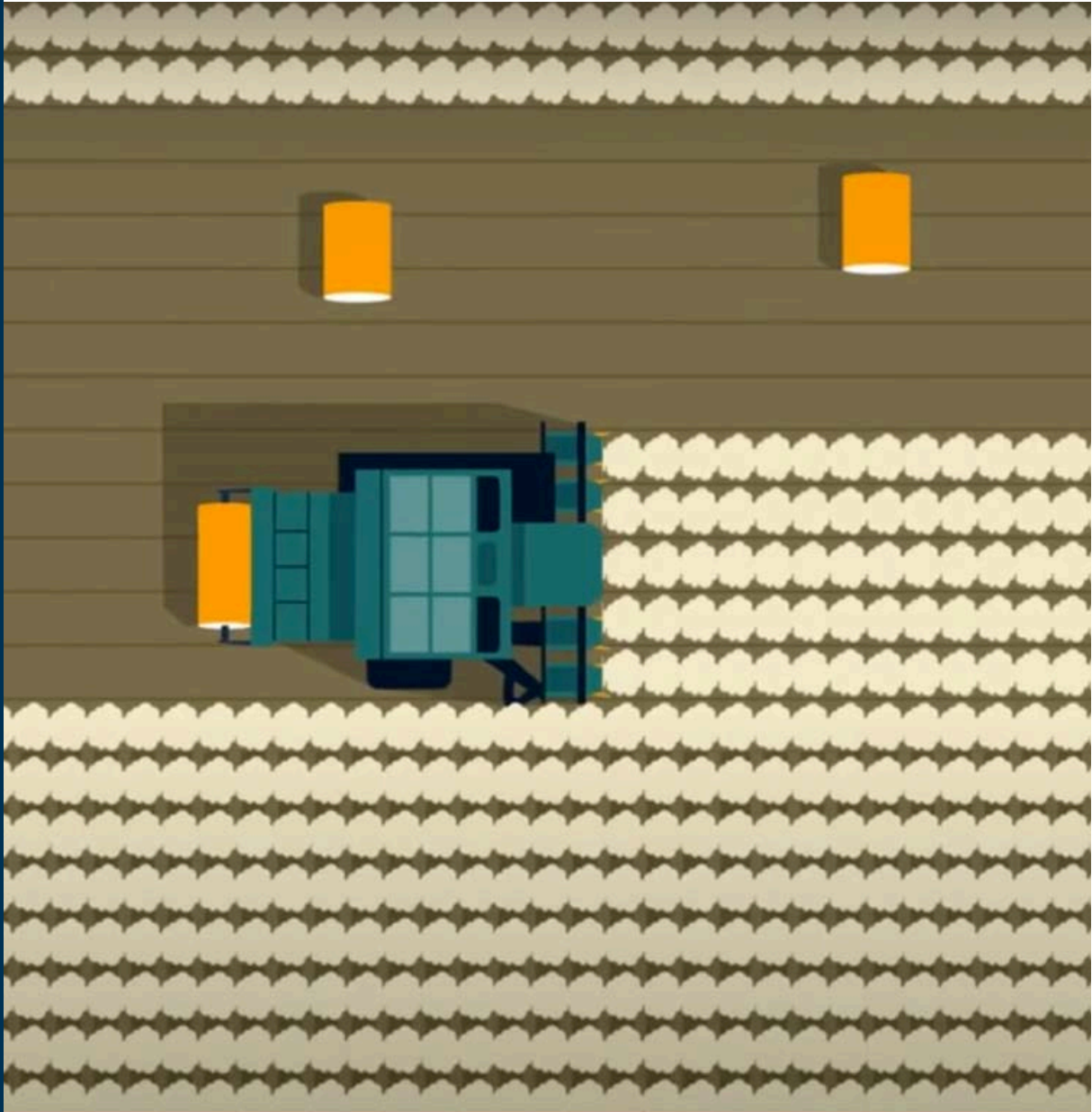
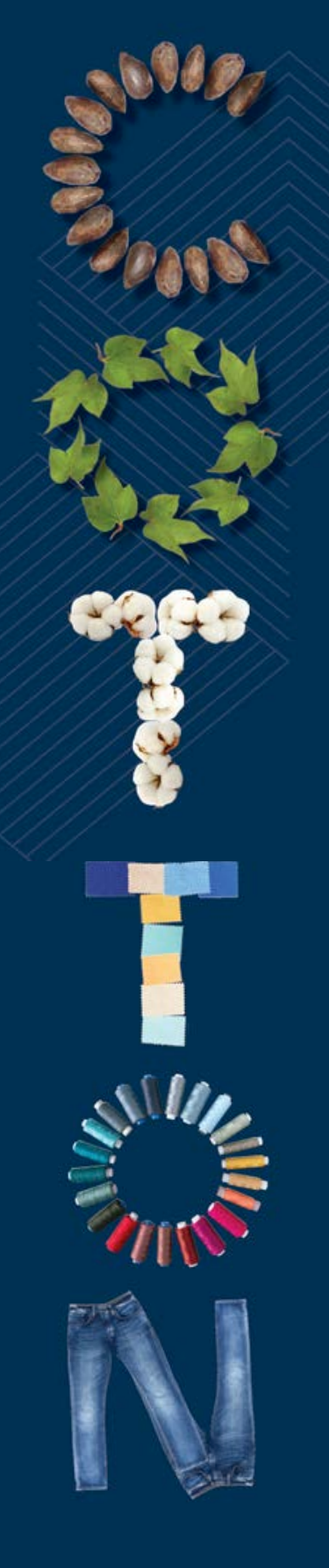


A Year on a Cotton Farm



Lesson & Activity Guide
Years 3 & 4
Design and Technologies,
Mathematics and Science



A Year on a Cotton Farm Overview



Australian Curriculum Content Year 3-4

Design and Technologies

- Describe the ways of producing food and fibre (AC9TDE4K03)

Science

- Compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (AC9S3U01)
- Examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use (AC9S4U04)

Mathematics

- Measure and compare objects using familiar metric units of length, mass and capacity, and instruments with labelled markings (AC9M3M02)
- Interpret unmarked and partial units when measuring and comparing attributes of length, mass, capacity, duration and temperature, using scaled and digital instruments and appropriate units (AC9M4M01)

Lesson Objective

Students learn about where their clothes come from focusing on the natural fibres from cotton. They will also learn about the regions of Australia where cotton is grown and what makes them suited to cotton production. Students will also examine the life cycle of a cotton plant, creating a scaled timeline and examine the jobs performed by cotton producers throughout the seasons in Australia.

Lesson Overview

Activity 1.1 - Where Do Your Clothes Come From? (40 mins)

Activity 1.2 - Cotton in Australia (20 mins)

Activity 1.3 - The Cotton Life Cycle (60 min)

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ATTRIBUTION, CREDIT & SHARING



This resource was produced by Primary Industries Education Foundation Australia (PIEFA) in collaboration with Cotton Australia. Primary Industries Education Foundation Australia's resources support and facilitate effective teaching and learning about Australia's food and fibre industries. We are grateful for the support of our industry and member organisations for assisting in our research efforts and providing industry-specific information and imagery to benefit the development and accuracy of this educational resource.



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A Year on a Cotton Farm

Resources & Equipment

ACTIVITY 1.1 - Where Do Your Clothes Come From?

1. **Worksheet 1.1a - What Am I?** (Stimulus activity)
2. Cotton on a stem (often available from a florist or you may request ONE free Cotton Sample Kit per school annually from the Cotton Classroom:
<https://cottonaustralia.com.au/education-kit>)
3. [Cotton Products and Uses](#) (3:07)
4. [Cotton Products & Uses Quiz](#)
5. Various cotton and non-cotton clothing with visible labels attached - 100% cotton, various cotton blends, and 100% synthetic material.
6. Cotton products such as cotton seeds, cotton wool (sometimes called cotton ripple), cotton balls, tips, buds, thread, napkin, cottonseed oil (if possible), hard-cover book binding, coffee filters, and bandages. Note that some cotton balls, tips and buds are now often manufactured using made/synthetic fibre so check the labels first - typically it is not labelled cotton, it is a made fibre (polyester or nylon).

Activity 1.2 - Cotton in Australia

1. **Worksheet 1.2a - Australian Cotton** (Literacy activity).
2. Coloured pencils.
3. **Worksheet 1.2b - Where Australian Cotton is Grown** (Mapping activity).
4. [Cotton-growing-in-Australia.pdf](#)

Activity 1.3 - The Cotton Life Cycle

1. String, one metre ruler or measuring tape, marker
2. **Worksheet 1.3a - Cotton Life Cycle** (Sequencing activity)
3. Scissors
4. Optional: [Cotton Plant Time Lapse](#) (6:09) to show the growth of a cotton plant in a greenhouse and/or [Cotton boll popping open](#) (0:37)
5. **Worksheet 1.3b - The Role of a Cotton Producer** (Timeline activity).
6. [Australian Cotton, from Seed to Sock](#) (6:12)

Other Resources

[A Season At Saunders - YouTube](#)

Cotton Boll Development





Students will explore where their clothes come from. They will learn about made materials (synthetic fibres) and natural materials (natural fibres) and learn about the many useful products made from cotton.

- a)** Introduce the topic of where clothes come from by encouraging a class discussion and posing the question, 'Where do the materials for your clothes come from?'. Focus the discussion on what they are made from (natural or made/synthetic fibres) and where this is produced or made (farms, factories) rather than where they can be purchased.
- b)** Record student responses on the board or in a central area and explain that natural materials come from the environment, such as plants and animals (e.g. cotton, wool, silk, linen, leather, hemp, bamboo) whereas made materials are those that are manufactured or created by humans and are petroleum based (e.g. polyester, nylon, spandex, rayon (semi-synthetic), acrylic, elastane etc.).
- c)** Display **Worksheet 1.1a - What Am I?** (Stimulus activity). Students make predictions and discuss what is shown. (Answers page 7)
- d)** Ask the students to check the label of their school uniform if suitable. What is it made from? Is it made from a natural or made material (also called man-made or synthetic)?
- e)** Explain that natural fibres such as cotton are used to make clothes because of their desirable properties. Cotton is a natural fibre that is durable, soft, breathable, and has moisture-wicking (draws moisture away from skin) properties. It will also decompose after the end of its useful life, recycling its nutrients back into the soil and not ending up in landfill for decades.
- f)** Show students a variety of cotton and non-cotton clothing with labels attached. Ask students to examine the labels and look for information about the materials used in the clothing. Ask them to feel the fabric, discussing any differences they observe between the 100% cotton and the synthetic or made fabric.
- g)** View the video [Cotton Products & Uses](#) (3:07). Ask students to recall the many products made from cotton mentioned in the video.
Optional: Students may take the interactive online quiz based on this video [Cotton Products & Uses Quiz](#).
- h)** **Allow students to handle some of the many products** made from cotton in addition to clothes, including cotton wool (sometimes called cotton ripple), cotton balls, tips, buds, thread, tea towel, bath towel, pillow slip, cottonseed oil (if possible), hard-cover fabric book-binding, coffee filters, bandages etc. Note that some cotton balls, tips and buds are now often manufactured using made/synthetic fibre so check the labels first – typically if it is not labelled cotton, it is a made fibre (polyester or nylon). You could also mention that the fuzzy seeds which is a by-product of ginning can be fed to livestock.



A Year on a Cotton Farm

Cotton in Australia

Lesson Guide for Activity 1.2



Students will discover the regions where cotton grows in Australia and why these areas are suitable for cotton production. They will mark these areas on a map of Australia and examine where they live in relation to cotton growing regions.

a) Ask students if they know where cotton is grown in Australia. Discuss why they think cotton is only grown in some areas and not others.

- Does cotton need a warm or cold climate to grow?
- Does cotton grow in dry conditions?
- Does cotton grow on flat or hilly land. Etc.

The suitability of an area for cotton production depends on a combination of factors, including climate, water availability, soil conditions, and whether technology (e.g. machinery used for picking) and infrastructure (such as a cotton gin (which separates the lint from the seed and bales the lint for export), road access, access to international shipping ports for export etc.) for cotton farming and processing are accessible or nearby.

b) Distribute **Worksheet 1.2a - Australian Cotton** (Literacy activity). Support students in reading the information and encourage a discussion about the needs of a cotton plant and how they relate to the vastly different regions in Australia.

c) Display [Cotton-growing-in-Australia.pdf](#). Explain to students that this map shows the main cotton regions in Australia. The main production areas are central and southern Queensland; northern, central, and southern NSW; and northern Victoria (Cotton Australia, 2023). Zoom in to see greater detail of the areas once students have an idea of the locations relative to the whole of Australia and the state they live in.

The map also shows small areas of northern Queensland, northern Western Australia and the Northern Territory where cotton production is now being grown commercially.

d) Distribute **Worksheet 1.2b - Where Australian Cotton is Grown** (Mapping activity) and assist students to complete the four mapping activities on the page. For early finishers, there is an extension activity for students to investigate and show the location of the Murray Darling Basin. Students will need to use the [Cotton-growing-in-Australia.pdf](#) map displayed previously. (Answers page 7)



Ginned Cotton



A Year on a Cotton Farm

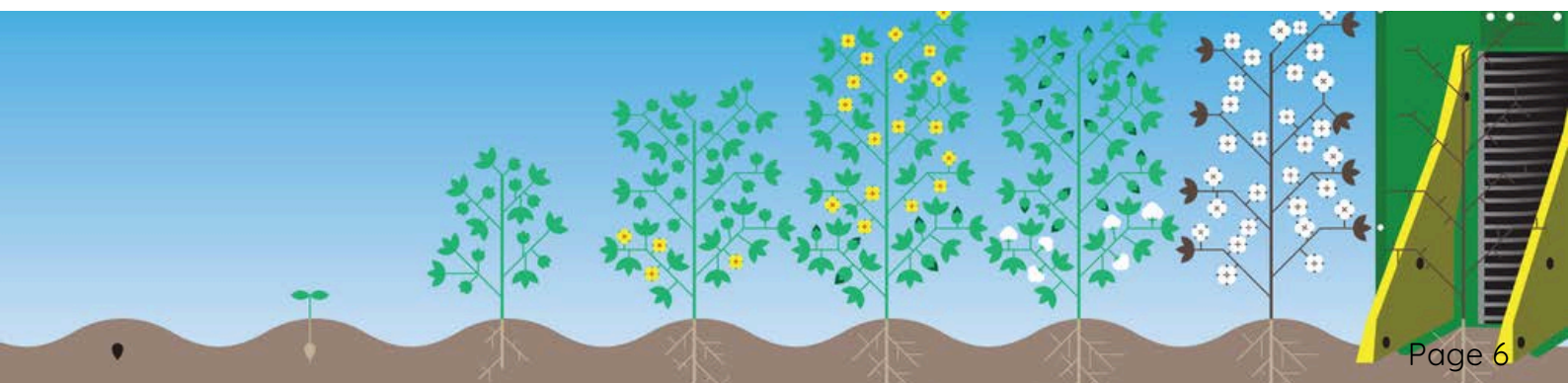
The Cotton Life Cycle

Lesson Guide for Activity 1.3



Students will learn about the life cycle of cotton and understand how the plant changes over a period of time. They will create a scaled timeline to represent a life cycle and associate the role of the farmer and their staff or contractors with jobs that are being performed at different stages of the plant's growth and development.

- a) Provide students with **Worksheet 1.3a - Cotton Life Cycle** (Sequencing activity). Students cut out the paper strips describing the different stages of the cotton life cycle. Each strip contains one stage and its corresponding week number. Ask students to arrange the strips in order of time (e.g. from 0 to 23 weeks). (Answers page 8)
- b) Lay a 12 m piece of string/paper on the floor or along a wall so students can easily access it. Demonstrate how to create a scaled timeline by using a ruler and placing a 5 cm long piece of masking tape every 50 cm along the string. Label each piece of masking tape with the numbers 0 to 23 to represent each week in the cotton life cycle. Explain to students that a timeline can show how something changes over a period of time. Note: scale down 50% if space is unavailable.
- c) Nominate one student at a time to attach a single strip of paper from **Worksheet 1.3a - Cotton Life Cycle** (Sequencing activity) to the correct locations on the string to create a complete timeline of the life cycle. (Optional: students draw a series of pictures to attach to the timeline based on the descriptions). Display the timeline in the classroom.
- d) Optional - View the time lapse video [Cotton Plant Time Lapse](#) (6:09) to show the growth of a cotton plant in a greenhouse and/or [Cotton boll popping open](#) (0:37) to show a cotton boll opening.
- e) Explain to students that at each point along the timeline/life cycle, a producer will perform particular jobs to make sure their crop is healthy and growing well. Distribute **Worksheet 1.3b - The Role of a Cotton Producer** (Timeline activity) and read about the jobs performed during the life cycle of cotton and both before and after the harvest. Students cut the worksheet into strips and order the jobs, referring back to the timeline as necessary.
- f) Nominate a student to walk to the class timeline and stand near the week where they think the producer would perform each job. Ask the rest of the class to raise their hand if they think the student is in the correct position. Attach the strip to the string/paper when the student is in the correct position. Repeat for the other job descriptions. (Answers page 8)





A Year on a Cotton Farm

Answers



ACTIVITY 1.1 - Where Do Your Clothes Come From?

Worksheet 1.1a - What Am I? (Stimulus activity)

Page 1 - A close-up of a cotton boll that has cracked open. The fluffy white lint known as cotton fibres can be seen. Cotton seeds (over 50% per boll) are also wrapped up in the lint.

Page 2 - Cotton plants showing stems, leaves, and open cotton bolls.

Once the plant has been defoliated (sprayed so the leaves drop to the ground to be composted back into the soil and the plant is left looking like a collection of bare sticks), the cotton is ready to be picked.

ACTIVITY 1.2 - Cotton in Australia

Worksheet 1.2b - Where Australian Cotton is Grown (Mapping activity)

See [Cotton-growing-in-Australia.pdf](#).

ACTIVITY 1.3 - The Cotton Life Cycle

Worksheet 1.3a - Cotton Life Cycle (Sequencing activity)

Week 0 - Planting (October - November):

Cotton seeds are planted in the soil when the soil is warm enough (14°C over three consecutive days).

Week 2 - Emergence (October - November):

The seed starts to germinate and emerge from the soil.

Week 4 - Growing taller (November - January):

The cotton plants grow taller and develop more leaves. The plant grows more stems, making them bushier.

Week 6 - Flower buds form (December - January):

The flower buds develop and get larger. The flower buds are called squares.

Week 11 - Flowering (January - February):

The plants briefly grow creamy-white coloured flowers that, once pollinated, change colour (cotton is self-pollinating not requiring bees and insects for this process). They change colour from creamy-white to pink, red, mauve, or purple. The petals drop off, leaving a small green seed pod (fruit) with seeds inside known as a cotton boll.

Week 14 - Boll development (February - March):

The cotton bolls grow larger and inside the fluffy cotton fibres begin to form around the cotton seeds. The bolls then start to open.

Week 23 - Maturity (March):

The cotton plant is fully grown, and the cotton is ready for harvesting.



Picking Cotton Aerial View



A Year on a Cotton Farm

Answers - continued



Worksheet 1.3b - The Role of a Cotton Producer (Timeline activity)

Week 0 - Planting (October - November):

Producers test the temperature of the soil to make sure it is warm enough for germination.

Week 2 - Emergence (October - November):

Producers ensure the cotton plants get plenty of water during this crucial growth phase.

Week 4 - Growing taller (November - January):

Producers check for pests, beneficial insects, soil moisture, remove weeds, and monitor the plants growth.

Some cotton farms use irrigation to water the plants. This depends on the region and the rainfall levels.

Week 6 - Flower buds form (December - January):

Producers check for pests, soil moisture, remove weeds, and monitor the plants growth.

Some cotton farms use irrigation to water the plants. This depends on the region and the rainfall levels.

Week 11 - Flowering (January - February):

Producers check for pests, beneficial insects, soil moisture, remove weeds, and monitor the plants growth.

Week 14 - Boll development (February - March):

Producers check for pests, beneficial insects, soil moisture, remove weeds, and monitor the plants growth.

Week 23 - Maturity (March):

Defoliation is carried out to remove the cotton plants' leaves and to help crack the bolls open before harvesting.

Week 26 - Machines are used to carefully pick the mature cotton bolls and collect them for further processing. This is called harvesting (or cotton picking).

Week 28 - Preparation for next cotton crop (April - September):

Producers may plant winter cover crops (such as wheat or barley) to protect and add nutrients to the soil before the next growing season begins. This winter crop also brings in more income for the producer. During Spring, soil is prepared for planting by removing weeds and adding nutrients if necessary. Soil moisture levels are checked and pre-watering may occur.



From Flower, to Square, to Boll

A Year on a Cotton Farm

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Cotton Gin Stand:
separating
the lint from
the seed.

WHAT AM I?



WHAT AM I?





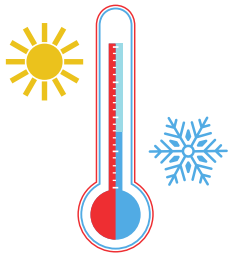
A Year on a Cotton Farm

Australian Cotton

Student Worksheet 1.2a



Cotton is suitable to be grown in some regions of Australia and not others due to a combination of factors. Some key factors influencing the suitability of an area for cotton production are:



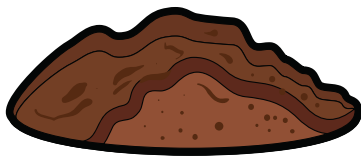
Climate:

Cotton is a summer crop and needs warm temperatures and no frost for growth. Northern and inland regions of Australia, such as Queensland and New South Wales, have the temperatures required for successful cotton growth.



Rainfall:

Cotton needs water to grow, so a consistent and reliable water supply is necessary. Regions with sufficient rainfall or access to water for irrigation, such as the Murray–Darling Basin, are more suitable for cotton farming than drier areas. Typically, 20% of Australian cotton is rain-fed and does not use irrigation.



Soil Type:

Different regions in Australia have different soil types. Areas with suitable soil conditions are ideal for cotton farming. Cracking self-mulching clay soils found on flood plains adjacent to rivers is best. These soil types expand and contract depending upon the water content of the clay.



Technology and Infrastructure:

Access to specialised farming equipment and technology for cotton growing and being in an area close to infrastructure for processing cotton is important. Areas with well-developed agricultural infrastructure are better equipped to support cotton production.





Follow the instructions to label the map.

1. Label the states and territories

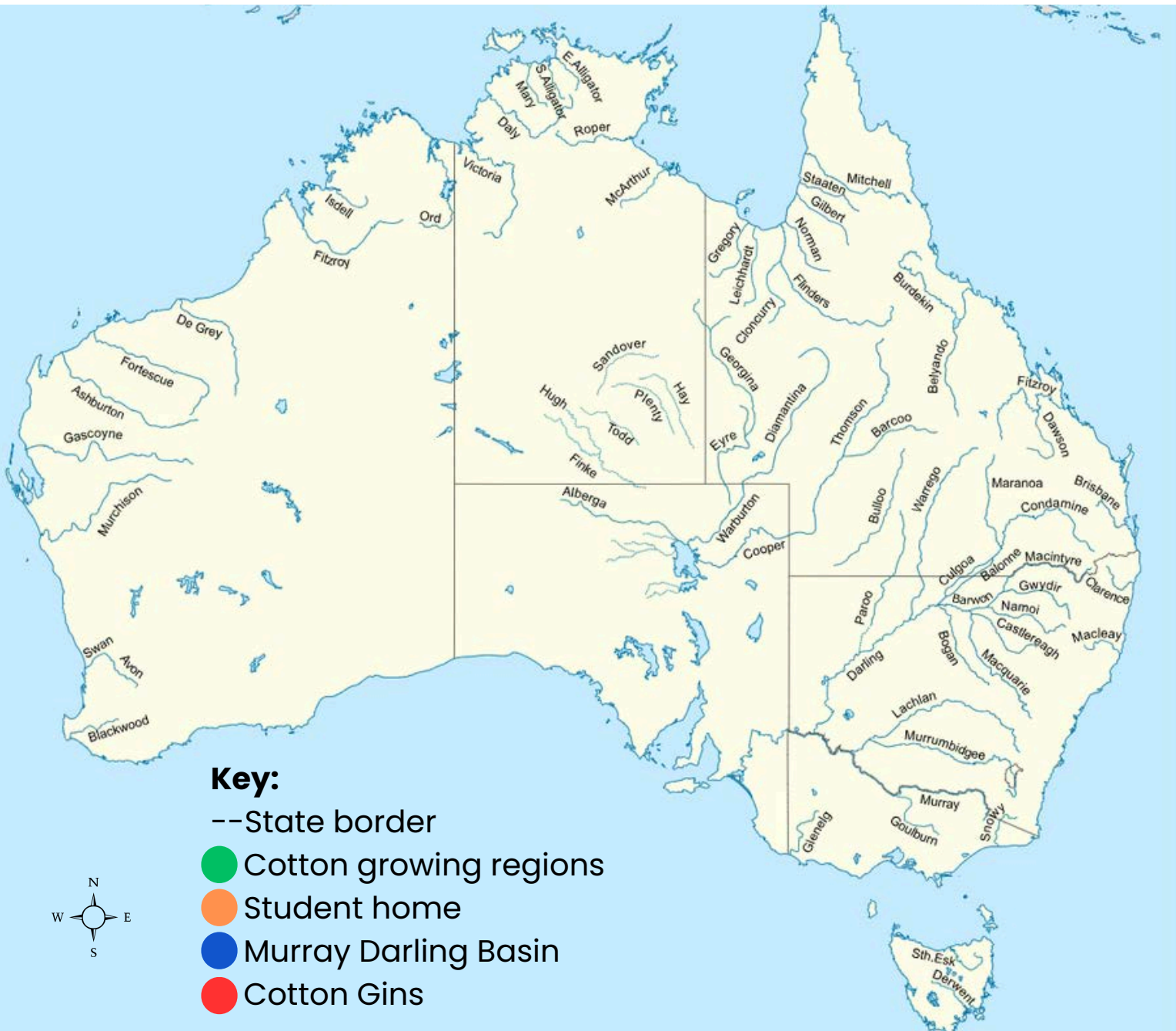
- o Western Australia (WA)
- o South Australia (SA)
- o Northern Territory (NT)
- o Queensland (QLD)
- o New South Wales (NSW)
- o Australian Capital Territory (ACT)
- o Victoria (VIC)
- o Tasmania (TAS)

2. Mark where you live on the map with an orange pencil.

3. Shade the cotton growing areas with a green pencil.

4. Place a red dot to show where the cotton gins are located.

Extension: Shade the Murray Darling Basin with a blue pencil.



A Year on a Cotton Farm

Life Cycle of Cotton

Student Worksheet 1.3a

Cut out the strips of paper and arrange the strips in order.



Week 4 - Growing taller (November - January):

The cotton plants grow taller and develop more leaves.
The plant grows more stems, making them bushier.



Week 14 - Boll development (February - March):

The cotton bolls grow larger and inside the fluffy cotton fibres begin to form around the cotton seeds. The bolls then start to open.
The boll is the fruit of the cotton plant as it contains seeds.



Week 0 - Planting (October - November):

Cotton seeds are planted in the soil when the soil is warm enough and there is moisture in the soil.



Week 23 - Maturity (March):

The cotton plant is fully grown and the cotton is ready for harvesting using a very large machine called a cotton picker.



Week 2 - Emergence (October - November):

The seed starts to germinate and emerge from the soil.





A Year on a Cotton Farm

Life Cycle of Cotton

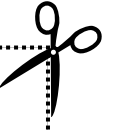
Student Worksheet 1.3a



Page 2 of 2

Week 6 – Flower buds form (December – January):

The flower buds develop and get larger. The flower buds are called squares.



Week 11 – Flowering (January – February):

The plants briefly grow creamy-white coloured flowers that, once pollinated, change colour. They change colour from creamy-white to pink, or purple. The petals drop off, leaving a small green seed pod (fruit) with seeds inside.



Cotton modules being trucked to the cotton gin.



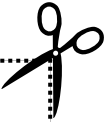
A Year on a Cotton Farm

The Role of a Cotton Farmer

Student Worksheet 1.3b



A cotton producer has many jobs they need to carry out during the year. Cut out the strips of paper and place them on the Australian cotton life cycle timeline where you think the producer would be performing this job.



Producers ensure the cotton plants get plenty of water during this crucial growth phase.

Defoliation is carried out to remove the cotton plants' leaves and to help crack the bolls open before harvesting.

Producers test the temperature of the soil to make sure it is warm enough for germination.

Machines are used to carefully pick the mature cotton bolls and collect them for further processing. This is called harvesting.

Soil is prepared for planting by removing weeds and adding nutrients if necessary. Soil moisture levels are checked and pre-watering may occur.

Producers may plant cover crops to protect and add nutrients to the soil before the next growing season begins.

Producers check for pests, beneficial insects, soil moisture, remove weeds, and monitor the plants growth.

Some cotton farms use irrigation to water the plants. This depends on the region and the rainfall levels.