduce bulk in seams. *Can you identify when you would use each of the four ways of reducing bulk in seams?*



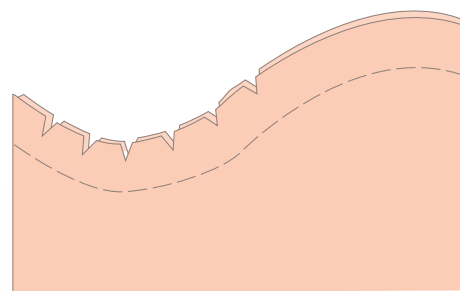
Trimming A seam is trimmed by cutting the seam allowance to $\frac{3}{8}$ or $\frac{1}{4}$ inch (9 or 6 mm). This reduces the bulk of the seam. This is usually done when the seam is enclosed in a collar, cuff, facing, waistband, or set-in sleeve.



Clipping Curved seams are clipped so that they will lie flat. Slits are cut into the trimmed seam allowance about every $\frac{1}{4}$ inch to $\frac{1}{2}$ inch (6 mm–1.3 cm). Clip only to within $\frac{1}{8}$ inch (3 mm) of the seamline, being careful not to cut through the stitching.



Grading A seam is graded by trimming the seam allowances to different widths. Trim the seam allowance toward the inside of the garment narrower than the outside one. This further reduces the bulk. Grading is often done on seams for facings.



Notching Some curved seams that have too much fabric in the seam allowance may need to be notched. Little Vs or triangles are cut out of the trimmed seam allowance.

Make Drawstring or Pull-On Pants

In this activity you will sew a basic pair of drawstring or pull-on pants using the skills you have learned in this chapter. Before you begin, read through the entire Life Skills Lab assignment. Write down any questions that you may have about the assignment. Reread the text or ask your teacher for help if you need it.



Supplies

- ✓ *Pants pattern of your choice*
- ✓ *Cotton fabric such as flannel*
- ✓ *Elastic*
- ✓ *Thread*

Develop Your Plan

- Choose a basic pants pattern in your size.
- Acquire the amount of fabric yardage and thread needed.
- Gather the notions you will need to construct the pants, including scissors, pins, and tape measure.
- Read through the pattern guide sheet to become familiar with the instructions.

Implement Your Plan

- Pre-wash, dry, and press your cotton fabric.
- Circle the correct pattern layout on the pattern guide sheet.
- Cut out the pattern pieces for your size.

- Pin the pattern pieces to your fabric according to the pattern layout.
- Cut out the pattern pieces from your fabric.
- Transfer markings onto your fabric from the pattern pieces.
- Wind the bobbin and insert it in the sewing machine. Thread your machine needle.
- Follow the instructions on the pattern guide sheet to sew your pants.

Evaluate Your Results

What did you learn about pattern layout? Is there anything you would change the next time you make a pair of pants? Write one or more paragraphs to explain your answer.



Projects and Activities Go to this book's Online Learning Center through glencoe.com for more projects and activities.

Sew on Buttons and Snaps

There are two types of buttons: sew-through and shank. A **sew-through button** has two or four holes through it and no loop on the back. It is used when materials joined need to lie flat. A **shank button** has a stem on the back. Shanks are used with thick fabrics. When you attach a sew-through button, you will need to add a thread shank. **Figure 18.5** shows you how to sew on both types of buttons.

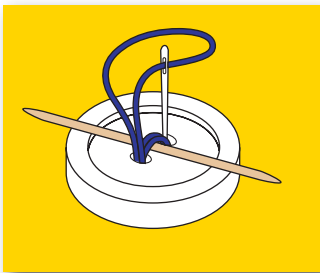
Snaps are used to hold together overlapping edges. The two parts of a snap are the ball half and the socket half. Follow these guidelines when replacing a snap:

- Place the ball half of the snap on the underside of the overlap, far enough from the edge so that it will not show. Sew five or six stitches in each hole. Carry the thread under the snap from hole to hole.
- Mark the position of the socket half. Stitch it in place. Secure the thread and knot it.

 **Reading Check** *Analyze* Why do garments have different types of closures?

Figure 18.5 Sewing on Buttons

Repair Skills Learning to sew on buttons is an essential clothing repair skill. *Where would you use each of the button types on a garment?*



Sew-Through Buttons

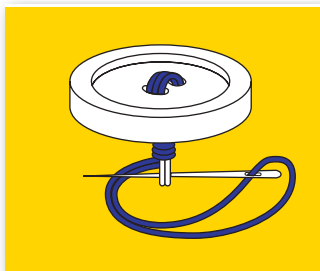
Step 1 Start on the underside of the fabric, and bring the needle and thread to the right side.

Step 2 Stick the needle and thread through one hole in the button. Place a toothpick across the top of or underneath the button to allow for a thread shank. Stitch in and out several times through the fabric and buttonholes and over the toothpick. Finish stitching so that your needle and thread are under the button.

Step 3 Remove the toothpick. Pull the button to the top of the thread loop. Wind the thread several times around the stitches under the button to make a thread shank.

Step 4 Bring the needle back to the wrong side of the fabric.

Step 5 Secure the thread by taking several small stitches in the fabric and knot it.



Shank Buttons

Step 1 Sew a shank button in place using five or six small stitches through the shank and into the fabric.

Step 2 Fasten the thread securely.

Step 3 Insert an eye fastener and sew the eye in place first.

Serging Basics

A serger is a machine that sews, trims, and finishes a seam in one step. A serger can save time and handle a variety of fabrics, from slippery silks to stretchy knits. A serger keeps the edges from raveling on all fabrics. On stretchy fabric, serging also allows for movement of the fabric.

How Sergers Work

A serger feeds several strands of thread through guides that are placed above the machine. **Cones** are the large cylinders used to hold large spools of thread. Sergers use cones instead of spools because sergers use more thread than sewing machines do. A cone can hold up to five times more thread than a spool can hold.

Sergers are known as two-thread, three-thread, four-thread, or five-thread, depending on the number of threads used to make the stitch. Each thread passes through its own tension dial. Sergers do not have bobbins. Instead, they have **loopers**, which are rounded parts that hold the thread inside a serger. The looper threads loop around each other and are interlocked with the needle thread or threads. Depending on the model, sergers may have one or two needles. The remaining threads are wrapped by the loopers. **Figure 18.6** on page 408 shows the basic parts of a serger.

Small knife blades are located inside the serger. These knives trim the fabric as it passes through the machine. The **result**, or outcome, is a seam allowance that is exactly the width of the serger's stitch. As you serge, the entire seam allowance is wrapped inside the serge stitch.

A serger does not replace a sewing machine because it cannot sew a single line of locked stitches, create buttonholes, or insert zippers. It allows you to use a greater variety of fabrics, including stretchy knits and sheers. Sergers are most commonly used to sew knits and stretch fabrics. Sergers can also be used to sew conventional skirt or pant hems or narrow, rolled hems, such as those on scarves safely.



Serging Without Pins

Serging with pins in place can cause safety concerns for you and others around you. Doing this can also cause serious damage to the serger's knife blades. Use these tips to use a serger

- Instead of pinning the fabric into position, baste the fabric, or tack it with glue.
- Be sure to check each pattern piece for pins before sewing.

Financial Literacy

Sewing Costs

Katie needs to buy materials for a sewing project, but she does not have a calculator. She has \$25.00 to spend. Does she have enough money? Use rounding to determine the total cost of the following items.

Fabric.....	\$8.99	Thread.....	2.15
Pattern.....	6.50	Pins.....	.99

Math Concept **Cost Estimation** To estimate the sum of a set of numbers, round the amounts to the same place-value position and add. When rounding, look at the first digit to the right of the decimal point. If the first digit to the right of the decimal point is 5 or greater, round up to the nearest dollar. If the digit is less than 5, round down.

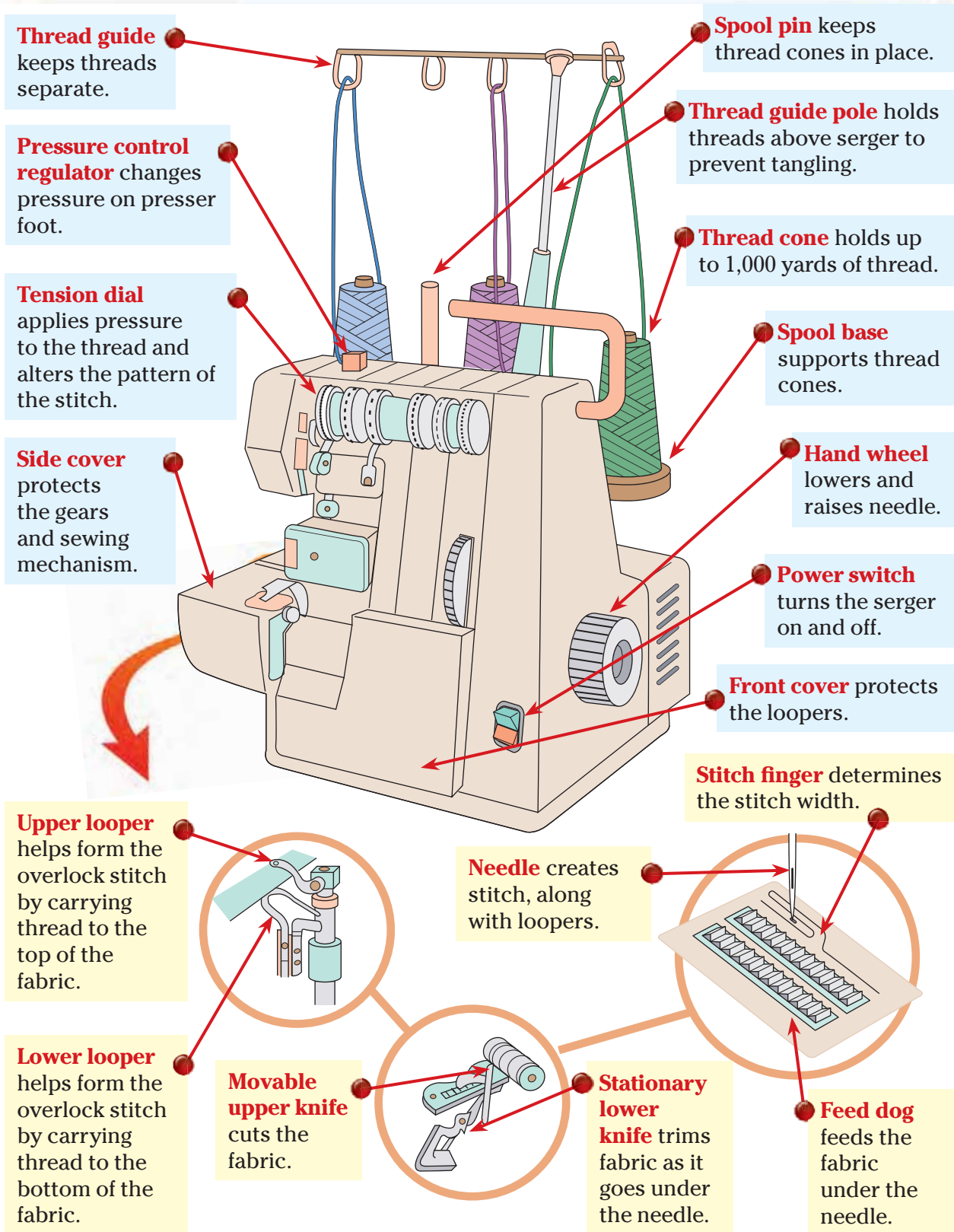
Starting Hint: To round \$8.99 to the nearest dollar, look at the number to the right of the decimal. Since 9 is more than 5, you would round \$8.99 up to \$9.00.

NCTM Number and Operations Compute fluently and make reasonable estimates.

Math For math help, go to the Math Appendix at the back of the book.

Figure 18.6 Basic Serger Parts

High-Speed Machine A serger has many working parts. *Find the loopers in this diagram and explain their function.*




Using a Serger

When you are ready to begin a project, set the stitch-length and tension dials on the serger to the desired settings. Use fabric scraps to test how the serged stitch will look on the final **product**, or result, either with or against the grain. Keep adjusting the stitch length and tension until you achieve the result that you want.

When you have tested the serge stitch on fabric scraps and basted your fabric, you are ready to serge. Position the fabric for feeding through the machine. Unless the fabric is unusually thick, you should not need to lift the presser foot. The fabric is moved along by the feed dogs. You should begin and end each seam with a **tail chain**, a length of thread shaped like a chain. A tail chain is made by pressing on the presser foot without placing fabric under the needle. It keeps the fabric from raveling and eliminates the need to tie off the threads of the seam.



 **Difficult Fabrics** Hard-to-handle fabrics, such as stretchy knits, are easier to handle on a serger than on a regular sewing machine. *Which garments in your wardrobe have “serged” seams?*

Section 18.2 After You Read

Review What You Have Learned

1. **Identify** the two types of casings and how each is used.
2. **Identify** the advantages of using a serger.

Practice Academic Skills

English Language Arts

3. Choose three items of clothing from your closet. Determine if the stitching was done by a sewing machine, a serger, or both. Explain how you can tell.

NCTE 4 Use written language to communicate effectively.

Social Studies

4. The art of quilt making is experiencing a revival. Quilts are works of art in museums, and can be seen on display at fairs and festivals. Write a paragraph to explain how a quilt can serve as a historical record.

NCSS 1A Compare and analyze societal patterns for preserving and transmitting culture while adapting to environmental or social change.

 **Check Your Answers** Check your answers at this book's Online Learning Center at glencoe.com.

Discovering Careers

Focus on Careers in Clothing ▼



Would you like to help people plan their wardrobes or design clothing for them to wear? Are you creative and have a knack for putting outfits together? If you answered yes to either of those questions, you might want to consider a future career in fashion or design. The following chart explores several careers in the fashion industry.

Job Title	Job Description
Clothier	Designs original garments, sews from existing patterns, and does alterations and repairs.
Clothing Inspector	Checks finished garments for stitching, colors, and sizes. Corrects errors in partially completed garments or returns garments for repairs.
Clothing Clerk	Helps customers find clothing. Checks sizes and makes recommendations to the customer. Organizes and stocks clothing racks.
FACS Teacher	Teaches Family and Consumer Sciences courses in middle or high schools.
Personal Shopper	Assesses clients' styles, needs, wardrobes, and purchases items for clients.
Wardrobe Consultant	Assembles wardrobes to project a desired image. Teaches basic clothes-buying strategies such as mixing, matching, and accessorizing.

Career Activities ▼

At School

1 Select three of the careers listed. Research the education, training, and work experience required for each career. Write a summary of your results.

At Home

2 Role-play with a family member the role of wardrobe consultant. Let your family member be your client. Determine the image he or she wants to project. Compile a wardrobe from magazine photos or online to show your client.

At Work

3 Like all clothing, uniforms require a design and someone to make them. List at least five jobs you can identify by the uniform.

In the Community

4 Contact and interview someone in your community who works in the fashion industry. Ask this person to describe what his or her typical work day is like. Share what you learned with your class.

Learn More Online  glencoe.com

Career Investigations Go to this book's Online Learning Center for activities and worksheets to help you explore careers.



Chapter Summary

Section 18.1 Fabric and Pattern Preparation

To prepare fabric for sewing, preshrink it and check the grain. Then read the pattern guide sheet. This will allow you to understand the overall project, and will help you avoid making mistakes. Check the pattern pieces and compare the measurements to those on the pattern envelope and make changes as needed.

Section 18.2 Sewing and Serging Basics

Sewing is an enjoyable creative activity that can help you expand your wardrobe by adding new garments and repairing older garments. There are ten basic sewing techniques. A serger sews, trims, and finishes an edge in one step. Serging allows you to use a variety of fabrics and to give your projects a professional look.

Words You Learned

1. Use each of these content vocabulary words and academic vocabulary words in a sentence.

Content Vocabulary

- selvage (p. 393)
- bias (p. 393)
- guide sheet (p. 394)
- layout (p. 394)
- marking (p. 394)
- ease (p. 396)
- staystitch (p. 400)
- feed dog (p. 400)
- casing (p. 403)
- sew-through button (p. 406)
- shank button (p. 406)
- cone (p. 407)
- looper (p. 407)
- tail chain (p. 409)

Academic Vocabulary

- determine (p. 396)
- transfer (p. 398)
- result (p. 407)
- product (p. 409)

Review Key Concepts

2. **Explain** why fabric preparation is important.
3. **Outline** the steps in fabric preparation.
4. **List** ten basic sewing techniques.
5. **Describe** what a serger does.

Critical Thinking

6. **Explain** why various fabrics might need to be prepared for sewing differently.
7. **Describe** problems that might occur if you do not prepare your pattern before beginning
8. **Compare and contrast** the uses of a serger versus the uses of a regular sewing machine.
9. **Analyze** which sewing project would be more challenging: a skirt with a fold-down casing or a round pillow with a ruffle. Explain your answer.

Real-World Skills and Applications

Problem-Solving

10. **Making Decisions** Evan bought a pattern, some fabric, and notions. He plans to start sewing immediately. Is he leaving out a step? Develop a plan of action for Evan that includes the steps that you recommend he take before he begins sewing.

Interpersonal and Collaborative

11. **Sewing Machine Timeline** Follow your teacher's instructions to form into teams. Work in teams to research and prepare a timeline display showing the history of the sewing machine. When and where was the first sewing machine developed? Who invented it? Was it first used in private homes or by clothing manufacturers? Present your findings to your class.

Financial Literacy

12. **Comparison Shopping** Think of two items of clothing you would like to buy. Comparison shop for the items of clothing by locating them in different places. You may find the items of clothing in local stores, magazines, and by searching the Internet. Write down where you found the items and how much they cost. Compare the price of the items to determine which store or other source offers the best buy. If you find the items of clothing on the Internet, be sure to add handling and shipping costs to the total cost of the items. Shipping costs may vary based on the type of shipping you choose and by the ship to location.



13. **Sewing Lab.** Make a personalized pillowcase. Cut a rectangle of fabric $42\frac{1}{2}$ inches \times $35\frac{1}{2}$ inches. Serge around the edges of the rectangle. Fold the fabric right sides together, and stitch along one long and one short edge. Turn up a 3-inch hem along the remaining short end, facing the wrong side. Stitch in place. Turn the pillowcase right side out.

14. **Research Clothing History** Clothing styles have changed throughout history. Certain features of clothing, such as colors and fabrics, often represented the status and wealth of the wearer. Choose a historical period and find examples of the clothing worn by both men and women of the period. Did different social groups wear different types of clothing? Prepare a short presentation for your class on what you have found.



15. **Clothing Today** With permission from your parents or teacher, go online to research teen clothing styles today. How have they changed since a decade ago? One hundred years ago? Find examples of teen clothing styles from past decades and of today's teen styles to include in your Life Skills binder.

Academic Skills



English Language Arts

16. **Advertise** Imagine that your school is creating a Sewing Club. You have been asked to create a flyer to hand out to your classmates encouraging them to join. Develop a flyer that would encourage both boys and girls to join the club. What information should you include in the flyer? What type of artwork? Describe the advantages of being a member of the club

NCTE 5 Use different writing process elements to communicate effectively.



Science

17. **Form a Hypothesis** The scientific method is a way to answer questions.
Procedure Collect information, form a hypothesis, study the results, and draw conclusions that can be tested by others. One hypothesis might read: It is more expensive to buy clothes in a store than it is to make them.
Analysis Form your own hypothesis about clothing costs and write a list of facts that support your hypothesis.

NSES A Develop abilities necessary to do scientific inquiry, understandings about scientific inquiry.



Mathematics

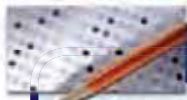
18. **Calculate Average Project Time** Nelly, Shar, and Keisha spend a total of 12 hours working together on an assigned sewing project. Each must keep track of the time he or she spends on the project. What is the average number of minutes each of them spends working on the project?

Math Concept Use Variables and

Operations Translating words into algebraic expressions requires knowledge of the meaning of the verbal descriptions. In algebra, a variable is a symbol used to represent a number. Arithmetic operations include addition, subtraction, multiplication, and division.

Starting Hint Since you are solving for the answer in minutes, first convert the hours into minutes. If x = the average number of hours each worker spends on the project, the algebraic expression for the problem is $3x = (12 \times 60)$. Solve for x .

NCTM Algebra Represent and analyze mathematical situations and structures using algebraic symbols.



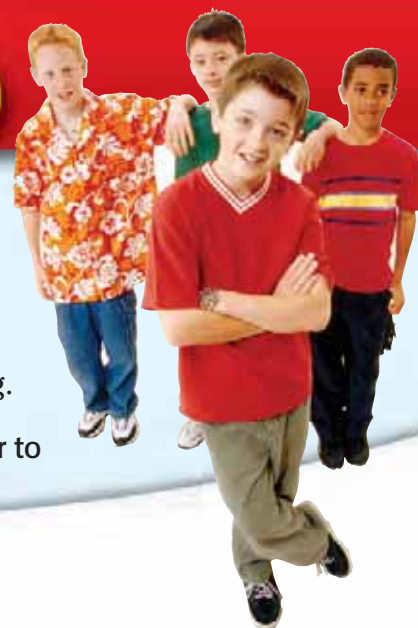
Standardized Test Practice

Multiple-Choice

Read the paragraph. Then read the question and the answer choices. Choose the best answer and write it on a separate sheet of paper.

Test-Taking Tip In a multiple-choice test, read the question before you read the answer choices. Try to answer the question before you read the answer choices. This way, the answer choices will not confuse you.

19. Justin is working on a sewing project for his life skills class. He reads the guide sheet included in the pattern he has chosen. The guide sheet says to be sure to check the *bias*. In this sentence, what does the word *bias* mean?
- a distortion of a set of statistical data
 - voltage applied across an electronic device
 - running diagonally across the weave of a fabric
 - having a preference



Design Your Own Clothing

Knowing how to sew can help you create unique clothing designs. You can learn about designs from studying pattern booklets in sewing stores. Reading fashion magazines may give you ideas for stylish projects. This project will help you design your own clothing.



My Journal Complete the journal entry from page 369, and refer to it to complete your design concept.

Project Assignment ▼

In this project, you will:

- Sketch ideas for a clothing design.
- Create a sewing pattern for your clothing design.
- Describe your design's practicality and style.
- Interview someone who sews professionally.
- Present your clothing design to your class.
- Include this project in the eighth section of your personal Life Skills binder.

Step 1

Develop Your Unique Design Concept

Pick a sketch that you believe you could successfully design. Color and add detail to the sketch. List the materials someone might need to sew your design and begin to write step-by-step instructions they must follow.

Step 2

Create a Pattern for Your Design

Review pattern markings on page 395 (Figure 18.2). Draw a pattern for your clothing design using the proper markings. Use these questions to write step-by-step instructions to go with your pattern:

- ✓ What supplies must be on hand before starting the project?
- ✓ Will a sewing machine be necessary, or can it be sewn by hand?
- ✓ Does the design call for particular types of stitches?
- ✓ What is the concept for the final project?

Step 3

Interview Someone Who Uses Sewing in their Work

Interview a seamstress, tailor, clothing designer, or anyone who sews professionally. Ask these questions:

- ✓ Do you think my pattern would work? Why or why not?
- ✓ What potential problems do you see in my design?
- ✓ What could I do to improve my design?

Use these interviewing skills when conducting your interview and these writing skills when writing the summary of notes from your interview.

Interviewing Skills

- Record interview responses and take notes.
- Listen attentively.

Writing Skills

- Use complete sentences.
- Use correct spelling and grammar.



Step 4 Create and Present Your Pattern

Use the Life Skills Project Checklist on the right to plan and complete your sketch and sewing pattern. Give an oral report on the project.

Use these speaking skills when presenting your final report.


Speaking Skills

- Speak clearly and concisely.
- Be sensitive to the needs of your audience.
- Use standard English to communicate.

Step 5 Evaluate Your Presentation

Your project will be evaluated based on:

- ✓ Your sketched design concepts.
- ✓ The sewing pattern of your clothing design.
- ✓ The step-by-step written instructions.
- ✓ The summary written from interview notes.
- ✓ Grammar and sentence structure.
- ✓ Presentation to the class.
- ✓ Creativity and neatness.

 **Evaluation Rubric** Go to this book's Online Learning Center through glencoe.com for a rubric you can use to evaluate your final project.

NCTE 3 Apply strategies to interpret texts.

NCTM Geometry Use visualization, spatial reasoning, and geometric modeling to solve problems.

Life Skills Project Checklist

Research Clothing Design

- ✓ Sketch designs for a sewing project.
- ✓ Read sewing pattern booklets for ideas.
- ✓ Design a sewing pattern for something to wear.
- ✓ Interview someone who uses sewing skills as part of his or her job.

Writing Skills

- ✓ Write step-by-step instructions explaining how to use your pattern.
- ✓ Describe the style and purpose of your design.
- ✓ Write a summary from your interview with someone who sews professionally.

Present Your Findings

- ✓ Prepare a short presentation to show your clothing pattern, and explain how to sew your design.
- ✓ Invite the students of the class to ask any questions they may have. Answer these questions with responses that respect their perspectives.
- ✓ Add this project to your Life Skills binder.

Academic Skills

- ✓ Conduct research to gather information.
- ✓ Communicate effectively.
- ✓ Organize your presentation so the audience can follow along easily.
- ✓ Thoroughly express your ideas.