

ELECTIVE: Textiles, Fashion and Design

CONTEMPORARY CLOTHING AND FASHION

INFLUENCES ON THE DESIGN AND CONSTRUCTION OF CLOTHING

Social influences

- First and Second World Wars
- Status of women, working outside the home, equality
- Changes in leisure activities, new casual wear styles
- Social conformity, conforming to the latest fashion trends
- Socio-economic status, income, occupation, lifestyle
- Entertainment industry e.g. World Music Awards
- Media, fashion magazines, film-stars, pop idols
- Emphasis on youth and youth culture

Economic

- State of the economy is reflected in fashion trends
- Economic recessions influence consumer demands
- Family income affects consumer spending
- Employment/unemployment affect disposable income
- Cost of functional clothing versus decorative clothing
- Introduction of 'off-the-peg' and seasonal collections
- World events e.g. availability of raw materials

Industrial

- Inventions (Spinning Jenny, the sewing machine)
- Industrial revolution (power-driven machinery, mass production)
- Creation of new fabrics e.g. synthetics (nylon)
- Scientific advances e.g. new microfibres, and improved man-made fibres
- Computerisation e.g. computer aided design (CAD)
- Improved systems of communications and transport

Factors that influence clothing requirements

The main factors that influence clothing requirements are approval, identification, modesty, personality, protection and status. The following are also factors:

- Advertising and merchandising
- Appearance of design and fabric
- Availability
- Age of individual
- Care label
- Cost, value for money
- Cultural and social acceptability
- Fit and specific requirements
- Functions, suitability for purpose

- Fashion trends, trend setters
- New fabrics and finishes
- Personal preferences, image

Examples of styles: casual, classic, country, executive or work wear, special occasion, sporty or leisure, teenager or youth culture, outdoor e.g. hiking

Categories of design: designer, ready-to-wear, bridge, contemporary, childrenswear

BASIC ELEMENTS AND PRINCIPLES OF FASHION DESIGN

Elements of design

Colour is the most prominent feature of a garment. Colours can be considered in terms of hue, intensity, value, tints, warm, cool, neutral, primary, secondary and tertiary.

Line refers to body, silhouette and structural lines. Curved, diagonal, horizontal and vertical lines are used to influence the garment design and how it drapes on the wearer.

Shape is the outline or silhouette of the garment.

Texture refers to the softness or crispness of a fabric as determined by the type of fibre and weave used.

Fabric is influenced by trends, drape, textures, colour, finishes and patterns.

Principles of design

Balance: designs can be balanced vertically, symmetrically or asymmetrically

Emphasis: creates a focal point or interest in colour, line, texture and design details

Harmony: this is achieved when all elements and principles of design work well

Proportion: relationship between different parts of the garment, equal or unequal

Repetition: gives garments rhythm through colour, line and shape. It can be continuous line movement, graduated, radiated, unequal or uniform

CURRENT FASHION TRENDS FOR WOMEN (2003)

Casual wear: more feminine in design, emphasis on colour, fit and shape, variety of traditional and modern fabrics, trend towards feminine decorative prints

Knitwear: short, fine-knitted jumpers and cardigans, twin-sets, oversized jumpers

Skirts: short, knee or ankle length, gathered, pleated, ruffled, frilled or scalloped hems, A-line or tiered, casual or semi-formal in style

Tops: variety of colours, fabrics and styles, short, skimpy in length, camisole tops with spaghetti straps, one-shoulder tops, variety of sleeve lengths, beads, embroidery, fringes, frills, ruffles

Trousers: hipsters with straight, bootleg or wide designs, pockets on the side, side openings or classic front opening

Work wear: combinations of tailored jackets or coats with trousers, skirt, or dress, classic styles, nipped at the waist, variety of sleeve lengths, fitted zipped jackets or knee-length coats, classic shirts or ribbed tops

Evening wear: long or short dresses in luxury or blended fabrics, tailored or loose trousers, plain or embroidered in casual, semi-formal or formal styles

Fabrics: denim, luxury blends (cashmere, silk) leather, metallics (satin, leather), muslin, natural, synthetics and man-made and blended fibres

Womenswear labels

Well-known womenswear labels are Christian Dior, Dolce and Gabbana, Peter O'Brien, Issey Miyake, Lainey Keogh, Libra, Giorgio Armani, Michael H, Regine, Yves St. Laurent, Vivienne Westwood, Philip Treacy, Paul Costello and Louise Kennedy.

CURRENT FASHION TRENDS FOR MEN (2003)

Styles and colours are more limited for men's clothing than for women, featuring traditional, classical, casual outdoor styles and semi-formal styles. A limited range of colours is used except for shirts, ties and socks. Colours tend to be dark for formal wear, with brighter colours for other ranges.

Casual wear: designs based on the functions of leisure activities, emphasis on practicality, fit, shape and fabrics, limited styles, adapted to everyday usage including work wear, comfortable to wear and easy care

Trousers: long with or without turn-ups, narrow or wide varies with season, made in wool, wool blends, chino, linen, baby cord

Jackets: single-breasted or double-breasted (depends on trend), sports jackets, casual blazers, out-door waterproof jackets, fabrics include wool, blends, cotton and linen

Shirts: fairly traditional, long or short sleeves, cuffs closed with buttons or cufflinks, large or small collars, plain stripes or prints, made in cotton, polycotton, silk, linen

Tops: casual sweatshirts, t-shirts with or without collars, tend to be plain or striped, natural and blended fabrics used

Knitwear: fine knits, chunky sweaters for outdoors, wool, cotton or blends used

Work wear: the tailored suit is an essential item for the majority of work places, unless protective clothing is a requirement, fabrics used include wool and wool blends

Formal wear: suits are most popular and are worn with traditional shirts and ties

Ties: variety of colours and patterns, little variety in shape (broad or narrow)

Menswear labels

Well-known menswear labels are Magee, Personal Tailoring (Donegal), Michael Mortell, O'Neills, Calvin Klein, Boss, John Rocha, Pierre Cardin, Ralph Lauren, Nike and Max Mara.

Irish designers (past and present)

Some famous Irish designers are Irene Gilbert, Sybil Connolly, Lainey Keogh, Louise Kennedy, Paul Costello, Philip Treacy, Marc O'Neill, John Rocca, Jen Kelly and Peter O'Brien.

TEXTILE SCIENCE

CLASSIFICATION OF FIBRES

Natural fibres

- Animal
 - Animal hair: wool (sheep), short fibres, speciality hair fibres (cashmere)
 - Animal secretions: cultivated silk (mulberry), wild silk (tussah)

- Vegetable
 - Seed – cotton (short fibres)
 - Bast – linen (short fibres, flax)
 - Leaf – sisal
 - Fruit – coir (nut husk fibres)

Table 1 Types of fibres

<i>Natural fibres</i>	<i>Origins</i>	<i>Uses</i>
Cotton	Cotton plant	Clothing, furnishing, household fabrics
Linen	Flax plant	Clothing, bed and table linen, soft furnishings
Silk	Silkworm	Clothing, soft furnishings, bed linen, rugs
Wool	Fleece (sheep)	Clothing, carpets/rugs, furnishing fabrics

Manufactured

Regenerated (from cellulose) – man-made

Acetate

- Origin: cotton linters/wood pulp treated with acetic acid, acetic anhydride and water
- Uses: blouses, dresses, lingerie, shirts, tops, linings

Tri-acetate

- Origin: wood pulp or cotton linters
- Uses: pleated skirts, sportswear

Viscose

- Origin: cellulose from spruce trees treated with caustic soda and carbon bisulphite
- Uses: blouses, lingerie, dresses, skirts, shirts, furnishings, table linen

Modal

- Origin: beechwood
- Uses: blouses, skirts, tops, bed and table linen

Synthetic (from chemicals) – artificial

Raw materials such as coal, petroleum, air and water are modified to produce different polymers and different types of synthetic fibres.

Acrylic

- Origin: acrylonitrile is co-polymerised with another chemical
- Uses: blouses, dresses, knitwear, sportswear

Lycra

- Origin: made from chemicals
- Uses: cycling wear, skiwear, swimwear, underwear

Nylon

- Origin: coal or oil mixed with air, chemicals and water
- Uses: blouses, thread, shirts, skirts, rainwear, swimwear

Polyester

- Origin: acid, alcohol and chemicals blended to form an ester and then polymerised
- Uses: blouses, dresses, jackets, lingerie, thread, trousers

LINEN – PROFILE OF A FABRIC MANUFACTURED FROM NATURAL FIBRES

Composition

Linen is made from the inner fibres of the stem of the flax plant. It is composed of bundles of fibres held together by a gum-type substance. The stem is composed of a thick wall and a lumen.

Fibre production

Processing

Flax is allowed to flower and produce seeds. Stalks are pulled by hand or machine. Seeds are removed by machine.

Retting

Stalks undergo retting to allow fungi and bacteria to form (3–7 weeks). Fungi and bacteria attack the substance holding the fibres together. Flax fibres are dried and separated from the core.

The fibres undergo the following processes:

- Scutching: rollers and blades separate the woody material, fibres stay together
- Combing/hacking: long fibres separated by combing through a set of pins
- Carding: this process untangles the fibres and removes any traces of impurities
- Drawing: the linen threads are stretched, evened out and wound onto bobbins
- Spinning: drawn out strands of thread are twisted together to form yarns
- Bleaching
- Weaving

Desirable properties

- Absorbent and dries quickly
- Comfortable, non-allergic, non-static
- Cool to wear in summer, conducts heat
- Durable (wears and washes well)
- Good lustre, natural surface
- Resistant to mildew, moths, pilling
- Strength increases when wet

Undesirable properties

- Burns readily, poor resistance to fire
- Creases quickly unless treated
- Damaged by mildew, easily soiled
- Little elasticity, tendency to shrink

Chemical properties

- Easily damaged by concentrated acids and hot dilute acids
- Resistant to alkalis, cool diluted acids and dry-cleaning solvents

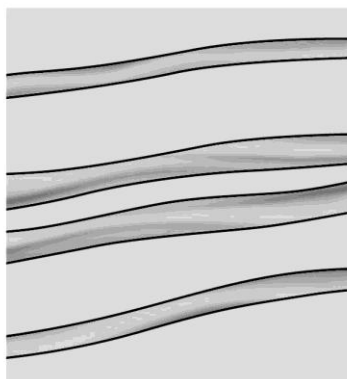
Table 2 Identifying linen – the burning test

<i>Fibre</i>	<i>Near flame</i>	<i>In flame</i>	<i>Out of flame</i>	<i>Residue</i>	<i>Smell</i>
Lin brittle	No reaction to flame approaching. flame.	Burns quickly with a yellow flame. edges.	Burns with an afterglow after flame.	Residue is a small soft grey removal from	It smells like burning paper. ash,

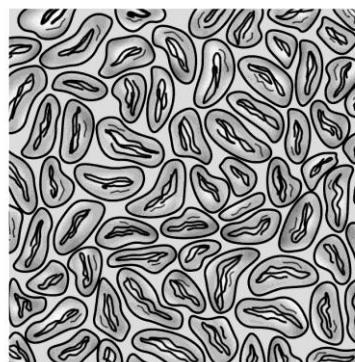
Identification – the microscopic view

Figure 1 Linen

(a) Longitudinal section: long, irregular bamboo-like structure held together by a gummy substance.



(b) Cross section: thick walls with a polygonal shape and a regular shaped lumen or canal through the centre of the flax stem, younger flax has oval shaped cells.



Methods of yarn production for linen

Filaments are connected end-to-end into long lengths and wound onto bobbins for spinning. Two methods of spinning are used to produce linen yarn:

- Dry spinning: used for tow (short fibres) and produces a coarser yarn
- Wet spinning: used for high-quality finer yarns from tow or line (longer fibres)

Yarn or filament modification for linen

- Bleaching: to improve its colour, makes it whiter
- Blending with other fibres: blended with wool, cotton, silk or polyester

Fabric finishes for linen: beetling, crease-resistant, flame-resistant

Applying colour to linen: direct or vat method to apply vat, direct or reactive dyes

Applying designs to linen: block printing, roller printing, screen printing, weaving

NYLON – PROFILE OF A FABRIC MANUFACTURED FROM MAN-MADE FIBRES

Composition: nylon is manufactured from carbon, hydrogen, oxygen and nitrogen

Uses: carpets, clothing, curtains, home furnishings, lampshades, lingerie, raincoats, shirts, skiwear, snowsuits, underwear, windbreakers

Specialist uses: conveyor belts, fishing equipment, sails, sleeping bags, tents

Fibre production – Nylon 66

- Two chemicals, adipic acid and hexamethylene diamine, are used to produce Nylon 66. The chemicals are mixed in a stainless steel cylinder, heated and molecules link up to form a long filament
- Molten nylon is forced from the steel container onto a water-cooled revolving wheel
- Nylon sets, forms a ribbon-like filament, is chopped up into chips and dried

Melt-spinning nylon

- Nylon chips are melted and forced through holes in a spinneret
- Molten liquid leave the jets, cools and hardens in a stream of cold air
- Nylon forms filaments and filaments are twisted together to form yarn

Desirable properties

- Durable, strong, high tensile strength
- Easy to launder, dries quickly
- Does not shrink, retains its shape
- Good elasticity recovery (100%)
- Resilient, resists abrasion
- Resistant to mildew and most insects
- Crease resistant, can be permanently set
- Easy to dye in a variety of colours

Undesirable properties

- Poor moisture absorbency
- Uncomfortable in warm atmospheres
- Nylon pills easily, can be treated
- Develops static electricity
- Mildew attacks surface finishes

Chemical properties: weakened by acids and strong sunlight, resistant to alkalis, bleach, detergents, dry-cleaning, organic solvents and soaps

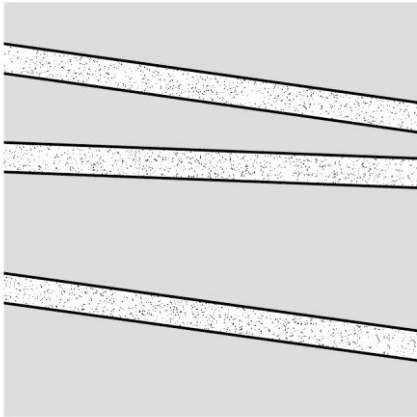
Table 3 Identifying nylon – the burning test

<i>Fibre</i>	<i>Near flame</i>	<i>In flame</i>	<i>Out of flame</i>	<i>Residue</i>	<i>Smell</i>
Nylon	Shrinks and melts as flame approaches.	Burns and melts slowly in flame.	Goes out after removal from flame.	Residue is a hard grey bead.	Celery-like smell.

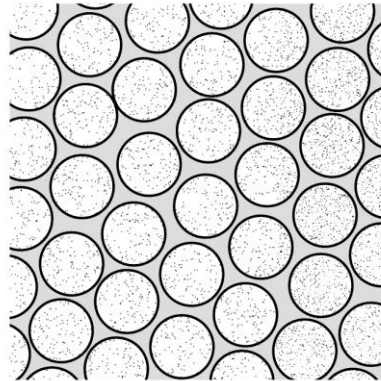
Identification – the microscopic view

Figure 2 Nylon

(a) Nylon longitudinal section: transparent fibres.



(b) Nylon cross section: circular shapes with smooth edges characteristic of melt spun fibres.



Method of yarn production for nylon

- Filaments are conditioned, twisted and wound onto spools
- Filament is ‘drawn’ by passing it between two rollers (slow and fast) to increase length and strength, and to improve lustre
- Filament is heat set in boiling water for two hours
- Wound onto bobbins as multifilament yarn

Yarn/filament modifications for nylon

- Blended with other fibres to improve durability
- Cut into lengths and twisted to make a fluffy yarn
- Extruded through smaller holes to produce finer filaments
- Use of trilobal filaments to allow water vapour to escape

Suitable fabric construction techniques

- Warp knitting, weft knitting, woven

Fabric finishes: anti-static finish, blending, brushing, heat setting

Applying colour: acid dyeing, disperse dyeing

Applying designs: embossing, roller printing, screen printing

POLYESTER/COTTON – PROFILE OF A FABRIC MANUFACTURED FROM A BLEND

Fibres are mixed or blended together to produce fabrics with particular characteristics. A blended yarn is one that is spun from two or more types of fibres e.g. cotton and polyester.

When natural and man-made fibres are combined, the fabric produced has the advantages of both fibres e.g. durable, strong when wet and dry, absorbent, crease-resistant, resilient.

Uses of polyester-cotton: bed and table linen, blouses, shirts, outdoor wear, nightwear

Fibre production

Cotton

The cotton plant produces green pods called ‘cotton bolls’ containing seeds and fibres. On maturing they produce a mass of white fluffy fibres. Cotton may be harvested by machine or by hand. Cotton fibres are separated from the seeds by a ‘ginning’ machine.

Polyester

Polyethylene terephthalate (PET), a by-product of the oil industry, is created by reacting ethylene glycol with terephthalic acid in the presence of a catalyst. The viscous liquid is extruded through a spinneret into the cold air where it is cooled and stretched to form fibres.

Desirable properties of polyester cotton

- Easier to launder and press than 100% cotton
- Drip-dries, dries quickly
- Holds its shape, does not shrink or stretch
- Polyester provides added strength to cotton
- Polyester has increased abrasion resistance
- Cotton adds comfort, allows perspiration through
- Cotton reduces static levels of polyester
- Dyes well due to presence of cotton

Undesirable properties of polyester cotton

- Higher percentage of polyester increases static
- Easily damaged by heat, mildew and bacteria
- Higher percentage of polyester reduced absorbency

Chemical properties

Cotton: resistant to alkalis, detergents and organic solvents, damaged by strong acids, hot dilute acids and strong sunlight

Polyester: resistant to acids, alkalis and oxidising agents

Table 4 Identifying cotton and polyester – the burning test

<i>Fibre</i>	<i>Approaching flame</i>	<i>In flame</i>	<i>Out of flame</i>	<i>Residue</i>	<i>Smell</i>
Cotton	Does not shrink, ignites upon contact.	Burns quickly with a steady	Burns with an afterglow, can flame.	Grey ash, light and be blown out easily.	Burning paper. feathery.
Polyester	Fuses, melts and shrinks away from approaching flame.	Burns and melts slowly, produces black smoke.	Self-extinguishing when flame is removed.	Hard, tough black or brown bead.	Strong odour, a sweetish smell.

Identification – the microscopic test

Figure 3 Cotton

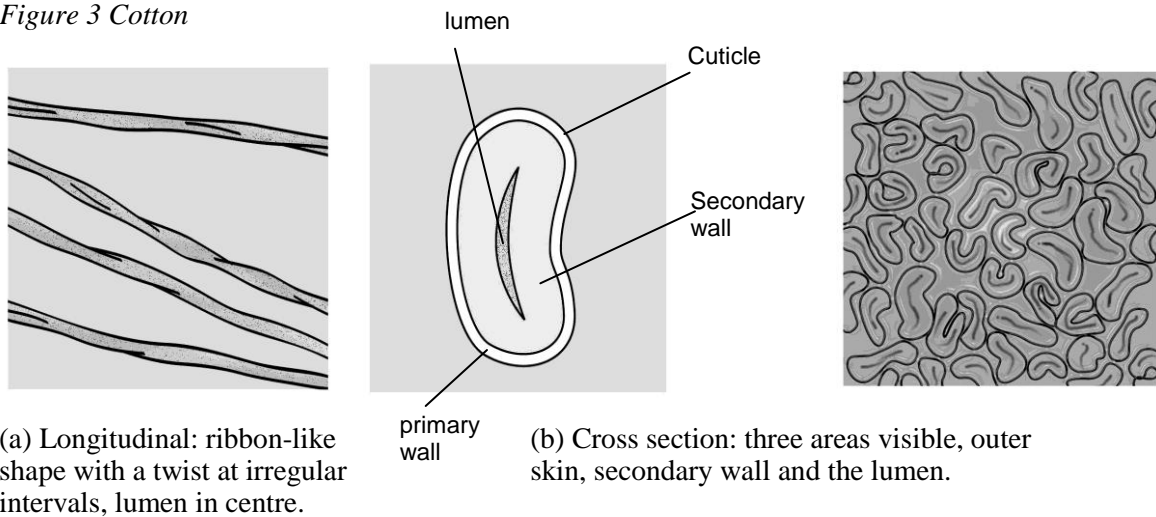
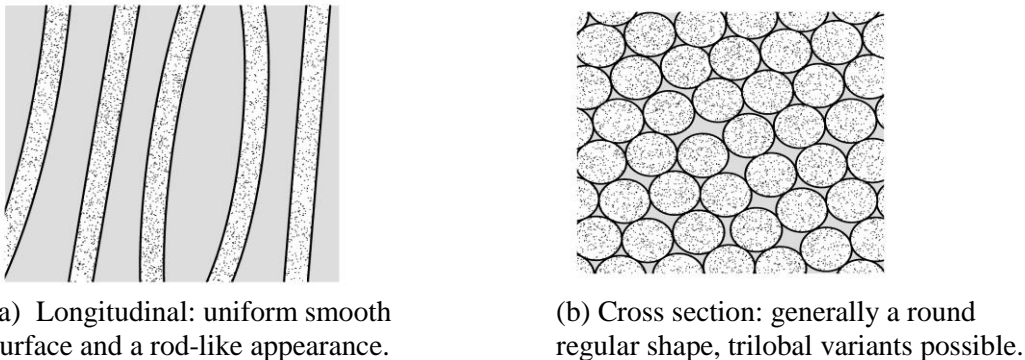


Figure 4 Polyester



Yarn production (blend)

- Two or more different fibres blended in varying ratios before spinning
- Polyester and cotton fibres cut to the same length
- Blending machine loosens and separates cotton fibres
- Fibres are blown to separate them and then cleaned
- Carding arranges fibres into thick ropes or slivers
- Combing removes the short fibres (noils), from the slivers
- Slivers are combined and fed into a drawing machine
- 50:50 blend represents one sliver of cotton and one sliver of polyester
- Mixture of fibres are drawn out and pulled to the required thickness

Yarn/filament modification

Cotton: mercerised to increase affinity for dyes, lustre, moisture and strength

Polyester: crimping produces a bulky form for hand-knitting yarns, jersey fabrics

Fabric construction: knitting, weaving

Finishes: brushing, flameproofing, napping, water repellence

Applying colour: disperse dyes, in direct or vat dyes, reactive dyes

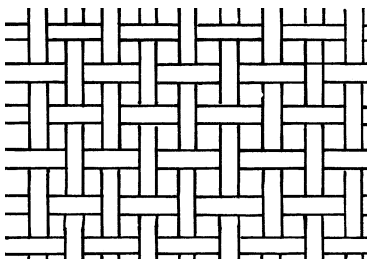
Applying design: block printing, screen printing

SUITABLE FABRIC CONSTRUCTION TECHNIQUES

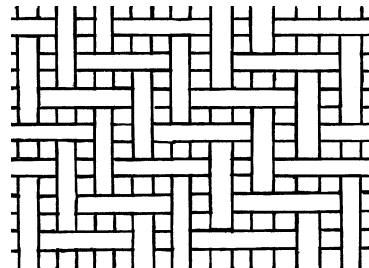
METHOD 1 – WOVEN FABRIC (WEAVING)

Woven fabrics are made up of two sets of yarn forming lengthwise (warp) and crosswise (weft) thread running across the width. A roller holds the warp threads in place as a shuttle carries the weft back and forth between the warp threads, which are raised and lowered following a pre-set pattern. Each line of weft is pushed into place by a batten. The selvage edges are formed along the edges of the warp. The diagonal is called the bias.

Figure 5 Woven fabric



(a) Plain weave



(b) Twill weave

The main *methods of weaving* are:

- Conventional warp preparation
- Sectional warping
- Using a rapier loom instead of a shuttle loom

Types of weaves: plain, basket, herringbone twill, rib, satin

METHOD 2 – KNITTED FABRIC TECHNIQUES

A series of interlocking loops are worked by hand or machine to produce a chunky, fine or thick fabric. Knitted fabric is stretchy and warm, lose their shape quickly and require careful laundering. Knitting can be divided into two main structures: weft and warp knitting.

Weft knitting

A single yarn forms continuous rows of interlocking loops in a horizontal direction. A dropped stitch will result in a vertical ‘run’ downwards.

Examples: double knit, patterned knit, plain jersey knit, purl knit, rib knit

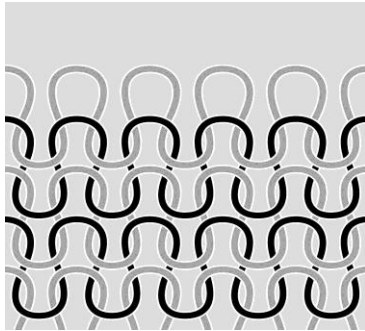
Warp knitting

More than one yarn is used to form interlocking loops that run vertically and zigzag across each other. Warp knitting is produced only by machine.

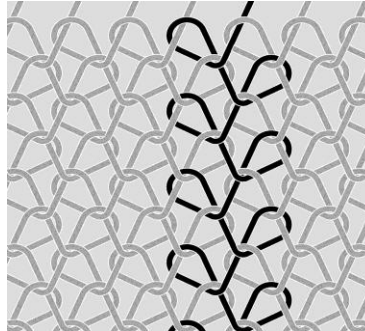
Examples: crochets, double-warp tricot, single-warp tricot, raschel

Figure 6 Knitting

(a) Weft



(b) Warp



Other fabric constructions: bonding, braiding, felting, fusing, knotting

FINISHES TO IMPROVE FABRIC PERFORMANCE – FUNCTIONAL

Easy care, minimum care, drip-dry, colourfast, shrink-resistant, crease-resistant, mildew resistant, mothproof, mercerised, water-repellent, waterproof, showerproof, anti-static, permanent press, permanent pleating, stain-resistant, anti-bacterial, pre-shrunk, flame-proofing and flame-retardant are examples of finishes.

Crease-resistant finish

Fabrics are immersed in a water bath with a solution of urea-formaldehyde and heated to 150°C for a few minutes. A resin forms an interlocking network, which is insoluble in water. The finish resists and recovers from creasing.

Water-repellent finish

Fabrics are treated with silicone and ‘baked’ to create a durable water-repellent finish. Fabrics are porous but resist the absorption of water.

COLOUR APPLICATION

Method 1 – dyeing

Dyeing or the addition of colour can be done using natural or synthetic dyes. Fabric may be dyed at different stages of manufacture, fibre, yarn and cloth:

- Stock dyeing: loose fibres are dyed before spinning in a vat containing a dye bath
- Solution dyeing: yarns on bobbins or cones are lowered into a dye bath
- Piece dyeing of fabric or garment: woven fabric or garment is put into a dye bath

Direct method: fabric is immersed in a salt and water-soluble dye solution with chemicals to set the colour. Without the chemicals the colours would fade. This method is easy to carry out, is inexpensive and provides a wide range of colours.

Method 2 – printing methods

- Direct printing: colour applied by blocks, rollers and screens
- Dyed printing: fabric printed with mordant and piece dyed
- Resist printing: fabric printed with chemical to form resist, then pieced dyed, treated part does not absorb the dye, non-treated part is printed
- Discharge printing: to form printed areas on fabric colour is removed
- Others: batik, tie-dyeing, stencilling

Stencilling

A design is drawn onto a card and cut out using a sharp blade. The stencil is taped to the fabric. A sponge or a brush is dipped into fabric paint and pressed over the cut out design. The card is removed, the fabric dried and the paint heat set.

DESIGN APPLICATION

Method 1 – embroidery stitches

Stem

Uses: outlines, motifs, stems

Satin

Uses: leaves, motifs, petals

Chain

Uses: to fill in or outline designs

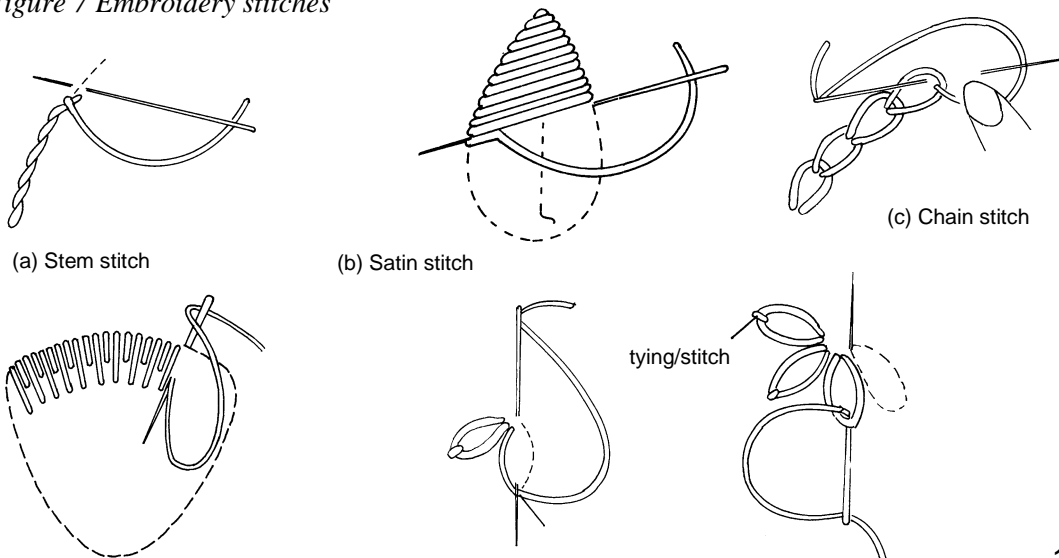
Long and short stitch

Uses: flowers, leaves, motifs

Lazy daisy

Uses: petals, daisy designs

Figure 7 Embroidery stitches



thread under needle

(d) Long and short stitch

(e) Lazy daisy stitch

Method 2 – appliqué

Pieces of fabric may be cut into a variety of shapes and attached to garments as a decorative finish. Fabric may be applied by hand (blanket stitch, embroidery stitches) or by machine (zigzag). Cut out fusible web, attach to the back of the fabric piece and then iron into position on the garment. Stitch in place and press.

FABRIC PERFORMANCE TESTS

Test 1 – testing insulation

Equipment: calorimeters or metal cans or coffee jars, fabric samples, thermometer, warm water (60–80°C)

Method

Cut out fabric samples the height and dimension of the container to be used. Wrap samples of linen and another fabric, around separate calorimeters (or metal cans). Add water to each calorimeter, cover with an insulating material and insert a thermometer into each. Record the starting temperature and continue to record the temperatures every three minutes for 20 minutes. The fabric holding the heat longest provides the better insulation and would be warmer to wear.

Test 2 – testing colour fastness

Equipment: fabric samples (coloured and white), warm/hot water

Methods

- Dry rubbing: use a white piece of fabric to rub the test fabric, dye is poor if any colour transfers to the white fabric
- Washing: wash test fabric with a piece of white fabric and check if dye transfers
- Wet rubbing: use a white piece of fabric, wrung out in warm water, to rub the test fabric. If any colour transfer to the white fabric the dye is poor
- Record the changes to the different fabrics

DESIGN EVALUATION AND GARMENT CONSTRUCTION

THE ELEMENTS OF DESIGN

1. Colour

Visual impact of colour

- Warm colours advance, the figure appears larger
- Dark colours reduce size, pale colours increase size
- Warm colours are stronger than pale colours
- Harmonising colours are easy on the eye
- Colour can emphasise details e.g. collars, cuffs, etc.
- Colour repetition emphasises direction and line
- Neutrals add emphasis to garments

Evaluating colour

Colours should suit the theme/design and function of the garment, be comfortable to wear and complement the skin tone and age of the person wearing it.

2. Line

Line refers to the silhouette and structural lines in all garments.

Silhouette: the outside line of garments, two main shapes (rectangle, triangle), variation in shapes (fitted, semi-fitted, loosely fitted)

Visual impact of silhouette: narrow rectangular shapes are slimming, boxy rectangular shapes increase width and reduce height

Structural: lines within the design, four types (curved, diagonal, horizontal, vertical)

Visual impact of structural lines: structural lines enhance balance, divert or draw the eye. They create illusions. Curves make the garment look softer and less formal. Diagonal lines contribute to height or width and add contrast. Horizontal lines widen and shorten. Vertical lines create height and reduce width

Evaluating line

Line should create interest, diverting the eye away from less attractive features, and enhance the person wearing the garment.

3. Shape

Shape is determined by the pattern chosen and personal preferences, which is based on the perception of one's own figure type.

Evaluating shape

The shape should suit the figure type, drawing attention to the best features or diverting the eye away from less attractive features.

4. Texture

Fabric texture provides variation in how fabrics feel and reflect light. Textures are rough, smooth, thick and fine.

Visual impact of texture

Thick, rough textures add bulk making the wearer appear heavier. Fine, smooth soft textures create a softer look as they cling to the body. Dull textures absorb light and visually reduce size. Shiny, smooth textures reflect light and increase size.

5. Prints and Pattern

Patterns should suit the design and function of garments.

Visual impact of prints and pattern

Large prints look best on tall individuals. Large patterns do not suit small garments. Small prints suit smaller figures.

THE PRINCIPLES OF DESIGN

Balance

There are two types of balance: formal and informal. Formal balance is achieved when two halves of the design are exactly the same. Informal balance refers to two halves, which are visually balanced but are not identical.

Emphasis

This attracts the eye to a specific feature or detail and creates a central point of interest e.g. buttons, collar, cuff, neckline, waistline.

Harmony

If balance, emphasis, proportion and rhythm work well together harmony will have been achieved. The garment will look well designed.

Proportion and scale

Proportion refers to the space relationships between colour, line, pattern, texture, length and size. Scale refers to size relationships e.g. similar sizes are in scale with each other.

Proportion and scale must be related to an individual's height, figure type and posture in order to cater for individual needs.

Rhythm

A comfortable rhythm is created when the eye can move easily and smoothly across the garment connecting all points of interest without jerking the eye from point to point.

Relationship between design and function

- Garments must be comfortable, decorative and functional
- Consider what is required of the garment e.g. protection, safety
- Function is determined by design performance (zips, pockets)
- Design and function may be determined by a social occasion
- Fabric performance may influence design and function e.g. fire-fighting

Relationship between comfort and aesthetic appeal

- Garments should allow for easy body movement
- Comfort and aesthetic appeal can be created using line, shape and texture
- Consider the function of the garment e.g. hill-walking, warm/cold weather
- Aesthetic appeal must complement function and comfort
- Appeal is determined by construction techniques, decorative finishes, colour, pattern or texture

DESIGNING AND MAKING A GARMENT

DESIGNING A GARMENT

The design brief process

A design brief is a statement of what you are asked to do e.g. the type of garment, age group, function, cost, prescribed processes, etc. The basic steps involved are:

- Design brief
- Analysis of the brief – identifying the requirements
- Research or investigation (methods and sources)

- Possible ideas or solutions
- Choosing one solution – developing a storyboard
- Investigating and selecting pattern, fabric and notions
- Constructing the garment
- Evaluating the finished garment

MAKING A GARMENT

1. Taking body measurements – the basic rules

- Measure accurately, get someone else to measure
- Compare personal measurements against pattern measurements
- Wear well-fitting underclothes or leotards and leggings
- Do not take measurements over layers of outer garments
- Stand up straight, feet on the ground and shoulders back
- Hold tape measure straight and measure snugly, never loosely or tightly
- Double check measurements
- Create a personal measurement chart

Measurements

You will need the following measurements: bust/chest, waist, hips, back waist length (neck to waist), shoulder length, sleeve length, inside leg, outside leg, crotch length for trousers, skirt or trouser length.

2. Choosing and buying patterns

When choosing and buying patterns always:

- Look at a variety of pattern catalogues before making a choice
- Buy patterns before buying fabric
- Compare your measurements with those of pattern
- Buy a pattern in the correct size, never a size larger
- Buy a pattern with a variety of garments
- Choose simple designs with few pattern pieces

3. Reading the pattern information

Envelope front: manufacturer's name, pattern number and size, sketch or photograph of garment/s, variations of main design e.g. with/without sleeves

Envelope back: style number, front and back views of garment (line drawings), written description of garment, measurements of finished garment, number of pattern pieces, pattern sizes and standard body measurements, suggested fabrics, amounts needed, details about extra requirements e.g. interfacing, extra fabric, notions e.g. buttons, zip

Note: Mark the size, view, width and amount of fabric.

4. Buying the fabric and notions

- Check envelope back for type and amount of fabric
- Avoid fabrics not on the recommended list,
- Avoid checks and fabrics with a nap
- One-way designs/patterns require extra fabric
- Fabrics are sold in many widths e.g. 90 cm, 115 cm, 140 cm
- Suitable fabrics will be easy to use and firmly woven

- Check the care label and specific recommendations for cleaning

Notions

Buy quality buttons, hooks and eyes, thread, trims, zips, etc. Interfacing may be required for collars, cuffs and facings.

5. Reading the pattern information and instructions

Pattern instruction sheet (inside)

(a) Layout and cutting out guide

- Identifies each pattern piece
- Gives instructions on preparing the fabric
- Identifies and explains the pattern markings
- Provides layout guide for fabrics of different widths
- Outlines special rules for using one-way or nap designs

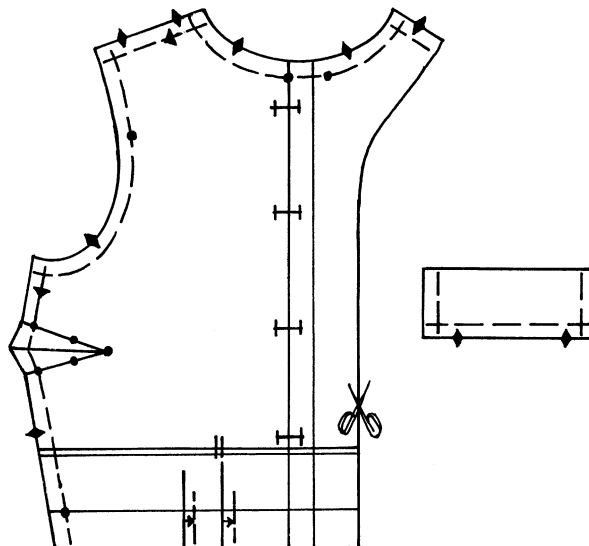
(b) Construction guide

- Step-by-step format for assembling the garment
- Sketches explaining each sewing process
- Guidelines for construction techniques and alterations
- Suggestions on stitching, trimming

Pattern markings

There are different pattern marking: straight grain, place to fold, cutting line, stitching line, notches (single, double, triple), fold line, balance marks (to be transferred), dart, buttonholes and button, hemline, adjustment line, construction symbols e.g. tucks, direction of sewing.

Figure 8 Pattern markings



6. Preparing and cutting out the pattern

Preparing pattern pieces

- Select pieces for view chosen

- Press creased pattern pieces with a cool iron
- Cut out accurately on the bold line of the pattern

7. Modifying patterns – flat pattern adjustments

Use lengthening and shortening lines on the pattern to alter the length. Use vertical lines to insert to remove width. By adding to or taking away a small amount from seams minor adjustments may be made. Be careful not to over fit.

Length modifications

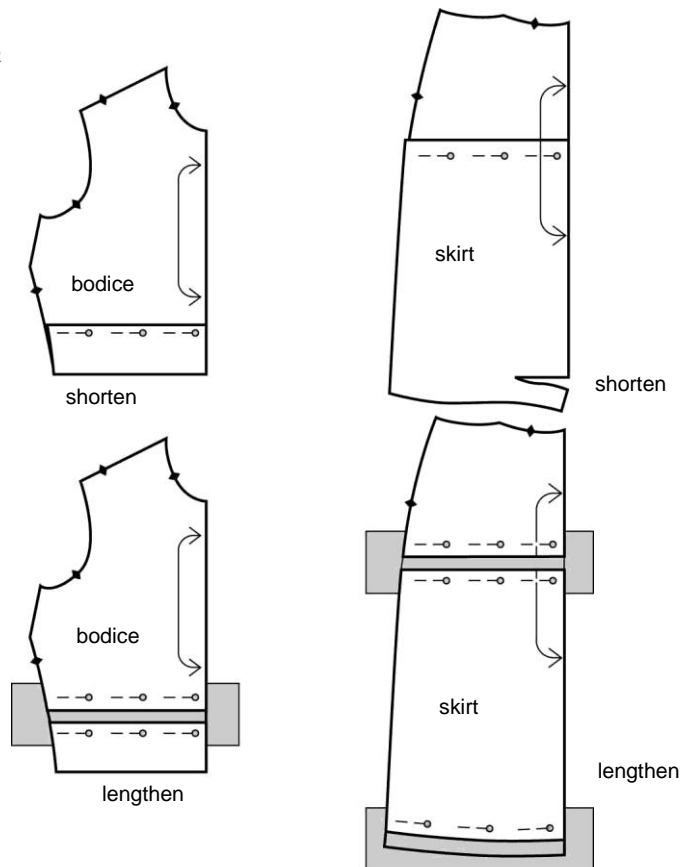
To add length (sleeves, bodices, lower hipline)

Cut pattern on alteration line. Separate pieces the required distance, insert extension paper between the cut pattern pieces, pin in place and redraw all pattern markings e.g. cutting lines, darts, hemlines and seamlines.

To increase hemline of skirt

Extend the pattern with paper and tape in position, redraw seamlines, cutting lines and the lower edge of pattern.

Figure 9 Modifications to lengthen



To reduce or shorten (sleeves, bodices, raise hipline)

Fold the pattern along the alteration line and make a pleat half the depth required. Pin in position. Redraw all cutting lines, dart lines and seamlines.

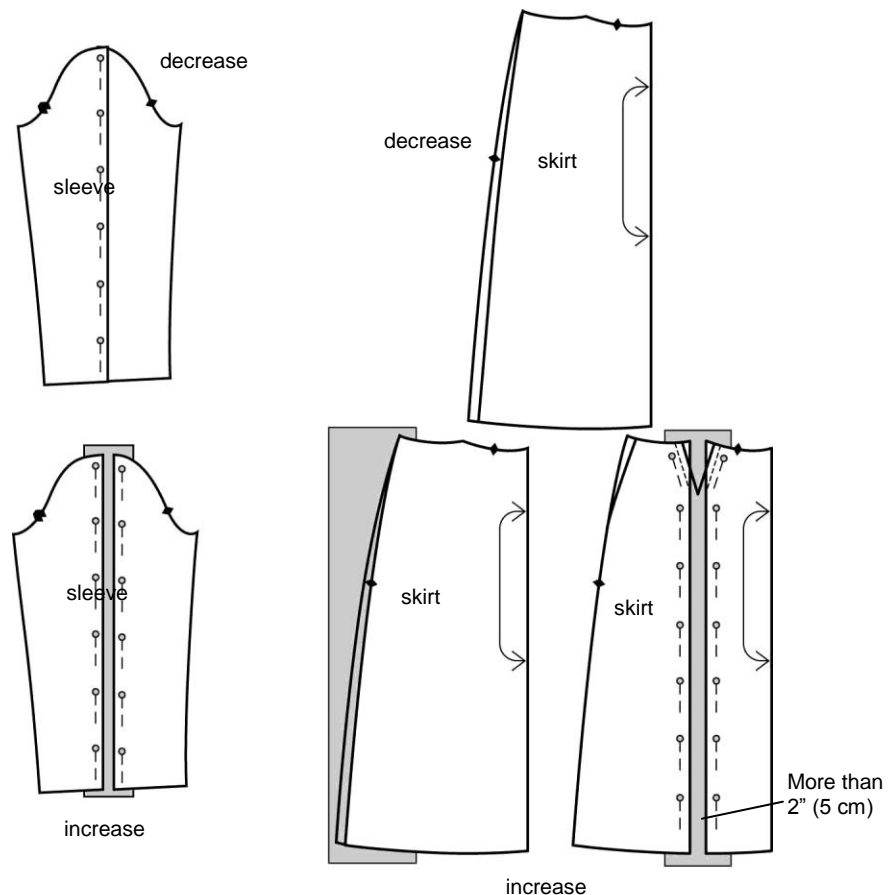
Circumference modifications – general guidelines

Reducing and increasing waistlines

Increases up to 2 cm can be added to side seams, add extension paper and redraw markings. If larger increases are needed, widen darts or consider buying a larger pattern size.

For reductions use a pencil to mark each pattern piece a quarter of the amount needed to be reduced at the waistline. Redraw pattern markings e.g. cutting lines, seamlines and zipline. Extra darts can be added on either side of the original darts if the reduction is greater.

Figure 10 Modifications – circumference adjustments increase and decrease



Reducing and increasing hiplines

Increases up to 5 cm can be added at the hipline. For increases place an extension paper along the side seam from waist to hem. Add a quarter of the amount needed to the hipline and gradually draw a line from the hipline to the hemline along the side seams. Pin the paper in place. *For reductions* remove a quarter of the decrease from each of the front and back seams. Draw a new line from the waist seamline to the hemline.

Trouser adjustments

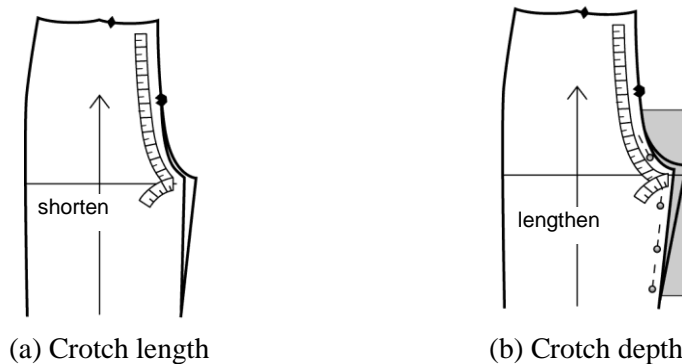
To achieve perfectly fitted trousers adjust the crotch depth and length.

To shorten depth make a pleat half the amount needed at the adjustment line on each pattern piece. Pin in place and redraw pattern lines.

To lengthen depth cut pattern along the adjustment line, insert extension paper, pin and redraw lines.

To decrease or increase length, add or subtract half the adjustment amount at the inner leg seam. Retain the curve shape and draw in the new seam lines.

Figure 11 Modifications trousers



8. Preparing fabric

Press fabric to remove creases. Identify right side of fabric and selvage. Straighten fabric if it is off grain. Pin selvages together placing pins 1.5. cm apart.

Laying pattern on fabric

- Collect all equipment e.g. scissors, tailor's chalk, etc.
- Fold fabric following the guidelines on the information sheet
- Keep grainline of pattern parallel to that of the fabric
- Use a tape measure to check grainline is in the correct position
- Position pattern pieces with 'place-to-fold' mark exactly on the fold
- For nap and one-way designs place the pattern in one direction
- Match fabric designs on seamlines and not on cutting lines
- Cut out each piece the right number of times
- Do not cut fabric until all the pattern pieces are in position
- For patterns without a seam allowance draw it in using tailor's chalk

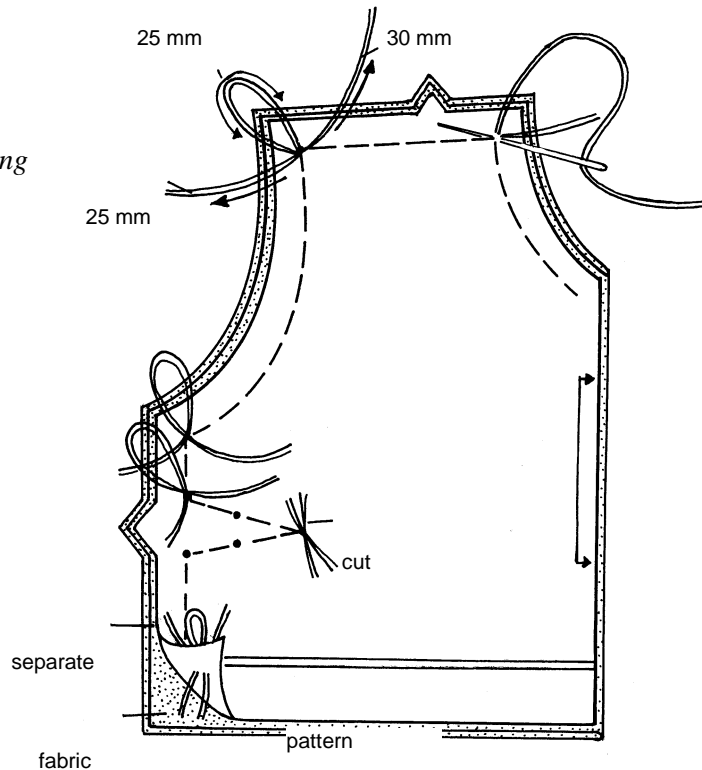
Cutting the fabric pieces

- Cut along the edge of the pattern
- Use sharp, bent-handled scissors, never use pinking shears
- Place the left hand (or right hand) over the pattern piece to hold it in place
- Do not lift fabric when cutting out, do not allow it to move
- Cut with long even strokes to ensure neat edges
- Cut notches outwards, never inwards

Transferring pattern markings

Transfer pattern markings using tailor tacking, dressmaker's carbon paper and wheel or tailor's chalk.

Figure 12 Tailor tacking



Useful pattern terms: clipping, layering/grading, notching, trimmings, trimming a point, understitching

PRESCRIBED PROCESSES FOR MAKING A GARMENT

Useful hand stitches

Tacking (straight, diagonal and slip-tacking), hemming (standard, slip-hemming, blind hemming), gathering, running, slip-hemming, over-casting, top-sewing.

Useful machine stitches

Straight machining, zigzag, embroidery stitches.

Seam types and uses

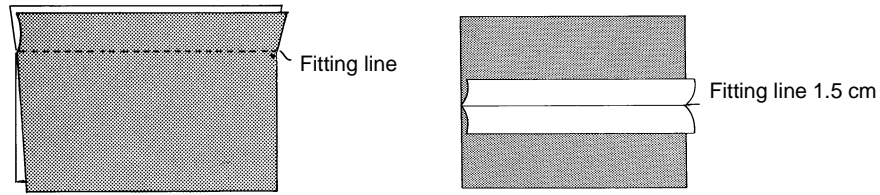
Plain (flat): fine, medium or heavy-weight fabrics, jersey fabrics, suitable for coats, jackets, skirts and trousers

French seam: fine, light-weight fabrics such as lawn, silk, muslin, organza, suitable for shirts, blouses, lingerie, underwear

Felled seam/self-finished seams: medium-weight closely woven fabrics such as cotton, denim and linen, suitable for shorts, jackets, jeans, sportswear

Decorative seams: Seams in medium-weight fabrics, for jackets, shirts, coats, jeans

Figure 13 Plain flat seam



Finish and uses of plain flat seams

Pinking: suitable for non-fraying fabrics e.g. flannel, use a pinking shears

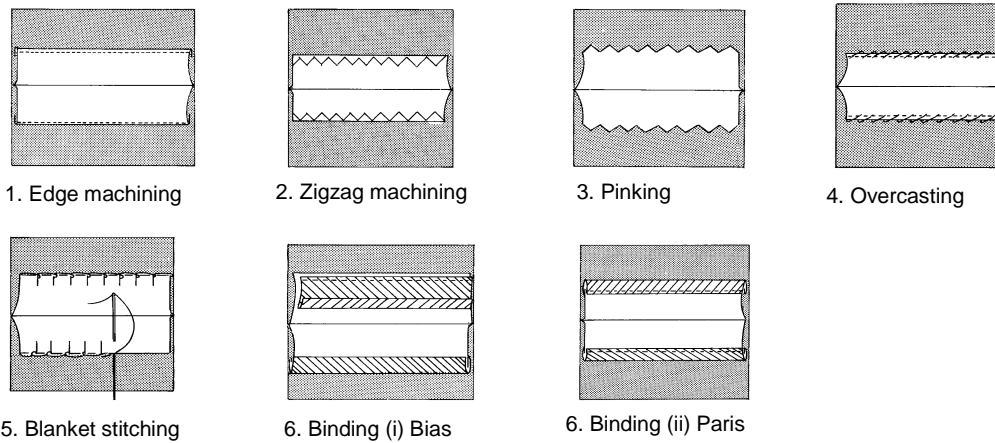
Edge-machining: suitable for light to medium-weight fabrics

Zigzag machining: used on most fabrics except very delicate ones

Overcasting: suitable for medium to heavy-weight fabrics

Binding: sew bias binding on each of the raw edges

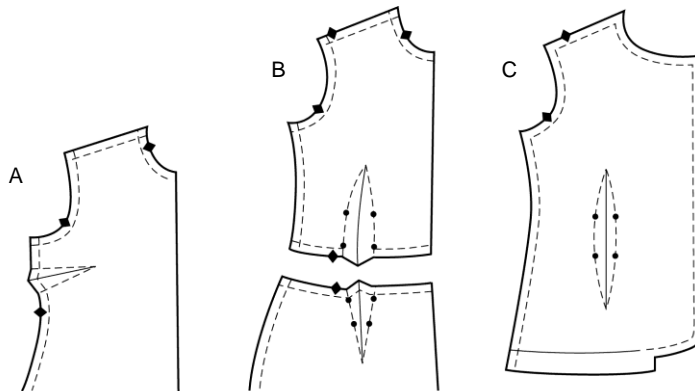
Figure 14 Seam finishes



Darts

Darts are used to arrange unnecessary fullness in garments at bust, elbow, shoulder and waist. Darts fit the curving shape of the body. The types of darts are standard single-pointed dart, double-pointed dart or contour dart and curved or French dart.

Figure 15 Types of darts



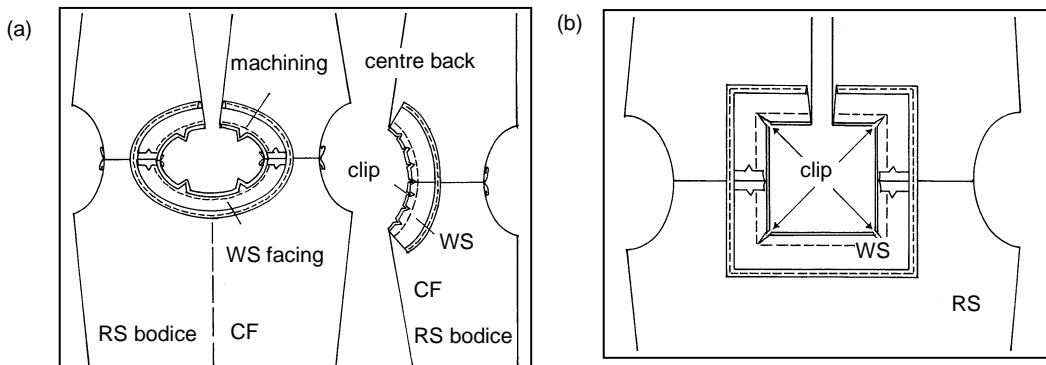
Gathers

Gathers draw in fabric and reduce fullness. They are used in cuffs, flounces, frills, ruffles, necklines, yokes, hem edges and on sleeve edges. They can be worked by hand or machine.

Facings

Facings are used to finish off raw edges around armholes, necklines and cuff openings. Interfacing is attached to the wrong side of the facing to prevent it from stretching.

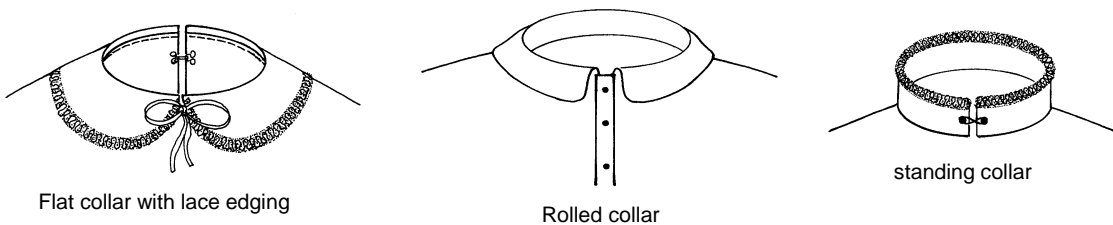
Figure 16 Facings



Collars

Collars neaten the raw edges of a neckline. The main collar shapes are flat, rolled, jabot, shawl, shirt and standing.

Figure 17 Collar styles



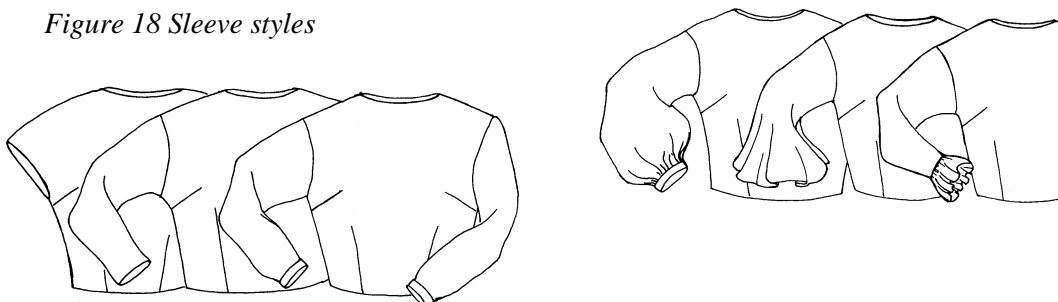
Waistbands

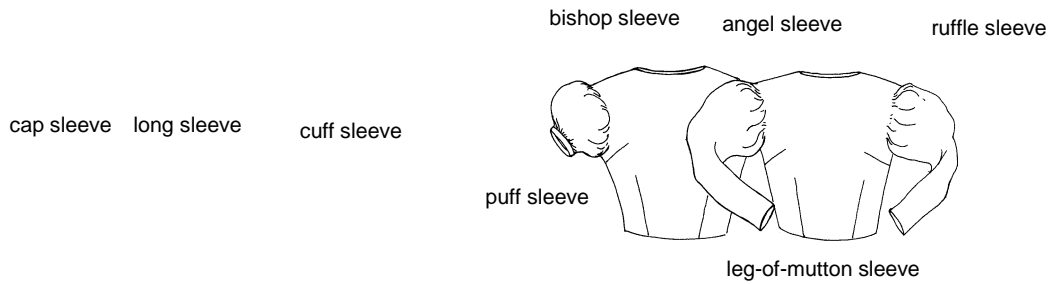
Trouser and skirt waistlines can be neaten using casings or waistbands.

Sleeves

The main types of sleeves are gathered, raglan, kimono, set-in, shirt and t-shirt. The main sleeve hem finishes are self-hem, facings (bias, shaped), casing and bands.

Figure 18 Sleeve styles





Buttonholes

Types and uses

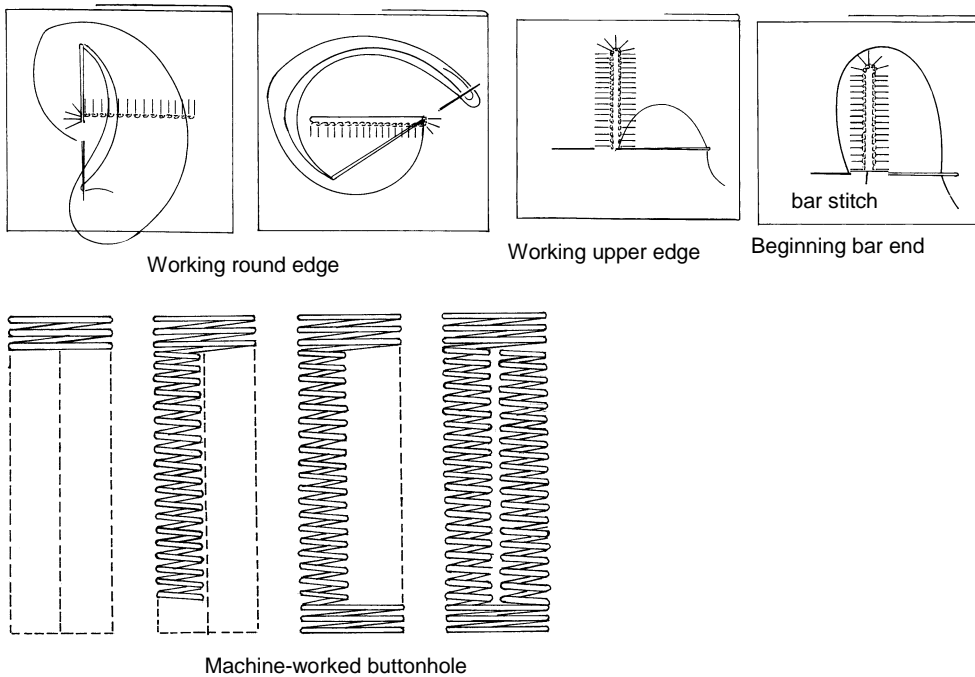
- Bound: all types of fabrics and garments for a professional finish
- Hand-worked: fine or delicate fabrics for blouses and children's clothes
- Machine-worked: fine to medium weight fabrics for shirts, children's clothes
- Tailored: tailored jackets, dresses and suits

Position and direction of buttonhole

Horizontal buttonholes: used where the strain is on the horizontal e.g. cuffs, dresses, jackets and waistcoats

Vertical buttonholes: used where the strain is on the vertical, e.g. blouses, shirts, waistbands and loose fittings

Figure 19 Hand-worked buttonhole and machine-worked buttonhole



Zips

Zips can be used centred, concealed, fly-front, open-end and lapped.

The types of zips are:

Conventional: metal, synthetic

Special purpose: invisible, open-end, two-way

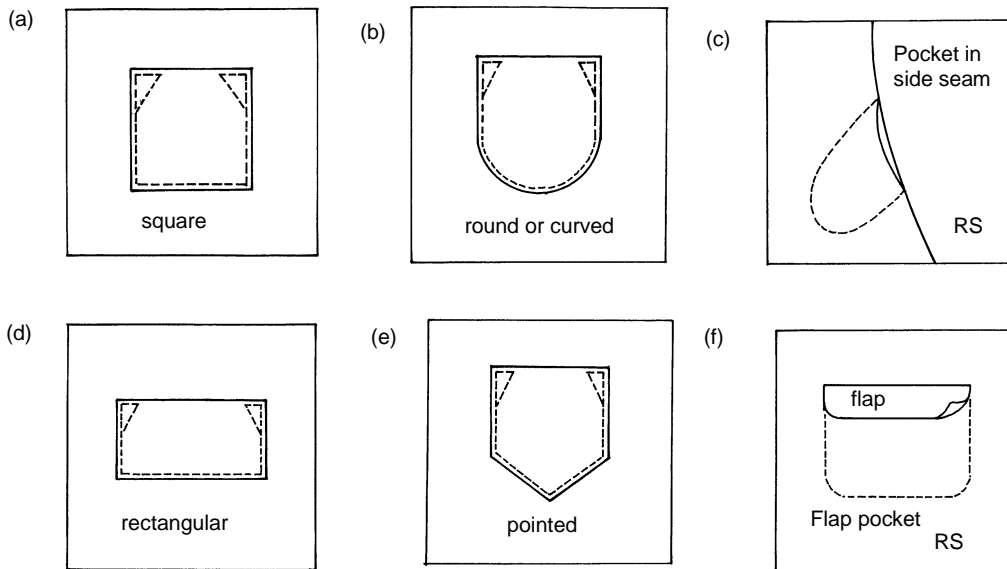
Pockets

Pockets can be decorative, functional or both and lined or unlined. The types of pockets are:

Patch pocket: square, rounded or curved, pointed, rectangular

Bag pockets: pocket in side seam, bound, flap, welt

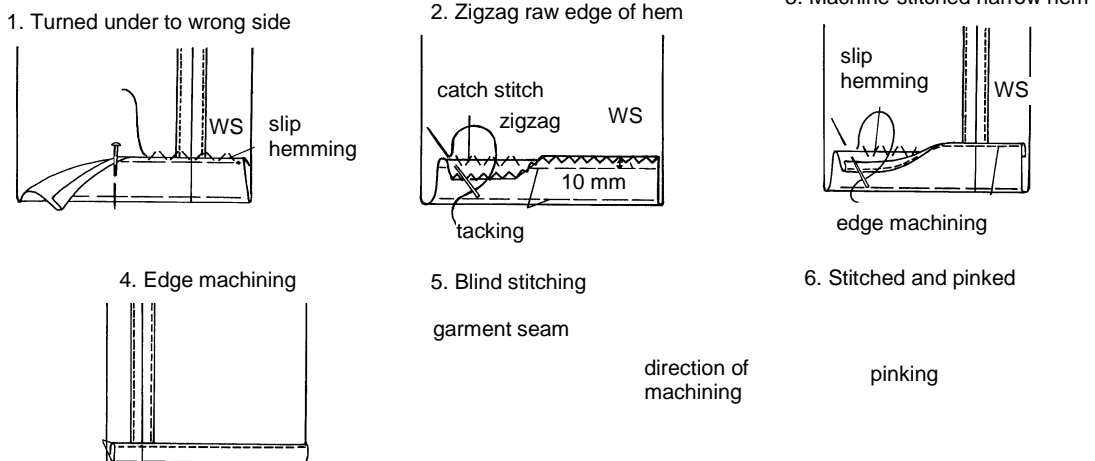
Figure 20 Pocket styles

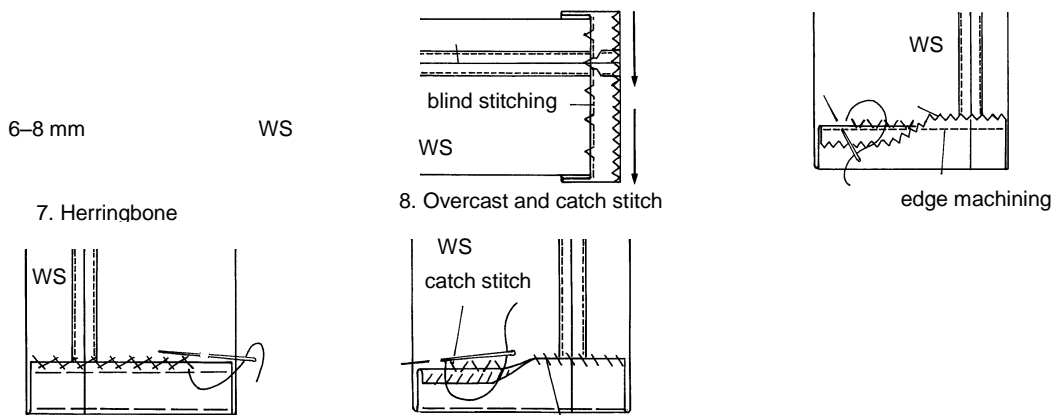


Hem finishes

Hem finishes are used on the bottom of garments. The main types of hems are turned up and stitched, faced and enclosed. The choice of hem is determined by the fashion or trend, garment style and shape, personal preference and type of fabric e.g. crisp, soft, delicate.

Figure 21 Types of hems





Hem finishes for fine and lightweight fabrics

Turned under and slip-stitched, zigzag raw edges and catch stitched in place, edge machining and slip-hemmed in place, blind stitching, pinked and slip-stitched, top-stitched.

Hem finishes for medium and heavyweight fabrics

Herringbone stitch, overcast and catch-stitch, bias binding and slip-hemming, Paris-binding and slip-hemming, bonded or fused hems, top-stitched.

Hems for stretchy fabrics

Zigzag stitching is used to neaten the raw edges of jersey fabric to produce a 'fluting' effect or a flat finish. A narrow hem is then turned up and slip-stitched to the garment.

FITTING A GARMENT DURING CONSTRUCTION

First fitting checks

During the first fitting tack darts, shoulder, side and waist seams along fitting lines.

- Try on garment right side out over undergarments and shoes
- Pin shut openings e.g. cuff, neck, zip
- Check the hang on centre front and back lines
- Check length from shoulder to waist
- Check that the garment looks in proportion
- Check position of darts and closures, adjust as necessary
- Garment should drape smoothly without wrinkling
- Remove garment and make adjustments, try on again

Second fitting checks

During the second fitting machine and press darts and seams, attach collar/facing, tack sleeves into armholes.

- Check that seams are straight
- Check that sleeves are in the right position and fullness evenly distributed
- Check position of openings
- Make adjustments if necessary, try on again

Final fitting checks

All described processes except for hem finishes should be completed before the final fitting.

- Mark hem length using hem gauge and pins
- Pin up and check hem is parallel to floor
- Remove garment, complete hem and press

Design features – creative details

Garments may be made more original by: appliqué, quilting, hand embroidery, machine embroidery, fabric painting (puffa, silk, stencilling), braid, laces, ruffles, feathers, fur, fringes, beading, sequins, combination of both.

THE CLOTHING AND TEXTILE INDUSTRIES

STRUCTURE OF THE CLOTHING AND TEXTILE INDUSTRIES

Production sectors in the industry

Different sectors in the clothing and textile industries produce accessories, business wear, children's wear, fashion knitwear, lingerie and hosiery, menswear, ladies outerwear, leisure wear, shirts and underwear.

CLOTHING RETAILING IN IRELAND – AN OVERVIEW

- Clothing outlets are dominated by chain stores
- Chain stores account for 30% of purchases
- Remaining 70% is accounted for by department stores, independent Irish retailers, specialist multiples and UK retailers
- Large chain stores serve the lower and middle end of the market
- Department stores serve the middle to upper end of the market
- Specialist outlets serve the middle and upper end of the market

Factors affecting growth (positive)

- Fashion trends (designer influences)
- Economic growth
- Increase in number of people at work
- Increase in disposable income
- Development of brand names
- Marketing based on demographic trends
- Development of export market
- Youth culture
- Media and lifestyles

Factors inhibiting growth

- Labour intensive business
- Increased cost of labour and raw materials
- Lower labour costs in other countries
- Cost of training in terms of time and people
- Increased competition from other countries
- Lack of language and computer skills

Strategies necessary to improve growth

- Improving competitiveness at production and retail levels
- Increasing the use of computer aided manufacture (CAM)

- Offering flexibility in relation to the size of orders
- Using quality management systems
- Developing strong links between industry and graduates
- Marketing the industry at national and international levels
- Promoting careers in the textile industry

Areas of potential growth include yarns and fibres, non-woven fabrics, woollen fabrics.

Small clothing and textiles businesses and cottage industries

This sector accounts for 70% of the clothing business and the majority employ fewer than twenty-five people. It has a history of sub-contracting work. It provides much needed employment in rural areas and has an impact on the cultural, social and the economic development of communities. Small firms contribute to the national economy.

Cottage industries supply a niche market. Cottage industries are associated with weaving, knitting, crochet, lace and the production of by-products associated with these skills. Linen and wool woven here are exported abroad to designers.

The Aran sweater is an example of an Irish craft. Crafts generate income from tourism. Other examples include Donegal tweed, Limerick lace and Foxford rugs.

Current Irish designers

Current Irish designers include Lulu Guinness, Paul Costelloe, Lucy Downes, Cuan Hanley, Jen Kelly, Louise Kennedy, Lainey Keogh, Marc O'Neill, Quinn and Donnelly, John Rocca, Philip Treacy and Mariad Whisker.

Leading clothing brands in Ireland – some examples

Menswear: Boss, Eurostyle, Magee, Remus Uomo, Ramsey, St Bernard, Tricot Marine

Womenswear: A-Wear, Paul Costelloe, Michael H, Michel Ambers, Quinn and Donnelly, Libra, Principles, Primark, Ramsay, Regine, John Rocca, Sasha, St Bernard

Knitwear: Carrig Donn, Tricot Marine, Magee, Joan Millar

Agencies supporting the development of the textile industry

FÁS, Forbairt/Enterprise Ireland, Irish Clothing and Textiles Association, Industrial Development Authority

Career opportunities

- Craft worker
- Textile designer
- Textile production
- Clothing designer
- Pattern designer
- Production line operator
- Quality controller
- Health and safety officer
- Research and development
- Marketing
- System analyst
- Fashion buyer
- Retail personnel in shops

- Image consultant
- Design/manufacture of accessories
- Tailors
- Fashion journalist/writers
- Model
- Stylists, hairdressers
- Photographer