

# Home Economics

## Textiles, Clothing and Fashion



<https://www.pexels.com/photo/abstract-abstract-background-cotton-linen-2559308/>

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*Topic: Natural Plant Fibre - Cotton and Linen*

*Group Level: Form Four*

### *Instructions:*

1. Read the information provided on the topic.
2. Review what you have learned by completing the worksheet.
3. Use the answer key to assess your performance.

## Natural Fibres

Natural fibres come from plants or animals. Cotton, Linen, Wool and Silk are the most common natural fibres. Quality of the fibre varies on the type of plant or animal and the growing conditions. They have unique characteristics that cannot be copied by science.

### Natural Plant Fibre - Cotton



<https://www.publicdomainpictures.net/en/view-image.php?image=220751&picture=cotton-fields>

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### Production of Cotton

Growing cotton begins in the green fields within tropical climates. The first stage of the process is planting the cotton seed. The cotton boll matures in a period that ranges from 55 – 80 days becoming a fluffy mass like a ball of cotton wool. The fibres in each boll are of different length, some being 2.5 cm long while others are shorter. At this stage the fibres are gathered by hand or machine.

#### Ginning

The bolls are put into a GIN, a machine which removes seeds, stalks, leaves and other impurities. In the completion of the cleaning and separating stage of the process, the seeds are then later refined to create cottonseed oil, the linters (fibres which are too short for making yarns) are used in the manufacturing of paper and plastics and the cotton is now referred to as lint cotton as it has been separated from the seed.

#### Baling

The cotton is packed into large bales of 180 – 227 kg and sent to the manufacturing countries.

#### Grading

The cotton is examined and graded according to quality. A series of machines tear the cotton apart and loosens it, finally forming it into a thick wad called a lap, similar to cotton-wool.

## **Carding**

A carding machine arranges the cotton fibres in thick ropes or slivers about 1 inch in diameter.

All the fibres now lie parallel.

## **Combing**

The slivers are combed to remove short fibres, and at the same time the slivers become thinner.

## **Spinning**

The sliver is drawn out and twisted to form yarn ready for weaving and knitting into fabric.

### **Properties of Cotton**

- |                |                  |                    |
|----------------|------------------|--------------------|
| • Strong       | • Hard - wearing | • Versatile        |
| • Absorbent    | • Creases easily | • Easy to care for |
| • Cool to wear | • Smooth         | • Breathable       |

### **Advantages and Disadvantages of Cotton**

#### **Advantages**

- Stronger when wet
- Durable and long lasting
- Not expensive
- Comfortable to wear
- Environmentally sustainable

#### **Disadvantages**

- Creases badly
- Burns easily
- Shrinks when washed

### **Uses of Cotton**

- Basically used for every type of clothing from jackets to normal shirts.
- In home, it finds its use in towels, cushions, bed sheets, quilts and curtains.
- Cotton seed oil is used in food and cosmetics.
- It is also used in coffee filters.
- The seeds are fed to cattle and crushed to make oil, rubber and plastics.

### **Fabric Names:**

- Calico, Drill, Corduroy, Poplin, Denim, Velvet, Cotton jersey, Terry towelling

## Natural Plant Fibre – Flax (Linen)



<https://www.pxfuel.com/en/search?q=flowering+flax>

Royalty-free

### Production of Linen

Linen is obtained from the flax plant and it is generally agreed that it is the oldest material grown and used for clothing. There are several references to flax in the Bible. It was grown in Egypt in early days and has been found as a burial garment in tombs opened up during recent years.

#### Harvesting Flax

The highest quality linens are harvested completely by hand, and to date, there is no machine that better streamlines this process. Flax fibers are held together by calcium and proteins, and must be separated during the harvesting process. The best way to separate them is steeping in water to loosen the fibre from the woody stem by letting it rot – known as the retting process.

#### The Retting Process

Water retting produces the best linens. Flax fibers must be held down in stagnant, still water in order to separate them. Bogs and ponds are great for this method. Dew retting is another possibility. Fibers are spread out so that the morning dew helps to separate them, and are pulled as the day warms. Flax can also be retted in a tank with cement, or using a chemical process. Both of these processes produce lower-quality linens.

#### Scutching

The flax is spread out to dry in the open air so that the woody stem may be crushed and removed.

## **Hackling**

The flax is combed so that the short fibres are removed and the longer ones lie parallel and smooth.

## **Carding**

The fibres are combed to form long soft ropes (SLIVERS), resembling glossy human hair.

## **Spinning**

The fibres are drawn out into a fine thread and twisted to give strength. They are now ready for weaving.

### **Properties of Linen**

- Very hard-wearing
- Cool next to the skin
- Strong
- Absorbent
- Creases easily
- Dull lustre
- Breathable

### **Advantages and Disadvantages of Linen**

#### **Advantages:**

- Strong when wet
- Very hard-wearing
- Highly absorbent so dyes easily
- Comfortable to wear

#### **Disadvantages:**

- Creases easily
- Expensive (Linen is expensive since it's hard to weave. Linen fiber is inelastic and easy to break in the production process)

#### **Uses:**

- Household items such as tablecloths, napkins, tea towels, sheets, and curtains.
- For making many types of garment and
- Making a strong sewing thread.

#### **Fabric Names:**

Damask Linen, Duck, Huckabuck, Ticking Holland

# Worksheet

1. DIRECTIONS: Read each of the following statements and circle T if it is true or F if it is false

- T F      a. Cotton is cultivated in warm, humid climate.
- T F      b. Hand picking of cotton results in a poorer quality cotton.
- T F      c. The cotton seeds are a valuable by-product of the cotton industry.
- T F      d. The ginning process of cotton separates the lint from the seed.
- T F      e. Grading is a process of sorting the cotton fibres according to quality.
- T F      f. Cotton fibres are stronger when dry than when wet.
- T F      g. Linen fabric is made from flax fibres.
- T F      h. The hacking process of flax involves straightening the fibers.
- T F      i. Flax fibres are held together by cellulose.
- T F      j. When flax is removed from the combing machine, it resembles glossy human hair.

(10 marks)

2. State one property of cotton which makes it suitable for the following use.

- I. Blouse .....
- II. Bed sheets.....
- III. Towel.....

(3 marks)

3. Define the term 'Retting Process'

.....

.....

(2 marks)

4. List three methods to achieve the retting process.

- I. ....
- II. ....
- III. ....

(3 marks)

Total 18 marks

# Answer Key

## 1. True/False Items

- |             |             |
|-------------|-------------|
| a. <b>T</b> | f. <b>F</b> |
| b. <b>F</b> | g. <b>T</b> |
| c. <b>T</b> | h. <b>T</b> |
| d. <b>T</b> | i. <b>F</b> |
| e. <b>T</b> | j. <b>T</b> |

(1 mark for each correct response)  
(10 marks)

## 2. State one property of cotton which makes it suitable for the following use.

- I.    Blouse **cool to wear or breathable**
- II.   Bed sheets **strong or hard – wearing**
- III.  Towel **absorbent or strong**

(1 mark for each correct response)  
(3 marks)

## 3. Define the term 'Retting Process'

**Steeping flax in water to loosen the fibre from the woody stem by letting it rot.**

(2 marks)

## 4. List three methods to achieve the retting process.

- I.    **Pond retting**
- II.   **Dew retting**
- III.  **Tank retting**

(1 mark for each correct response)  
(3 marks)

Total 18 marks

<b>16 – 18 Excellent    13 – 15 Good</b> <b>12 and under – Review information and try again</b>
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## References

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Gawthorpe L. (1976) Fabrics and Laundrywork. Hulton Educational Publications

Giles R. (1985) Fabrics for Needlework. Methuen Educational

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