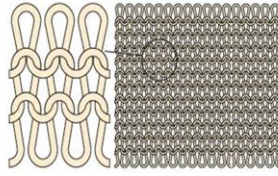## 1. Knitted Fabrics

- are made from a series of yarn **loops** that interlink together
- can be made by **machine** or by **hand**
- **stretch** easily and lose shape
- are **warm** to wear, as the loops trap air
- can **unravel** if the yarn is cut.

Knitted products include **stretchy** casual clothing, such as T-shirts, vests, leggings, and also **warm** clothing, such as hats and gloves.
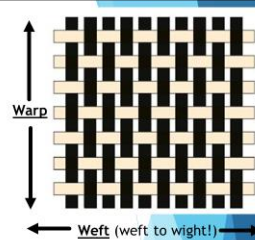
Would this be good for a bag? Why?

Video: Circular Knitting machine (1 min 20 sec)

2. Woven Fabrics

Weaving is done on a loom, with warp and weft yarns:

- **Weft** yarns run across the **width** of the fabric.
- **Warp** yarns run along the **length** of the fabric.
- Weft yarns **interlace** with warp yarns in an 'over-under-over-under' configuration.

Woven fabrics are **strong** and **stable**.

They **don't stretch** but will **fray** if cut.

Woven products typically include smart trousers, shirts, dresses, skirts, carriers and bed clothes.
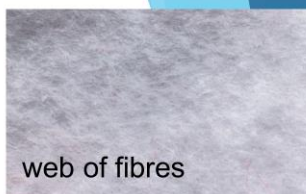
Would this be good for a bag? Why?

Video: Commercial Weaving on Loom (2 min 20 sec)

Warp

Weft (weft to wight!)

3. Bonded Fabrics (non-woven)

Bonded fabrics are made by applying pressure and heat directly onto a **web** of fibres, sticking them together. They are:

- quite **cheap** to make
- not strong and **easily torn**
- ideal for **disposable** products
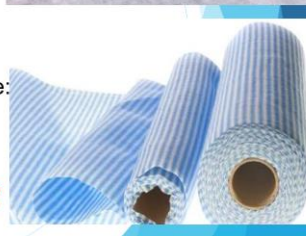- often used to **reinforce** other fabrics.

Products made from bonded fabrics include:
- face masks
- protective suits
- cleaning cloths.

Would this be good for a bag? Why?

Video: Non-woven fabric production (30 sec)

web of fibres

Fibre Properties

Fibre	Source	Properties	Used for
Cotton	cotton plant (natural)	**Absorbent**; strong; cool to wear; washable; flammable	Clothing; soft furnishings; bed sheets; sewing threads
Linen	flax plant (natural)	**Absorbent** ; hard wearing; cool to wear; washable; flammable	Lightweight summer clothing; soft furnishings; table linen
Silk	silk worm cocoon (natural)	Absorbent; **shiny** ; good handle; comfortable to wear	Luxury clothing and lingerie; knitwear; soft furnishings
Wool	sheep, llama, (natural)	**Warm** ; absorbent; strong; low flammability; shrinks easily	Coats; jackets; jumpers; socks; blankets; carpets
Polyester	petroleum (synthetic)	**Strong ;** flame resistant but still melts; poor absorbency	Versatile; used throughout textiles
Nylon	petro-chemicals (synthetic)	Strong; melts as it burns; good **elasticity**; not absorbent	Clothing; carpets; rugs; seat belts; ropes; tents
Acrylic	petroleum (synthetic)	Strong when dry; burns and melts; good **insulator**	Knitwear; knitted fabrics; fake fur; upholstery

Research images and Specifications

Specifications:

It must be a small strong bag with a simple logo of some kind.

The style will be a square tote bag in bright colours, maybe with a pocket and straps.

It must include 2 textile techniques, e.g. tie dye and machine sewing.

It must be made from an environmentally friendly fabric like cotton, that can be recycled.

(Enhancing Fabrics) 1. Blended Fibres

- Fibres (hairs) are the raw materials of textiles and every fibre has its own **characteristics** or **properties**, e.g:
  - cotton fibre is absorbent and cool to wear
  - polyester fibre is strong but not absorbent

- **Blending** or mixing fibres combines the best properties of each.
  - **Polyester cotton** is a blended fibre which will be cool to wear but will dry more quickly, because polyester does not absorb water.

- Many shirts or bed sheets are made from '**polycotton**'. It is also cheaper than 100% cotton.

polyester + cotton

Blending

polycotton
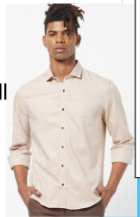
(Enhancing Fabrics) 2. Combined Fabrics

Textile fabrics can be **combined** to improve their qualities.

Laminated (bonded) fabrics are where two or more fabrics are glued together to create a **layered** material.

Compared to plain fabrics, laminated fabrics have **combined** properties (greater **strength**, **durability** and **waterproofing**.

They are great for outdoor clothing, sanitary products like cloth nappies, mattress protectors, bibs, wet bags and tablecloths.

Can you think of any other products?

A neoprene mouse mat. A thin, blue knitted fabric is laminated to a black rubber fabric (neoprene). This feels soft to your hand but is non-slip underneath.

What is GORTEX?

(Enhancing Fabrics) 3. Applied Finishes

Finishes are applied to the surfaces of fabrics to improve the function or the aesthetics (looks). Finishes can be:
  - a **mechanical** process
  - a **chemical** process

- **Mechanical**: Fabrics can be **brushed** making them fluffier in appearance, softer and warmer to wear.

- **Chemical**: A **resin** applied to fabrics makes them crease resistant or water resistant, which is ideal for clothing.

Brushing raises the surface of fabric. Warm air is trapped in the raised fibres keeping the wearer much warmer.

A silicone finish applied to fabrics will make them resistant to water. The droplets simply run off.