Fabrics are made up of different types of fibres. Fibres can come from nature, like cotton from the cotton plant, or wool from sheep and they can also be synthetic (man-made) and be made from chemicals. Fibres often look like hair and they can be processed in different ways to make fabric. How they are processed affects the properties of the fabric, as does the fibre you start with.

There are three main ways to make fabric – Weaving, Knitting and Felting or Bonding.

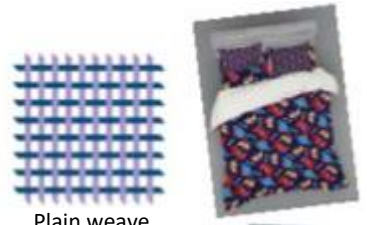
Woven Fabric

When fibres are collected from nature, they need to be cleaned before they can be turned into fabric, they also are often carded (combed) to remove any debris and help the fibres lay in the same direction. Imagine a sheep's fleece – that needs cleaning and carding before the next stage of the process can begin.

Once the fibres are clean and ready to use, they are twisted together – this is called spinning. Lots of fibres are spun together making one long strand. The thickness of the strand varies, depending on how you want finished fabric to turn out.

This giant machine spins all the fibres into yarn, ready for weaving

The spun fibres are then woven together on something called a loom. There are lots of different types of weaves and they give a different end result. You might be most familiar with one called a plain weave, this is used for fabric that could be made into school shirts, dresses and bedding. If you look very carefully at your school shirt, you might be able to see the different strands woven together. A Twill weave is used to make Denim fabric, which will be used to make jeans.



Plain weave

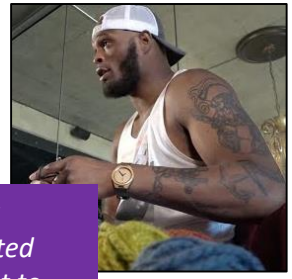
Twill weave

Knitted Fabric

When you think of knitted fabric, you might think of what your grandparents or parents or even you do with knitting needles. Essentially, it is the same process for making knitted fabrics, but on a much larger scale, and using machinery.

Just the same as when making woven fabric, the fibres need cleaning and carding and then spinning before they can be knitted.

After that, the yarn is knitted into either rolls of flat fabric, or sometimes tubes of fabric or even whole garments such a tights or socks.



Heavy weight fighter Maurice Greene started knitting before a fight to calm him down. He's recently moved on crochet

This is a type of loom that is making knitted fabric that is in the shape of a tube. This could be used to make the body of a t-shirt, the arms and neck hole would be attached separately.

'Welt' knit

'Warp' knit

This is a picture of what knitted fabric would look like if you looked at it very closely. You can see the yarn is looped together. This makes knitted fabric stretchy so it's great for making into things like T-shirts and sportswear.

So it's not just woolly jumpers that are knitted, but also leggings, swim suits, underwear, socks and any other Textiles items that are stretchy, are likely to be made from knitted fabric.

Felted and Bonded Fabric

Felted fabric is made directly from the fibres. No spinning is needed, although the fibres are still washed and carded. Wool is one of the best natural fibres to create felted fabric, because each fibre has a scaly structure that looks a bit like a fir-cone. When the fibres are heated up, the scales open up and then lock together with other fibres when they are agitated (rubbed together).

Wool fibre under a microscope

Felt fabric does not stretch, and can be very warm because of the way it is made. Felt does not fray like woven fabric, or unravel or ladder like knitted fabric but it doesn't drape very well so tends to be used for items like hats, bags and coats.

You may have heard of Needle Felting and Wet Felting. These are both crafts that can be done at home to create a variety of different items. Felting is also done on an industrial scale, and felt can be shaped as it's being made – like into the shape of a hat!

Bonded fabrics are also made directly from fibres, rather than yarn. The fibres are laid out in a random pattern, and then bonded together using heat or glue.

These fabrics tend to be very weak, but they don't stretch or fray. They are used for disposable items like J-cloths, surgical gowns and wet wipes.

Natural Fibres

Textiles are usually made up of fibres. Fibres can come from all sorts of places like plants, animals, insects and even synthetic (man-made) fibres that come from chemicals. Fibres often look like hairs and can be processed in different ways to make Textiles, also called fabric.

Before and after shearing!

Wool

Wool is a fibre that comes from animals. We mostly get wool from sheep, but you can also get wool from camels, alpacas, llamas, goats and even rabbits! It's possible to make wool from anything that is hairy – you could even make wool fabric from a dog!

The wool is sheared from the animal (like having a haircut) and then it's washed, combed and processed to turn it into wool fabric. Wool fabric is warm so it's good for making into things like jumpers, scarves and coats. It's also used to make carpets and insulation to keep your house warm. Wool is absorbent and it can also shrink easily so you have to be careful when you wash it.

Cotton

Cotton is a fibre that comes from the cotton plant. The plant grows in warm climates and needs lots of water. After the plant has flowered, it produces a 'boll' which contains the seeds of the plant. In nature, these would be blown around by the wind and the seeds would disperse and grow new plants. Instead, we farm the plants and pick the cotton 'bolls', process them and turn them into cotton fabric.

Cotton feels cool to wear when it's hot, but it can crease easily. It can be quite hard wearing so can be washed easily and can last a long time. Cotton is also absorbent so it's good for making things like towels. Other items made from cotton include bedding, t-shirts, socks and underwear, trousers and school shirts. Cotton is cool to wear so it is used for a lot of clothing.

Silk

Silk comes from the cocoon of a silk worm. The silk worm (which is actually a caterpillar) spins a cocoon of silk around itself when it is ready to turn into a moth. People farm the silk worms, just like people farm sheep and when they make their cocoons it can take them up to 8 days! The farmers put them in hot water to release the glue that holds the silk fibres together. Then the silk fibres are processed to turn them into silk fabric.

As each cocoon is very small, silk fabric is very expensive as it takes so much effort to make just one item – it takes around 1,800 cocoons to make one silk dress! Silk is quite a delicate fabric and can be easily damaged when it's wet (e.g. washing). Silk is often used for special items like wedding dresses, or special occasion shirts or ties but some people have silk underwear! Silk keeps you cool when it's hot, and also keeps you warm when it's cold. It has a natural 'lustre' or shine.

Flax plant drying after cutting

Linen

Linen comes from a plant called the Flax plant. The stem of the plant is used to make fibres. The plants are cut, then the stems are soaked in water to get rid of the soft parts. That leaves the tough fibres behind which are then processed to turn them into linen fabric.

Linen is great for summer clothes because it's very cool to wear. Linen is hardwearing so lasts for a long time but creases very easily. Apart from summer clothes, it can also be used to make tea towels and table cloths among other things.

Q What type of fibre do you think would make a good T-shirt? Can you give reasons why?
Q Why do you think cotton is a good fibre to make summer socks?
Q What fibre would be good to make a blanket from? Why would it work well?