Exploring Life Skills – Apparel

Directions:

1) Get textbook "Building Life Skills"
2) Read/Scan Chpt 32 (Fibers, Fabrics & Sewing Tools) pages 384-395
3) Complete "Review It" on page 396 questions 1-10

1._____

2._____

3._____

4._____

5._____

6._____

7.

Handwheel

Spool pin

Take up lever

Presser foot

8._____

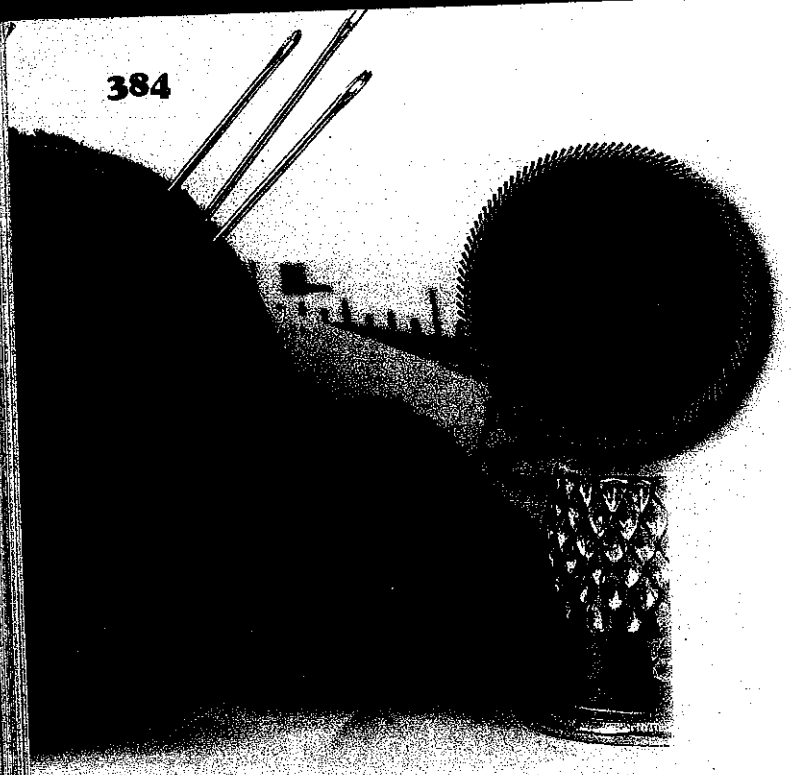
9. _____

10. _____

4) Complete "Think about it more" page 396 questions 1 & 2

1. _____

2. _____



Fibers, Fabrics, and Sewing Tools

Everything You Need to Know Before You Start to Sew!

How are fibers and fabrics related?

Objectives

After studying this chapter, you will be able to

- classify fibers as natural or manufactured.
- state the functions of various fabric finishes.
- identify and select various pieces of sewing equipment and notions.

Words to Know

fibers	weaving
yarns	knitting
fabrics	finish
natural fiber	serger
manufactured fiber	notions
microfibers	fasteners
blend	interfacing
combination	

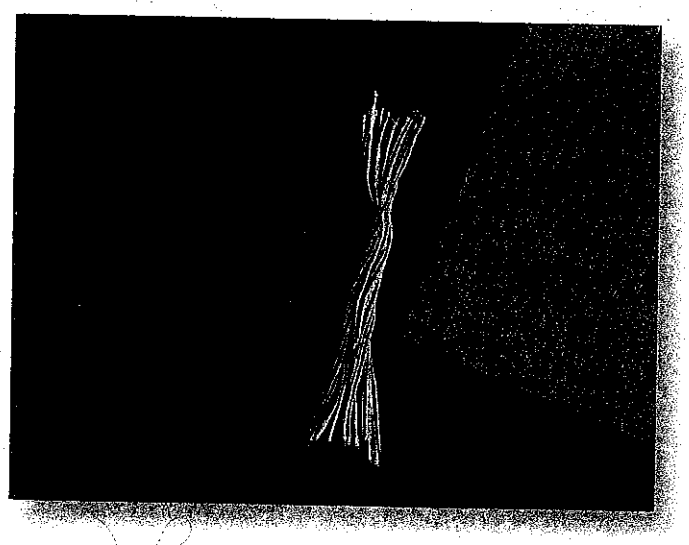
(Also note the names of tools and parts of the sewing machine shown in the illustrations.)

Why does your wool sweater feel warmer than your cotton shirt? Why are some fabrics, such as denim, more durable than other fabrics, such as satin? Why do some fabrics wrinkle while others resist wrinkling? Answers to these questions can be found in this chapter. By learning about fibers and fabrics, you will be able to make wise clothing decisions.

Fibers are the basic units used in making fabrics. Fibers are formed into ***yarns***. These yarns are then woven or knitted to make ***fabrics***, 32-1.

Use a scrap of fabric to see how fibers, yarns, and fabrics are related. First, pull a "thread" from the fabric. This is a yarn. Then untwist the yarn. These hairlike strands are the fibers. Fibers may be continuous strands called *filaments* or short lengths called *staple fibers*.

The characteristics of fibers determine the quality of a fabric. Fibers have certain properties that influence the strength, texture, absorbency, warmth, and shrinkage of fabrics. The properties of a fiber depend on its source. Fibers come from natural sources and chemical sources. This is why there are two major groups of fibers—natural fibers and manufactured fibers.



32-1 Fibers (left) are combined to make yarns (center). Yarns are then combined to make fabrics (right).

Natural Fibers

Natural fibers come from plant, animal, and mineral sources. The quality of natural fibers can vary depending on the type of plant or animal and growing conditions. They must go through processing and cleaning before they are made into yarns. Natural fibers have special properties that cannot be copied by science. Characteristics of natural fibers are given in Chart 32-2.

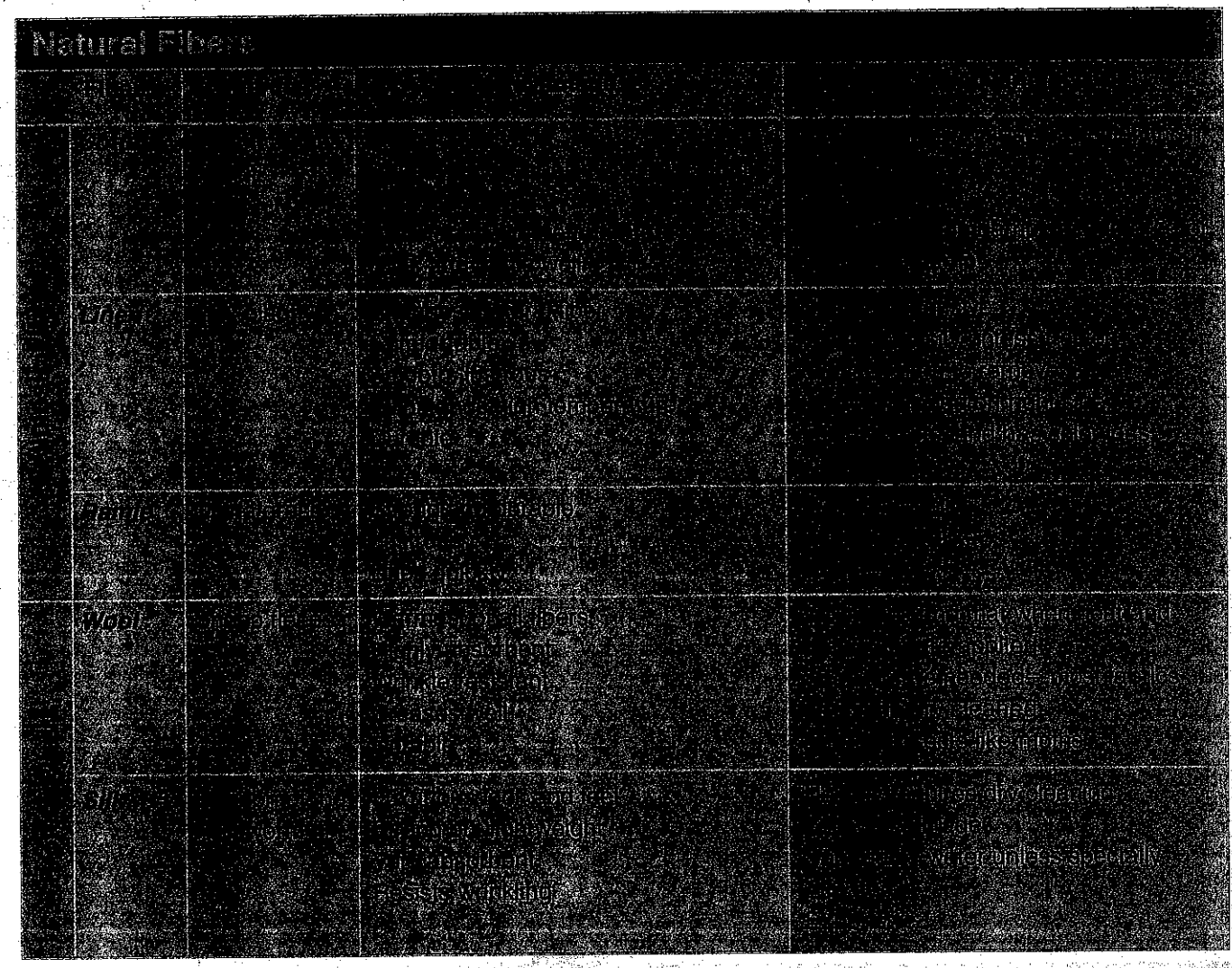
Fibers that come from plant sources are called *cellulosic fibers*. Although there are many kinds of cellulosic fibers, only a few of them are used in clothing. Cotton, flax, and ramie are the major cellulosic fibers used in clothing.

Fibers that come from animal sources are called *protein fibers*. Wool and silk are the major protein fibers. Other protein fibers are called *specialty hair fibers*. These include mohair and cashmere from the goat family; angora from the rabbit family; and camel, llama, alpaca, vicuna, and guanaco hair from the camel family. Because specialty hair fibers are usually in short supply, they are more expensive than wool.

Manufactured Fibers

Manufactured fibers are made in a laboratory. The two types of manufactured fibers (also called synthetic fibers) are cellulosic and noncellulosic. *Cellulosic* fibers are made from cellulose (the fibrous substance in plant life). Rayon, acetate, and lyocell are cellulosic manufactured fibers. *Noncellulosic* fibers are made by combining chemical compounds. Nylon, polyester, and acrylic are examples of these. Characteristics of various manufactured fibers are given in 32-3.

Raw materials and chemicals used to produce manufactured fibers can vary. However, they all go through the same basic steps before they become fibers:



32-2 This chart summarizes the advantages and disadvantages of the natural fibers.

1. Solid raw materials are changed to a liquid form.
2. The liquid is forced through a *spinneret* (a small nozzle with many tiny holes).
3. The liquid hardens in the form of a filament.

Often the filaments are then twisted together into yarns and wound onto spools. They can then be made into cloth.

Recently, a new category of filament fibers has been developed. ***Microfibers*** are extremely fine filaments that make extra smooth, soft, and silky fabrics. Because the filaments can be packed so close together, they form an effective wind barrier in clothing. Fabrics made from microfibers allow moisture vapor to escape, but keep the wearer dry and comfortable. Most of the manufactured fibers can be made into microfibers.

Yarns

A yarn is a strand made by combining staple fibers or filaments. Yarns vary in size, stretch, and texture. There are three types of yarns—spun yarns, monofilament yarns, and multifilament yarns.

Short, staple fibers are used to make *spun yarns*. Their surface is rough because some of

Manufactured Fibers		

32-3 This chart lists the advantages and disadvantages of the most common manufactured fibers.

the fiber ends stick out. This creates a fuzzy look. All natural fibers, except silk, are made into spun yarns, 32-4. Manufactured fibers can be cut to staple length and used to make spun yarns. *Monofilament yarns* are made from a single filament. *Multifilament yarns* are made from a group of filaments.

Many fabrics are made up of both natural and manufactured fibers. These are called blends or combinations. A ***blend*** is made by spinning different staple fibers together into a single yarn. A ***combination*** is made by twisting two different single yarns into a ply.

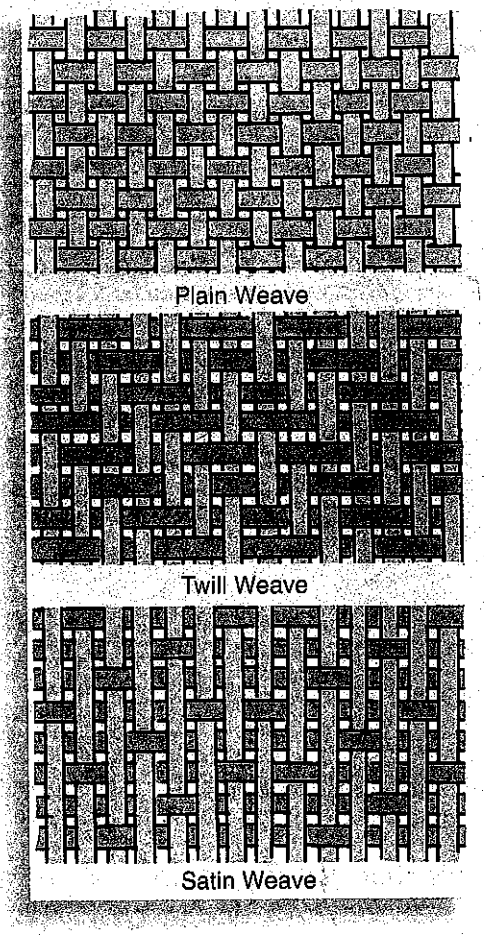
Blends and combinations create fabrics that have better performance. When fibers are blended or combined, the best of each fiber can be enjoyed. Suppose you have a polyester/cotton shirt. When these two fibers are blended together, it is possible to take advantage of the good characteristics of both fibers. The effects of the bad characteristics are also lessened. Cotton is cool and comfortable, but it wrinkles easily and shrinks. Polyester is strong, wrinkle resistant, and does not shrink. However, it is less cool and comfortable than cotton. That's why many people prefer polyester/cotton blend shirts over shirts made of all cotton or all polyester. They get the cool comfort of cotton and the wrinkle and shrink resistance of polyester all in one shirt.

32-4 Fibers are spun and twisted into yarns. The spools of yarn are then ready for weaving, knitting, or dyeing.

Fabrics

Weaving and knitting are the most common ways of making fabrics. Other methods of making fabrics include felting and bonding or fusing. The variety of fabrics produced by weaving, knitting, felting, and bonding is endless.

Weaving is the process of interlacing yarns at right angles to each other to produce a fabric. Weaving is done on machines called looms. Many different weaving effects can be created. The three basic weaves are the plain, twill, and satin weaves. See 32-5.



32-5 Different patterns of interlacing yarns are used to create these three basic weaves.

In the Headlines

Scientists Analyze Cloth Found with Egyptian Mummy

What could we learn from examining the fabrics made by ancient cultures?

What are some types of fabrics used a long time ago that are still used today?

The *plain weave* uses an over one, under one pattern. Most plain weave fabrics are durable and strong. They are usually easy to sew.

The *twill weave* is made when yarns in one direction float (pass) over two or more yarns in the other direction. Each float begins one or more yarns over from the last one. This creates a diagonal line or *wale* in the fabric. Twill weave fabrics are durable and resist wrinkles.

The *satin weave* is created by floating a yarn from one direction over four or more yarns from the other direction and then under one yarn. Each float begins two yarns over from where the last float began. This creates a fabric with a very smooth, shiny surface. The satin weave is not very durable and it tends to snag.

Knitting is done by looping yarns together. These loops can be varied to create different patterns and textures. Knitted fabrics are versatile. They can be made from any fiber and any yarn. They are usually comfortable, easy-care fabrics.

Finishes

A ***finish*** is a treatment that is given to fibers, yarns, or fabrics that can improve the look, feel, or performance of a fabric. Some common finishes are described in Chart 32-6.

Sewing Equipment

Just as a builder uses certain tools to build a house, you need certain tools to "build" a sewing project. Sewing equipment includes all the tools you use to make a garment or project.

Fabric Finishes

Finish	
Antistatic	
Crease resistant	
Durable press	
Permanent press	
Flame resistant	
Mildew resistant	
Mercerization	
Moth repellent	
Preshrunk	
Sanforized®	
Scotchgard®	
Soil release	
Water repellent	

32-6 Different finishes are used to improve the look, feel, and performance of fabrics.

These tools help you perform the various tasks involved. Measuring, marking, cutting, sewing, and pressing are all tasks that require sewing tools.

Measuring Tools

For accurate sewing, measuring tools are a must. Some measuring tools include both standard and metric measurements. Helpful measuring tools include a tape measure and sewing gauge, 32-7.

A *tape measure* is used to take body measurements. It is also used to measure fabric and pattern pieces. Tape measures are 60 inches long and made of plastic or strong fabric that does not stretch.

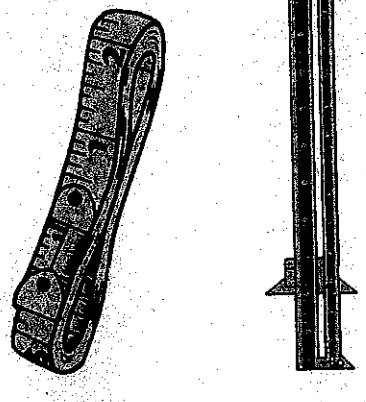
A *sewing gauge* is a six-inch ruler with a sliding marker. It is used to measure short distances such as hems. A sewing gauge is a very handy sewing tool.

Marking Tools

Tracing wheels, dressmaker's carbon paper, tailor's chalk, and *pencils* are marking tools, 32-8. They are used to transfer pattern markings to the fabric. These markings help you put the pattern pieces together correctly.

When using dressmaker's carbon paper, tailor's chalk, or pencils, choose a color that is closest to the color of your fabric yet visible. This will help prevent the color from showing through on the right side. When using a tracing wheel, avoid pressing too hard. Tracing wheels can damage work surfaces and tear your pattern.

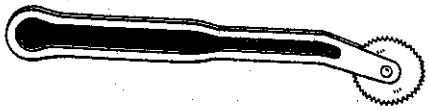
Measuring Tools



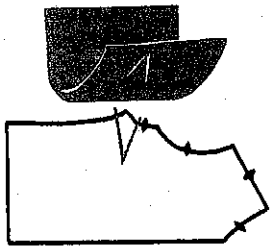
Tape Measure Sewing Gauge

32-7 Accurate measuring is important for good sewing results.

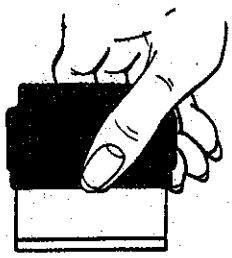
Marking Tools



Tracing Wheel



Dressmaker's Carbon Paper



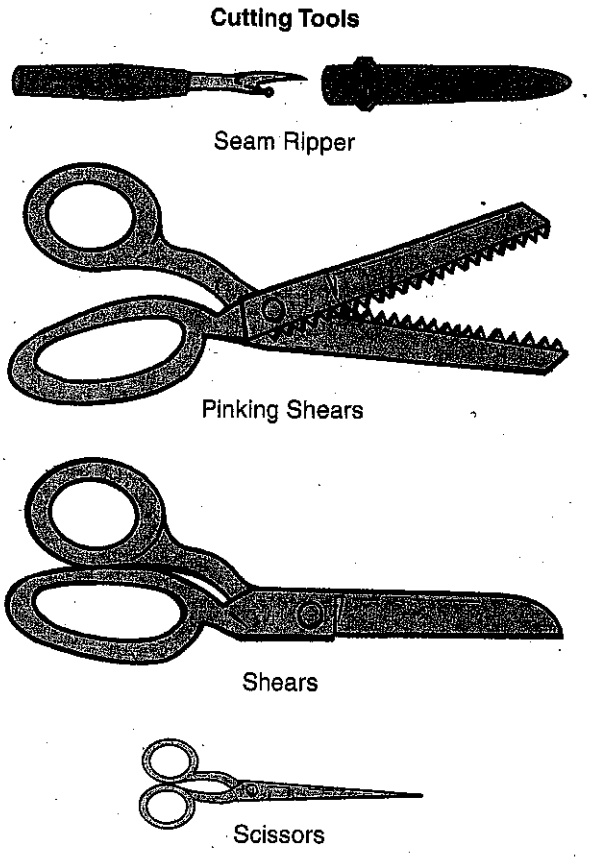
Tailor's Chalk

Tailor's Pencil

32-8 Marking tools allow you to transfer pattern markings to the fabric.

Cutting Tools

Shears, scissors, pinking shears, and seam rippers are all cutting tools, 32-9. Many people think shears and scissors are the same. They are not. *Shears* are often longer than scissors. The handles are not the same size. This is so they will fit your hand. Bent-handled shears are used to cut pattern pieces from fabric. The bent



32-9 Cutting tools are sharp. Use care when using them.

handle allows the fabric to lie flat as it is cut. This results in more accurate cutting.

Scissors are usually short. The handles have small, matching holes. They are used to trim seams, clip around curves, and open buttonholes.

Pinking shears have a zigzag cutting edge. They are used to give seam edges a finished look. They can also be used to achieve a decorative look on nonwoven fabrics. Do not use pinking shears to cut garment pieces from fabrics. The uneven edge would be difficult to follow when sewing.

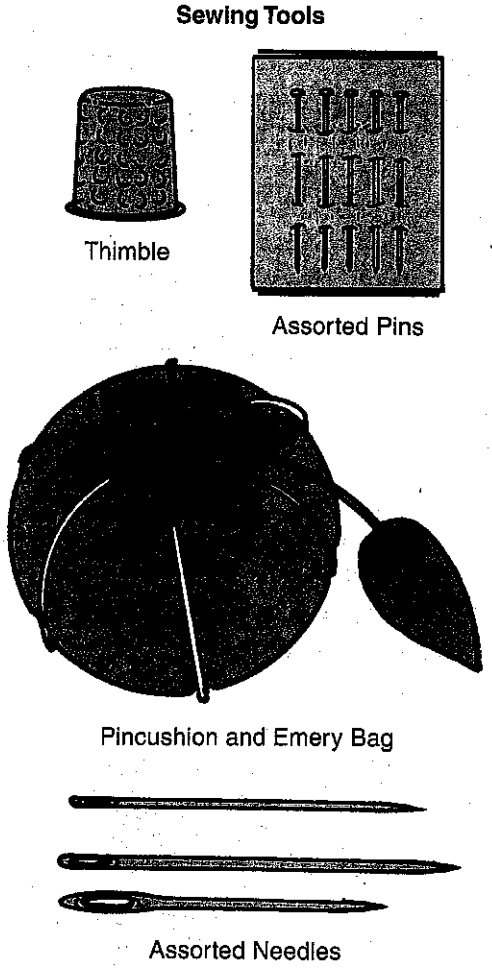
A *seam ripper* can be used to undo mistakes in sewing or to remove basting stitches. Since seam rippers are sharp, use them with care. They can injure you or cause damage to fabric.

Sewing Tools

Sewing tools are the items you use as you stitch garment or project pieces together. These items include needles, pins, pincushions, and thimbles, 32-10.

Needles

Needles are used for hand sewing. They come in many sizes and types. A package of assorted sizes would be a good choice to meet your hand-sewing needs. Fine needles are for delicate fabrics. Medium needles are for medium-weight fabrics. Coarse needles are for heavyweight fabrics.



32-10 Sewing tools such as these make sewing easier.

Needles range in size from one to twelve. The smaller numbers are coarser needles, and the larger numbers are finer needles. A size 1 needle is larger than a size 12 needle. For most hand-sewing tasks, a size 7 or 8 needle would be a good choice.

Pins

Straight pins are used to hold patterns to fabric before and during cutting. They also hold pieces of fabric together before sewing. Pins come in boxes or in paper folders. You may want to buy pins with large plastic or glass heads. They are easy to see and use.

Pincushions

If you've ever spilled a box of pins, you know what a chore it can be to find all of them. Pincushions are a handy place to store pins. They come in many shapes and sizes. Never put pins in your mouth. A *wrist pincushion* is a convenient way to keep pins handy.

The small, strawberry-shaped bag attached to some pincushions is an *emery bag*. An emery bag is used to remove rough spots or a dull point from a needle or pin. You can do this by pushing the needle or pin into the bag several times.

Thimbles

A *thimble* will help protect your finger when you are sewing by hand. Thimbles are used to help push the needle through thick or tightly woven fabrics. The dents on the thimble are there to hold the end of the needle as it is pushed through the fabric. Thimbles used for sewing are made of metal or plastic. A thimble should be worn on your middle finger on your sewing hand. It should feel comfortable—not too snug and not too loose.

The Sewing Machine

The most important piece of sewing equipment is the *sewing machine*. Sewing machines vary. There are different models and brands. Some may have special features. Before you sew, you should know how the machine you will use works. Some sewing machine basics include knowing how to thread the machine and start sewing. You must also learn how to control the speed and stop at the desired point.

Getting to Know the Sewing Machine

A sewing machine is a complex machine. Knowing the names of the parts and what they do are keys to understanding how a sewing machine works.

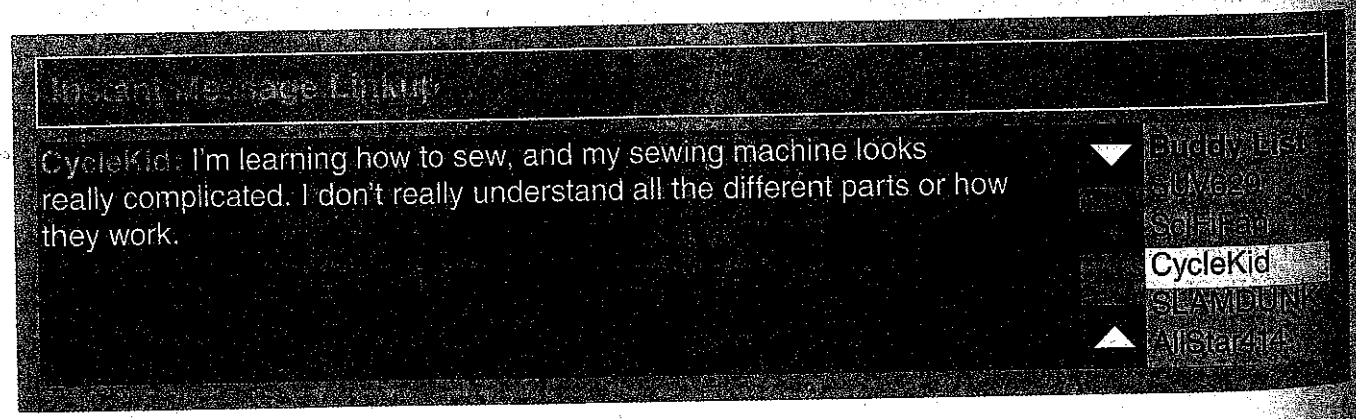
The parts of a sewing machine are shown in 32-11. As you read the following descriptions, use the numbers in parentheses to locate each part in the diagram.

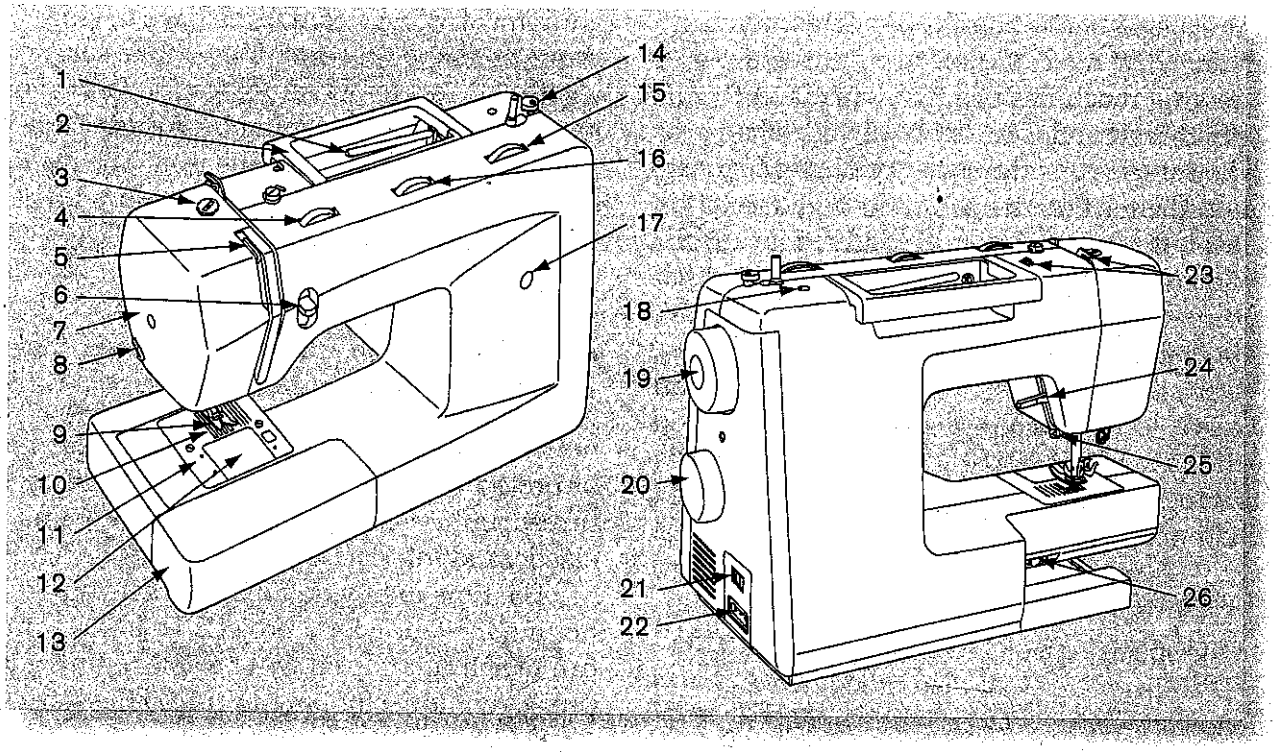
The *head* is the top part of the machine. It holds most of the moving parts that help the machine operate.

The *spool pin* (1) holds the spool of thread.

The *presser foot pressure adjustment* (3) controls the amount of pressure the presser foot places against the feed system.

The *needle thread tension dial* (4) lets you set the tension for your particular project. Your fabric, stitch, and thread will determine the tension setting you need.





32-11 By learning about the sewing machine, you will be able to operate it properly.

The *take-up lever* (5) controls the flow of needle thread. It must be at its highest position each time you start to sew. If it is not, the thread will be pulled away from the needle as the lever rises. Then you will have to thread the needle again.

The *reverse-stitch button* (6) lets you stitch backward.

The *face plate* (7) swings open for access to the movable parts and the light.

The *thread cutter* (8) is on the back of the presser bar for convenience.

The *presser foot* (9) holds fabric against the feed system teeth.

The *feed system* (10) moves fabric under the presser foot.

The *needle plate* (11) has guidelines to help you sew straight, even seams. It also supports the fabric during sewing.

The *bobbin plate cover* (12) covers the bobbin and bobbin case.

The *removable extension table* (13) lets you change from flat bed to free arm. This feature is convenient for stitching tubular pieces such as cuffs and pant legs.

The *bobbin winder* (14) guides the thread when filling the bobbin with thread.

The *stitch length dial* (15) controls the length of the stitches.

The *stitch width dial* (16) controls the width of zigzag stitching. It also positions the needle for straight stitching.

The *handwheel* (19) controls the movement of the take-up lever and needle. It turns as the machine runs. You can move the needle up and down by turning the wheel with your hand.

The *power and light switch* (21) turns on the machine and sewing light at the same time.

The *thread guides* (23) lead the thread to the needle.

The *presser foot lifter* (24) allows you to raise and lower the presser foot.

The *needle clamp* (25) holds the needle in place.

The instruction manual that comes with your sewing machine shows you the parts of your sewing machine and tells you what they do. It tells you how to prepare your machine for sewing. It describes your machine's special

features. It also tells you how to care for your machine.

Sewing machines use two threads: the needle thread and the bobbin thread. The needle thread runs from the spool pin. It goes around the tension discs and through the take-up lever, thread guides, and needle. The bobbin thread runs from the bobbin plate up through the throat plate. As you sew, these two threads interlock to hold fabric pieces together.

Once the machine is correctly threaded, you are ready to sew. Before sewing your project, practice sewing on some scraps to get the feel of sewing on fabric. Since most sewing is done with two layers of fabric, use two scrap pieces.

Sergers

One special type of sewing machine is called a serger. *Sergers*, also called overlock machines, provide a factory-like finish to garments. Sergers are popular with many sewers because they can perform three functions at once. Sergers join two layers of fabric to form a seam. At the same time, they trim away extra seam allowance width and overcast the fabric edges.

A serger uses two to five threads and one or two needles to produce its unique finish. Since sergers vary in their design and operation, be sure to refer to the instruction manual.

Pressing Equipment

If you press as you sew, your garment will have a neat, professional look. The *steam iron* and *ironing board* are the basic items of pressing equipment. Most steam irons have a wide range of temperature settings. Make sure to use the correct temperature for the fabric you are pressing. Avoid ironing over pins. They can scratch the bottom of the iron. The ironing board should be sturdy and covered with a tight-fitting, padded cover.

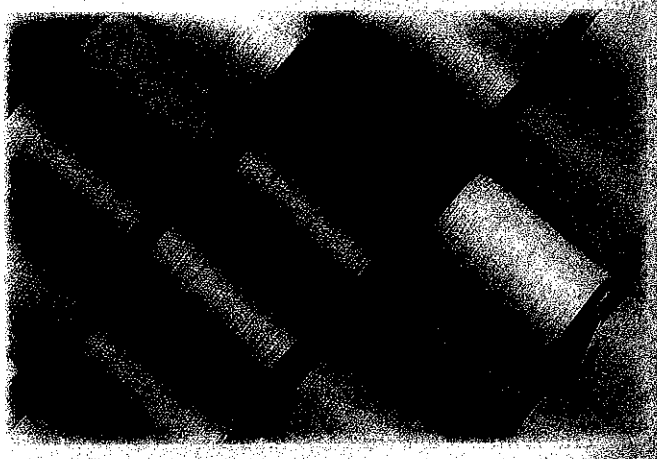
Notions

In addition to sewing tools, you also need notions. Items that become a part of a garment or project are called ***notions***. Items such as thread, buttons, snaps, zippers, tapes, trims, elastic, and interfacings are notions.

The time to buy notions is when you are buying the fabric for a project. This way you can match colors. You will be able to finish your project without stopping to run to the store for a needed item.

Thread

Thread comes in a wide variety of colors and types. If you are using a solid-color fabric, try to select thread that is slightly darker, 32-12. Thread usually looks lighter when it is stitched into fabric. If you are using a print or plaid fabric, select thread that matches the main color in the print.



32-12 Select a thread color that closely matches your fabric.

In the Headlines

Sergers Modernize Sewing

How can using a serger help save time?

What are the benefits of using a serger? What are the drawbacks?

Have you ever used a serger? Did you find it easier to use than a regular sewing machine?

Express Your Creativity

Ask a seamstress or tailor to share with you leftover fabric from garments he or she has made. Be creative and cover a box with the fabric remnants. You might fray the fabric edges, tear them, or cut them with pinking shears. Use the box to hold sewing supplies or other special items. Sign and date the box.

The fiber content of thread is just as important as the fiber content in fabric. There are two basic types of thread available. These are polyester or polyester/cotton thread and mercerized cotton thread.

Polyester or *polyester/cotton thread* is an all-purpose thread that can be used to sew almost all fabrics. It is often used for knits and stretch fabrics. Because it is strong and stretchable, it prevents seams from breaking as garments are worn.

Mercerized cotton thread is recommended for use on woven fabrics made of natural fibers. Although it sews well, it has limited stretching ability.

Fasteners

Fasteners include zippers, buttons, hooks and eyes, snaps, and hook and loop tape. The type of fastener you need will be listed on your pattern envelope.

When choosing zippers, choose the type and length specified on your pattern. The color of the zipper should be matched with the color of the fabric.

Buttons can be decorative or functional. The size and number of buttons you will need are listed on your pattern. A button's size is its diameter. Two common types of buttons are sew-through buttons and shank buttons. *Sew-through buttons* have holes in them through which you sew with thread. *Shank buttons* have a loop behind the button through which the thread is stitched.

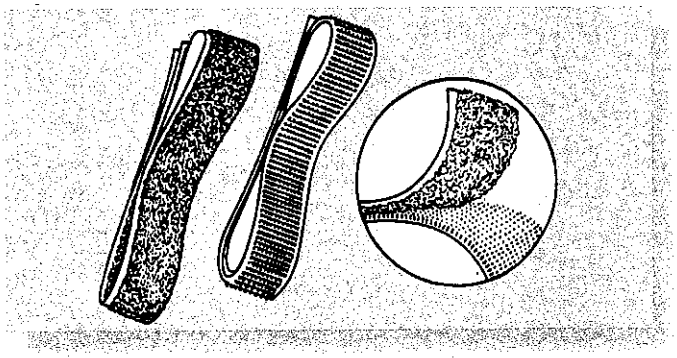
Hooks and eyes and snaps come in various sizes. The smaller the number, the smaller the size will be. Hooks and eyes and snaps usually come in black and silver. Black is often used on dark-colored fabrics. Silver is used with light-colored fabrics.

Hook and loop tape is a fastener made up of two nylon strips. One strip has tiny hooks. The other one has a looped pile. When the strips are pressed together, they stick to one another. Hook and loop tape comes in precut shapes and is also available by the yard, 32-13. A common brand of hook and loop tape is Velcro®.

Elastic is used to provide fit to garments. Elastic can be used in a casing (an enclosure to hold elastic) or stitched directly to a garment. When buying elastic, read the label so you get the type you need.

Interfacing

Interfacing is used to prevent stretching and provide shape to a garment. It is used in collars, cuffs, waistbands, and facings. Interfacings are woven or nonwoven. They are either stitched into the garment or fused onto the garment by pressing. Choose interfacing that is the same weight as the garment fabric or slightly lighter. Interfacing fabric must be able to receive the same care as the other fabric you are using.



32-13 Hook and loop tape is a popular fastener. The tiny hooks intermesh with the pile loops.

Looking Back

The clothes you wear are made from a variety of fibers. Some fibers, such as cotton and wool, are called natural fibers. They come from plant, animal, and mineral sources. Other fibers, such as nylon and polyester, are manufactured fibers. They are made in a laboratory. Each fiber has certain characteristics that affect the appearance, feel, and care requirements of your garments.

Fibers are formed into yarns. The yarns are then woven or knitted into fabrics. Different types of weaves and knits are used to create different kinds of fabrics. Fabrics may be treated with finishes to achieve certain characteristics.

Many different tools are used to complete a sewing project. Some tools are used to measure fabric, pattern pieces, and garments. Other tools are needed to mark and cut fabric and put fabric pieces together. Still other tools are used to press sewing projects to give them a neat, finished look. You need to know what each tool does and how to use it correctly. This is especially true of the sewing machine. Using sewing equipment properly will make sewing easier and give you better results.

To complete your sewing project, you will need a number of notions as well as your fabric. Notions include thread, fasteners, elastic, and interfacing. You must select these items carefully according to the needs of your project.

Review It

1. List three natural fibers and their sources.
2. List three manufactured fibers and give one advantage and one disadvantage of each.
3. Why are fabrics often made of fiber blends or combinations?
4. What is the basic difference between weaving and knitting?
5. True or false. Shears is another name for scissors.
6. For most hand-sewing tasks, a size _____ needle would be a good choice.
7. What is the purpose of each of the following parts of a sewing machine?
   A. Handwheel.
   B. Spool pin.
   C. Take-up lever.
   D. Presser foot.
8. What is the advantage of using a serger?
9. Items such as thread, buttons, snaps, zippers, elastic, and interfacings are called _____.
10. What type of thread can be used to sew almost all fabrics?

Apply It

1. Check the care labels in six of your garments. Make a list of all the fibers used for each garment. Compare your list with your classmates' lists.
2. Use an instruction manual to find all the parts on a sewing machine in your classroom.

Think More About It

1. Would you buy clothes made from animal skins and furs? Why or why not?
2. Imagine you are creating a mini sewing kit to keep in your school locker, and you can only choose four sewing tools. Which tools would you choose? Why?

Get Involved

Use yarn and fabric scraps to create a colorful fiber art project. Donate the projects to a local hospital as gifts for the patients.