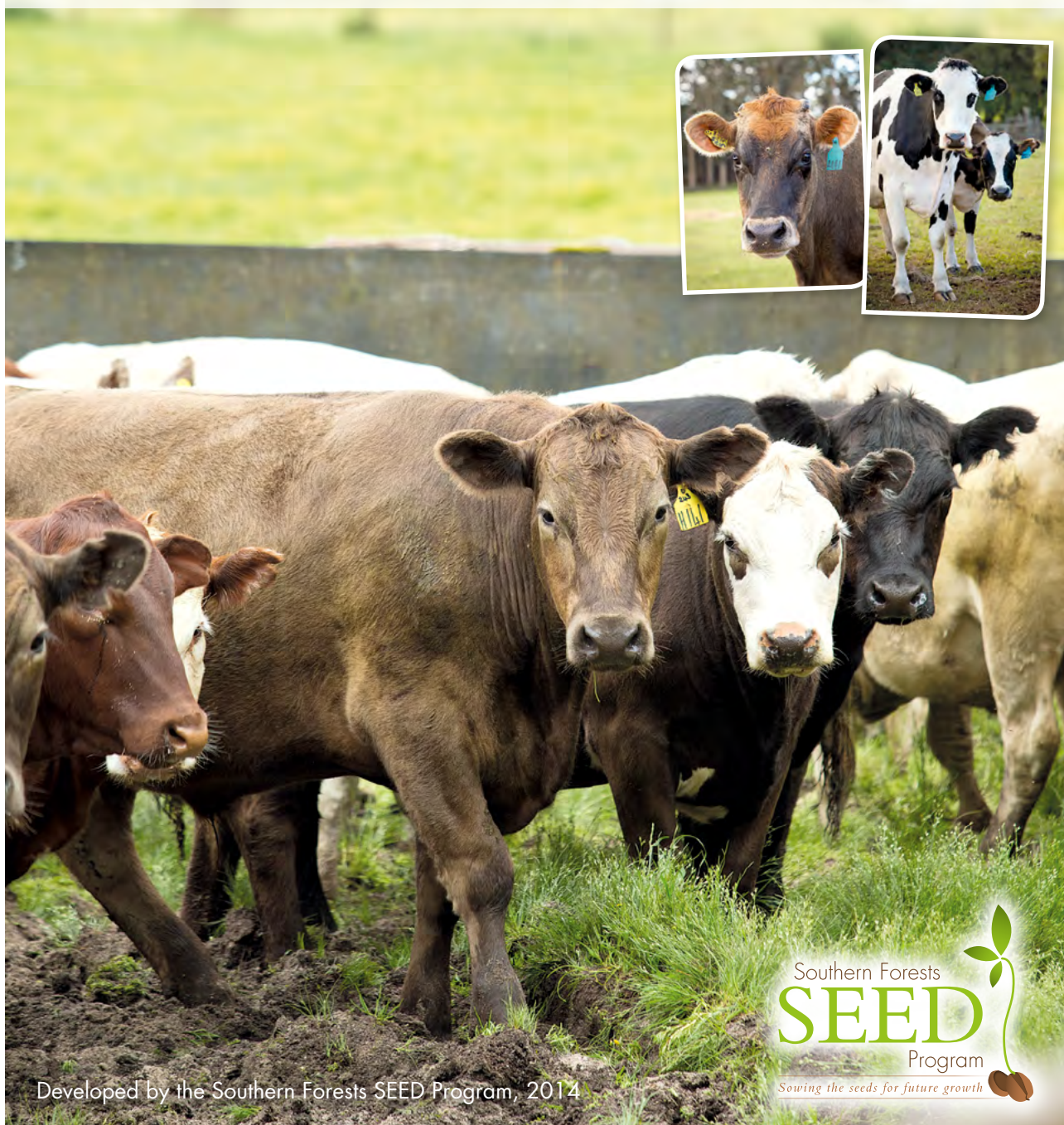


CONTENTED COWS

A five week literacy based program for years 4/5



Developed by the Southern Forests SEED Program, 2014

Southern Forests
SEED
Program
Sowing the seeds for future growth



Acknowledgements

The materials and ideas in this resource are the work of author, Heidi Temptra. The Southern Forests SEED Program is extremely grateful and her efforts are to be highly commended.

This education resource was produced by the Southern Forests SEED Program, a SuperTowns initiative of the Shire of Manjimup.

The Southern Forests SEED Program is funded by the Department of Regional Development through the Royalties for Regions SuperTowns program.

The SEED Program is based within the Shire of Manjimup and aims to raise the profile of careers in agriculture as a valid career pathway by increasing young people's exposure to the field of agriculture, through learning and enabling opportunities to explore the industry and connect with those living and working in agriculture.

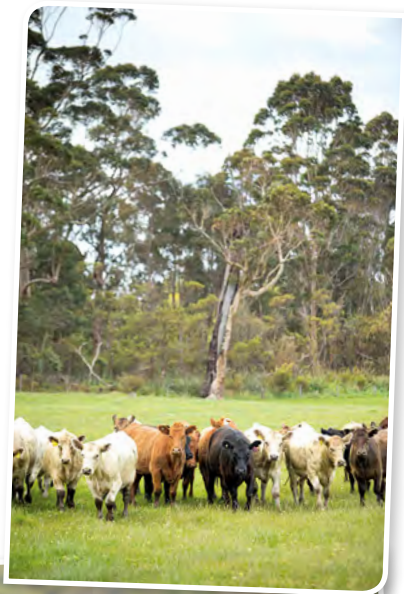
This series of primary and middle school resources allows teachers to use the agricultural industry as a subject area to address cross curricula learning in the classroom. The Southern Forests SEED Program is grateful for the support it has received from the local agriculture industry, linking in with educational programs and hosting excursions to their farms and businesses.

The Southern Forests SEED Program would like to acknowledge the terrific amount of support St Joseph's School in Pemberton have provided by piloting these programs, allowing teachers and students to provide candid feedback so that these programs can be refined for other schools' benefit.

The Southern Forests SEED Program would also like to acknowledge ongoing support and collaboration with the Department of Agriculture and Food and schools in the Shire of Manjimup.

Photographs in this package are supplied courtesy of Craig Kinder Photography and the Southern Forests Food Council.

Resources contained within this package may be copied and distributed for educational purposes.



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Welcome

...to the intriguing world of cows! While cattle have only been in Australia for about 200 years - the first six head of cattle came with the First Fleet in 1788 - they have been domesticated animals for about 10,000 years.

Throughout history, cattle have been an important animal. In Ancient Egypt they were worshipped and are still considered a sacred animal in countries such as India where they roam free all over the country. They have provided civilizations with milk, meat and leather for centuries. Other by-products are also used for medicines, cosmetics, soap and glue.



Domestic cattle have been used for transportation of goods and for pulling machinery in agriculture. They are still used for this in some developing countries in the world. In the south west of Western Australia, cattle were an integral part of developing the timber industry where bullock teams were used to drag huge karri and jarrah logs from the forest to timber mills for processing.

Today, about one quarter of Australia's farmers run cattle. It is estimated that there are more than 25 million head of cattle in Australia which are worth more than \$5 billion. Australian farmers rely on the export trade of cattle with much of this now being in the form of refrigerated or frozen meat.

While this is a literacy-based program, we have added extra resources should you wish to align your other teaching areas to extend the program.

Heidi Tempra

B.Arts(Pri), B.Edu(RE), M.Edu(SLN), M.Ed(ECE)

How to use this Program

The program is based on both fiction and non fiction text. The aim is to increase children's understanding of cows, as well as continuing their analysis of character, setting and tone through the class novel. The following is a suggested guide of how to implement the literacy program.

- The class novel, *The Midnight Fox*, is to be read, and related activities completed, 3 times a week. It is up to the teacher if they are consecutive or alternative days.
- The factual text readings and activities are to be completed twice a week. Again, it is up to the teacher if they are consecutive days or not.
- Many of *The Midnight Fox* activities have a large writing component. It is suggested these become the writing focus for that week as part of the literacy program.
- The Word Work activities are to be done prior to the reading activity. A warm up could include showing the individual cards to students, practising their correct pronunciation and then asking spelling rule questions (eg how many morphographs in this word). This is to be done daily. The teacher is to select which activity is to be done each day.
- The following page suggests an outline of the activities to be completed each week.



Additional Resources

OTHER PROGRAMS TO LINK WITH

- Dairy Australia; Picasso Cows and Discover Dairy
<http://www.dairyaustralia.com.au/People-and-skills/Education-and-careers/Primary-School-Resources.aspx>

Excursions

- Visit a dairy farm or dairy factory
- Visit a beef farm or cattle feedlot
- Visit cattle saleyards on sale day
- Visit a supermarket, butcher shop or pie/hamburger shop

Incursions

- Have a farmer come and talk to the class about breeding cows (Stud breeders are registered with national breed societies)
- Invite a veterinarian to talk to the class about caring for cows
- Invite a researcher from university to talk about research and development into cattle, methane production and the effects on climate change.
- Have a livestock agent talk to students about buying and selling cattle
- Have a chef/cook talk to class about eating quality of beef, ask them to do a cooking demonstration.
- Invite someone from your local migrant community to talk about the role of cows/beef in their culture.
- Hold a Japanese barbeque and cook beef and vegetables.
- Make beef pies or hamburgers

Wonderful websites

<http://www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/1301.0Feature%20Article232005?opendocument>

https://www.agric.wa.gov.au/climate-land-water/primary-education-resources?page=0%2C3#smartpaging_toc_p3_s0_h2

<http://www.angusaustralia.com.au/>

<http://www.archibullprize.com.au/DairyFacts/index.html>

<http://www.dairyaustralia.com.au/Industry-information/About-the-industry.aspx>

<http://www.dairynsw.com.au/NewsandEvents/TheUdderTruth.aspx>

<http://www.dairy.edu.au/discoverdairy>

<http://www.hobartshowground.com.au/show/education/background/beef/development.php>

<http://www.legendairy.com.au/>

SUGGESTED TEXTS

The Midnight Fox
by Betsy Byars (1968)

The Illustrated Guide to Cows
by Celia Lewis (2014)

Suggested Teaching Guide

WEEK	WORD WORK	THE MIDNIGHT FOX	NON FICTION
1	<p>Word of the Day Have all the theme words placed in a paper bag. Children to draw a word out of the bag and complete the word of the day sheet.</p> <p>Rainbow Words Five words</p> <p>Build It Three Words</p> <p>Word Work</p> <p>Pyramid Words Five words only</p>	<p>Lessons</p> <p>1</p> <p>2</p> <p>3</p>	<p>Dairy Cows (Compare and Contrast)</p> <p>Caring for Dairy Cows (Tree Map)</p>
2	<p>Word of the Day Have all the theme words placed in a paper bag. Children to draw a word out of the bag and complete the word of the day sheet. (Swap if it is a word they have had previously)</p> <p>Snap</p> <p>Build It Next three words</p> <p>Alphabetical Order Five words</p> <p>Pyramid Words Next five words</p>	<p>Lessons</p> <p>4</p> <p>5</p> <p>6</p>	<p>Interesting Facts About Cattle Cow Research Work</p> <p>Amazing Cow Facts Interesting Words Chart</p>
3	<p>Word of the Day Have all the theme words placed in a paper bag. Children to draw a word out of the bag and complete the word of the day sheet. (Swap if it is a word they have had previously)</p> <p>Snap</p> <p>Build It Next three words</p> <p>Alphabetical Order Five words</p> <p>Pyramid Words Next five words</p>	<p>Lessons</p> <p>7</p> <p>8</p> <p>9</p>	<p>The Illustrated Guide to Cows Graphic Organiser</p>

Suggested Teaching Guide

WEEK	WORD WORK	THE MIDNIGHT FOX	NON FICTION
4	<p>Word of the Day Have all the theme words placed in a paper bag. Children to draw a word out of the bag and complete the word of the day sheet. (Swap if it is a word they have had previously)</p> <p>Rainbow Words Five words</p> <p>Build It Next three words</p> <p>Alphabetical Order Five words</p> <p>Pyramid Words Next five words</p>	<p>Lessons</p> <p>10</p> <p>11</p> <p>12</p>	<p>Parts of A Cow</p> <p>Products Made From Cattle</p>
5	<p>Word of the Day Have all the theme words placed in a paper bag. Children to draw a word out of the bag and complete the word of the day sheet. (Swap if it is a word they have had previously)</p> <p>Rainbow Words Five words</p> <p>Build It Next three words</p> <p>Alphabetical Order Five words</p> <p>Pyramid Words Next five words</p>	<p>Lessons</p> <p>13</p> <p>14</p>	

Australian Curriculum Outcomes

FICTION - THE MIDNIGHT FOX

LESSON	OUTCOMES	GENERAL CAPABILITIES
Word Work	ACELA 1779 (Spelling) ACELA 1498 (Vocabularies)	Literacy Critical and Creative Thinking
The Midnight Fox Lesson 1	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 2	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 3	ACELY 1692 (Reading Comprehension) ACELT 1603 (Attitudes, Personal Responses)	Literacy Critical and Creative Thinking Personal and Social Capacity Ethical Understanding
Lesson 4	ACELY 1692 (Reading Comprehension) ACELY 1694 (Creating Texts)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 5	ACELY 1692 (Reading Comprehension) ACELY 1694 (Creating Texts) ACELY 1695 (Editing)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 6	ACELY 1692 (Reading Comprehension) ACELT 1605 (Text Structure)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 7	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 8	ACELY 1692 (Reading Comprehension) ACELA 1493 (Word Meanings, Sentences - Grammar) ACELA 1495 (Adverbial Phrases) ACELA 1604 (Metalanguage)	Literacy Critical and Creative Thinking
Lesson 9 Lesson 10	ACELY 1692 (Reading Comprehension) ACELA 1604 (Metalanguage) ACELA 1495 (Adverbial Phrases)	Literacy Critical and Creative Thinking
Lesson 11	ACELY 1694 (Creating Texts) ACELY 1695 (Editing)	Literacy Critical and Creative Thinking
Lesson 12	ACELY 1694 (Creating Texts)	Literacy Critical and Creative Thinking

Continued over.

Australian Curriculum Outcomes

FICTION - THE MIDNIGHT FOX (continued)

LESSON	OUTCOMES	GENERAL CAPABILITIES
Lesson 13	ACELY 1692 (Reading Comprehension) ACELY 1688 (Speaking)	Literacy Critical and Creative Thinking Personal and Social Capacity
Lesson 14	ACELY 1692 (Reading Comprehension) ACELY 1694 (Creating Texts)	Literacy Critical and Creative Thinking

NON FICTION - COWS

LESSON	OUTCOMES	GENERAL CAPABILITIES
Compare and Contrast	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capabilities
Tree Map	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capabilities
Research Information	ACELY 1692 (Reading Comprehension) ACELA 1793 (Electronic Publishing)	Literacy Critical and Creative Thinking Personal and Social Capabilities Information and communication technology capability
Interesting Words Chart	ACELY 1691 (Reading) ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capabilities
Graphic Organiser	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capabilities
Parts Of A Cow	ACELY 1692 (Reading Comprehension)	Literacy Critical and Creative Thinking Personal and Social Capabilities
Products Made From Cattle	ACELY 1692 (Reading Comprehension) ACELA 1793 (Electronic Publishing)	Literacy Critical and Creative Thinking Personal and Social Capabilities Information and Communication Technology Capability

LITERACY



WORD WORK

Use the FLASHCARDS in this pack as the focus of your spelling words for this program. A great way to start each day is with; I say, we say, you say. The teacher holds up the flashcard and says the word, repeat but this time with the students joining in, and then the children say the word on their own.

Everyday use one of the Word Work activities to reinforce the words.

EXTENSION: The more able children can be given more words to do than the suggested number. They can also be given some of the more challenging words.

REMEDIATION: Limit the number of words they have to work with and choose the words that have common blends and less than two syllables.

- **WORD of the day sheet:** Children complete the sheet following the instructions as written.
- **BUILD IT:** Children make the word out of unifix cubes.
- **RAINBOW words:** Write the words/letters in different colours five times.
- **SNAP:** Photocopy theme words and laminate so there are two copies of every word. Children play snap.
- **PYRAMID words:** Build a pyramid using the letters of the words.
- **ABC order:** write the words in alphabetical order.



Word of the Day

Write your word here

noun verb adjective adverb

Have you heard this word before?

Yes / No

How many syllables?

Number of vowels?

Number of consonants?

Definition

Put in a sentence

Smaller words

Illustrate

Word Work

1 Write six words from the wall.

1 _____
2 _____
3 _____

4 _____
5 _____
6 _____

2 Use two words in a sentence.

a) _____

b) _____

3 Illustrate one of your sentences.



stock

drove

ungulate

dung

shorthorn

livestock

transport

beasts

breed

herd

domesticate

longhorn

paddock

hoof

bovine

stomach

heifer

steer

calves

calf

tractor

mammals

bull

oxen

hectare

cattle

farming

dairy

The Midnight Fox by Betsy Byars

The aim of this novel study is to read a chapter or a few pages every day. This allows for **MODELLED READING** and for children to pick up the tone of the book via the teacher's expression. Towards the end of the novel, able readers are encouraged to take turns reading out loud to the class. Reading aloud of the text or the re-reading of sections can sometimes take place during the teaching sessions but should also take place during separate read-aloud times in order to reach particular parts of the narrative in preparation for sessions. Where this is important, it has been noted.



GUIDED READING

Although the unit is designed for use with the whole class, teachers could also select aspects of it to use with guided reading groups. Alternatively, individual sessions could be followed up during guided reading sessions, with a closer look at individual sections of the text-looking, for example, at the language or what has been revealed about plot or character.

PRE READING

What do you think the novel will be about? What clues does the cover give? What clues does the title give?

DURING READING

After listening to the story each session, the children are required to complete one of the following activities for the **DURATION** of the novel study.



LESSON 1 (SUGGESTED 40 MINS)

Read the first two chapters of the story aloud, Chapter 1, 'Bad News' and Chapter 2, 'The Trouble with Leaving', either before this session or at the beginning of it. Then have a whole-class discussion about what the children know so far about the characters and the story. Make notes on a chart as the children offer information. Questions should be open-ended and might include: 'What do we know already about Tom and his family?' This sheet could be kept and added as the novel study continues.

Ask the children to work with a partner and think about the reasons why Tom's parents want him to go to the farm, and Tom's reasons for not wanting to go, i.e. the things he will miss. Make two lists of these opposing views. Share these notes as a class and then ask the children for their own opinions about whether or not he should go. Encourage them to think about what they might miss if they were sent away like Tom or what they might enjoy about going to stay on a farm.

LESSON 2

Read Chapter 3 'Abandoned', then go back and discuss the scenes near the beginning where Tom imagines different scenarios on arrival at the farm. Discuss how they think Tom is feeling and how he imagines his Aunt and Uncle might be feeling about him coming to stay.

Ask children to illustrate Tom's actual arrival. Ask two or three students to voice the thoughts that their characters might have at this stage in the story. Discuss the arrival with the class, asking questions such as: What do you think Aunt Millie and Uncle Fred actually thought about Tom when they saw him? Alternatively, children could write a diary entry from Tom's perspective about his thoughts and feelings.

LESSON 3

Read Chapter 4 'Stranger', then, re-reading parts of this chapter to the whole class, have a discussion about Bubba. What did he have in his room? What do they think he liked to do? What sort of a boy do they think he was?

Ask children to draw an annotated picture of Bubba's room with a partner. When they have done this, ask them to talk with their partner about Tom and his interests. What might his room have in it? Worksheet provided if necessary.

What differences might there be between the two boys? Look back at the notes made on day one to remind the children what they already know about Tom. Discuss with them how they think Tom might feel about staying in Bubba's room.

Continued over.

LESSON 4

Read the opening to Chapter 5 *The Black Fox*, where Tom is about to write a letter to his friend Petie. Read up to 'I wrote a long letter to Petie,' on the second page of the chapter. Ask the children to work with a partner and talk about Tom, what he has been doing on the farm and how he feels about being there. What might he tell Petie about being on the farm in a letter? Introduce this as a shared writing activity. Then ask the children to write their own letter to Petie, in role as Tom. Australia Post provides guidelines for letter writing if needed.

Before the next session, read the rest of Chapter 5.



LESSON 5

Ask children to close their eyes as you reread the section in Chapter 5 where Tom first sees the black fox, beginning 'I did not believe it for a minute.' Ask questions such as: What could they see? How does it make them feel? Talk with the children about how they think Tom felt when he saw the fox and then ask them to think about why he didn't want to tell Petie about it in the letter. Give each child a small book to be Tom's 'fox spotter' notebook, which they will use to make notes when they hear about any more sightings of the fox in the story.

Ask the class to imagine they are Tom recording his first sighting of the fox in their notebooks. Ask them to write the headline 'FOX' and under this to draw a picture of the fox (as if it was a newspaper photograph), adding a caption underneath to show how amazing this sight was.

Before the next session, read Chapters 6 'Hazeline' and Chapter 7 'Discovery at the Field'.

Continued over.

Lessons

LESSON 6

Re-read the section of Chapter 6 'Hazeline', which starts: 'Hazeline do you see many foxes in the woods?'

Ask the children to turn to a partner and talk about what Tom finds out about foxes from Hazeline and Mikey. Then share their ideas as a class, recording the information on a chart.

Give the children a copy of the section of Chapter 7 'Discovery at the field', which describes the fox sighting. It begins 'Now suddenly - I was looking in the right direction or I might have missed it.'

Ask children to re-read this with a partner and then to draw a sketch and make notes in their books to record this second sighting. They could also add the list of things Tom has found out about foxes from Hazeline and Mikey and from his observations. As an extension children can google more interesting facts about foxes and share with class.



Read Chapter 8 'The Forest Chase' before the next session.

LESSON 7

Begin this session by asking children to think about what they know about the farm and the area around it. Ask them to close their eyes and in their minds 'walk around' the farm and the places that Tom has explored. Then ask them to turn to a partner and talk about what they can see. Share these ideas as a class and make a list of the places in the story on a flip chart. Demonstrate using an interactive whiteboard (IWB) how this information could be turned into a map of the story world. Then ask children to work with a partner and draw their own maps.

As well as the farm they might include, for example, the creek, pond, forest and pasture. This will help them to visualise the setting and the location of key events. They could also add labels to show the location of some of the events in the story so far, e.g. 'This is where Tom is frightened by the cows', 'first sighting of fox'.

Before the next session, read Chapter 9 'Uncle Fred' and Chapter 10 'The Search' and allow time for the children to enter new sightings of the fox in their books.

Continued over.

Lessons

LESSON 8

Display the section of the text in Chapter 10 'The Search', which describes Tom's sighting of the fox.

Ask the children to help you to identify the words and phrases that describe the fox, how she looks and how she moves. Highlight these words and phrases with the children using an enlarged version of the text or on an IWB. Alternatively, children could have their own copies of this section. Use this as an opportunity to introduce the idea of a simile as children find phrases such as 'Her fur was black as coal'. Talk about the ways that this helps to create a picture of a fox in the reader's head.



Then give the children a copy of the extract together with a further extract describing the fox, such as the one in Chapter 7 beginning 'Now suddenly - I was looking in the right direction'. Ask them to work with a partner to highlight the words and phrases that tell how the fox looks or how she moves.

At the end of the session, list the words and phrases that the children have found on a flip chart and read these together. Discuss with the children the ways the fox is described and what these tell you about how Tom feels about the fox.

LESSONS 9 AND 10

Look together at the words and phrases the children have collected that describe the fox. Ask them to work with a partner and see if they can think of any more words or phrases to describe the midnight fox - the way she looks or moves - and add these to the collection. As a shared writing activity, demonstrate how this collection of words and phrases could be used to create a simple poem (Haiku) about the fox. For example:

**Midnight fox Black as coal Crouching
Quicker than a cat Leaping ...**

Then ask the children to work individually to create their own fox poems using the bank of words and phrases to help them.

When finished, the poems could be worked on with a response partner to improve them. The redrafted poems could then be collated into a class book and illustrations added.

Read Chapter 11 'Tragedy Begins' and Chapter 12 'One Fear' before the next session and allow time for the children to respond to these.

Continued over.

Lessons

LESSON 11

Organise the children into mixed-ability groups and ask them to think about and discuss reasons for killing the fox and reasons for not killing her. Give them a large sheet of paper divided in half to list, in their groups, their reasons for and against.

Bring the class back together to talk about the two sides of the argument. Then discuss with the class how they could use words and phrases to be persuasive on both sides. It is important that the children give reasons for their opinions, e.g. 'It would be cruel to kill the fox because' 'Foxes are a threat to farmers because...'.

End the session with a whole-class debate. To do this you could, for example, ask half the class to represent Aunt Millie and Uncle Fred's viewpoint that the fox should be killed and half the class to represent Tom's viewpoint that she should be saved. Individuals could take turns to make their points, with a class vote to end the session.



Before the next session read Chapter 13 'Tacooma!'

LESSON 12

Discuss with the class how Tom feels about the fox being hunted and his imaginary conversations with his aunt and uncle, where he tries to persuade them not to kill the fox.

Ask the children to work with a partner and role-play imaginary scenes where Tom tries to persuade Uncle Fred or Aunt Millie not to kill the fox. Ask them to write a note in role, as Tom, to his aunt and uncle or to his cousin, asking her to help him persuade her parents not to kill the fox. This could be done on paper or alternatively in the children's books.

Read Chapter 14 'Unwilling Hunter', Chapter 15 'The Den' and Chapter 16 'Captured' before the next session and allow time for the children to respond to these.

Continued over.

LESSON 13

Start the session by reading Chapter 17 'The Stormy Rescue'. Discuss Tom's actions in releasing the fox cub. Do they think he was right to do this? What would they do in this situation? Then discuss the moment when Tom tells his Aunt and Uncle that he has released the cub.

Ask the children to form pairs and freeze-frame the moment in the story where Uncle Fred and Tom are looking at each other, beginning with 'Uncle Fred and I were left in the hall alone', with one child playing the part of Tom and the other the part of Uncle Fred. Then ask the pairs to voice their thoughts in role to show how each character is feeling.



Talk with the class about what they have found out about Uncle Fred from this scene and how Tom's views of him change. End the session with the children writing in their books, in role as Tom, about what has happened.

LESSON 14

Ask children to work with a partner, with one in role as Tom and one as a TV reporter interviewing Tom about the fox cub rescue. If there is time, you could record the interviews using a video camera, webcam or tape recorder. Then ask children to draw on their interviews and work with their partners to create a newspaper report of the rescue, choosing headlines such as: 'Boy in daring fox cub rescue!'

POST READING

On the completion of reading the class novel, a character gallery activity can be done for children to assess the main characters in the story and the role they played. (Blackline Master attached)

OR

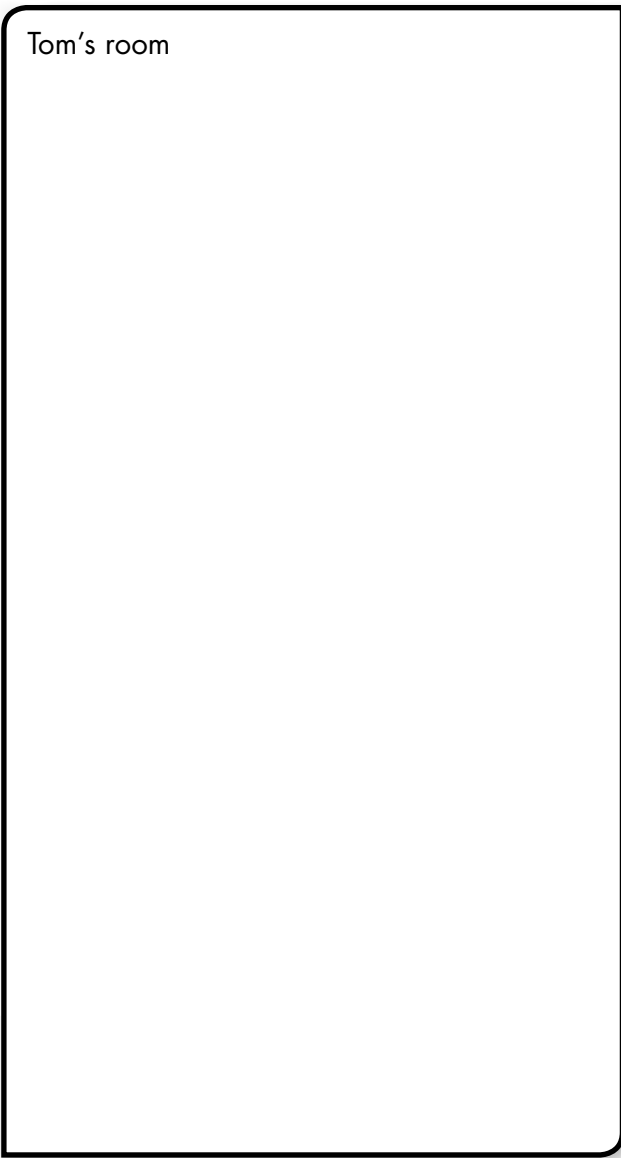
The students complete a Story Map to demonstrate recall and correct sequence of the significant events in the novel. (Blackline Master attached)

OR

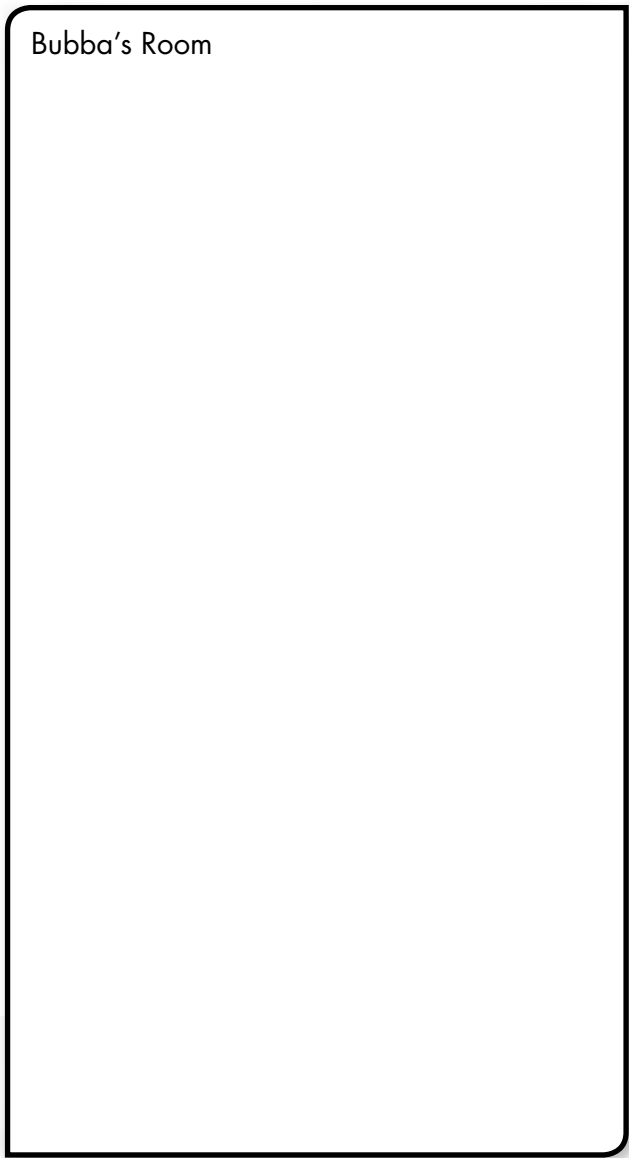
Students are to design a movie poster for *The Midnight Fox*. What captions would they use, as well as photos/images, that would capture people's attention?

The Midnight Fox - Chapter 4

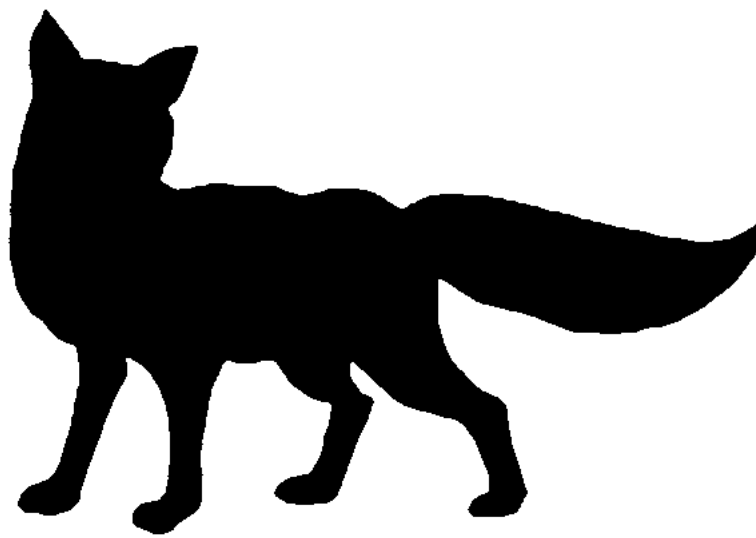
Tom's room



Bubba's Room



How do you think Tom is feeling about staying in Bubba's room? Why?



The Midnight Fox - Chapters 7 & 8

After reading chapters 7 & 8 please answer the following questions using full sentence answers.

Question 1: Where did Tom wait to see the black fox?

Question 2: According to Hazeline what do foxes like to hunt on windless days?

Question 3: Write 3 sentences using some of the following words.

Patient	Graceful	Gradually	Usual
Particular	Wait	Crouch	Discover
Exceptional	Immediate	Avoid	

1 _____

2 _____

3 _____

Continued over.

The Midnight Fox - Chapters 7 & 8

Question 4: Choose 3 of the following words and find a dictionary meaning of the word.

Impulse	Deposited	Baffled	Pasture
Fierce	Desire	Appealing	Temptation
Reluctant	Recite	Fascination	
Abandon	Accident	Thicket	

1 _____

2 _____

3 _____

Question 5: Your choice! Choose to either recreate the front cover of this book or create a word search using at least 10 of the above words.

To Kill or not to Kill? That is the Question...

Reasons for killing the fox.

Reasons against killing the fox.

Australian Dairy Cattle

Dairy cows are specially bred to produce large amounts of milk. A dairy herd is made up of four different groups of cattle. The four groups of cattle are;

- **Cows:** the females, who give birth to calves and produce milk. Most of the cattle in a dairy herd are cows
- **Bulls:** the fathers of the dairy herd. Only a few are needed on a dairy farm.
- **Heifers:** young female cattle, who are the 'teenagers' of the herd and have not yet had a calf. They are the second biggest group in the herd.
- **Calves:** baby cattle. Female calves grow into heifers and then milking cows. Male calves become bulls and are often sold.

BREEDS OF DAIRY COWS

There are many breeds of cows in Australia but the main dairy cattle breeds are Holstein, Jersey and Aussie Red, all of which have different shapes and colours.

Have students look up different types of cattle on iPads/interent or in *The Illustrated Guide to Cows* book.

HOLSTEIN

Origin: Holstein cows originally came from the Netherlands, but many breeding animals now come from North America.

Appearance: These cows are mainly black and white.

Interesting facts:

- Holsteins can be found in every Australian state.
- Holsteins are one of the biggest dairy animals; cows can stand over 150cm tall and weigh over 600kgs.
- Also called Fresian or Holstein Fresian

JERSEY

Origin: Jersey cows originally came from the island of Jersey (in the English Channel between England and France). They were brought to Australia in 1829.

Appearance: These cows are fairly small, and fawn in colour, with black tips on their muzzles, ears, feet and tail.

Interesting facts:

- A Jersey cow's milk is ideal for making butter because it is so creamy.
- Jerseys are the smallest of all dairy cows and can weigh up to 500kg.
- Jerseys are the second most common breed in Australia.

Continued over.

Australian Dairy Cattle

AUSSIE RED

Origin: These cattle were bred in Australia by combining Scandinavian Red genetic lines with other Australian Red breeds such as the Illawarra and Ayrshire.

Appearance: These cows are medium sized and mainly red in colour, with white markings.

Interesting facts:

- Aussie Reds are extremely hard to breed.
- Their milk has a high protein content and medium fat content.

ILLAWARRA

Origin: The Illawarra breed was developed in New South Wales and was recognised as new cow breed in 1910.

Appearance: They are a rich red colour with a little white on their flanks.

Interesting facts:

- These are Australia's own breed.
- Illawarra cows are producers of large quantities of milk. Many cows produce in excess of 40 litres per day.

AYRSHIRE

Origin: This breed originally came from the County of Ayr in Scotland.

Appearance: Their colour varies from light to deep cherry red, mahogany, brown or a combination of these colours with white. Some are all white.

Interesting facts:

- Imported to Australia in the 1850s

Australian Beef Cattle

Most beef cattle breeds in Australia originated in Europe and are known as *Bos taurus* types of cattle. These live mostly in the southern parts of Australia where there are warm to hot summers and cold winters. Other types of cattle originated in South Asia and are known as *Bos indicus*. These are usually found in northern Australia where there are hot, humid and harsh conditions.

Have students look up different breeds of cattle on iPads or the internet or using *The Illustrated Guide to Cows* by Celia Lewis.

ANGUS

Origin: Scotland, 18th century. Bred to withstand harsh winters in Scotland and for its temperament as they are good natured cows. Also selected for its ability to have calves for many years. First arrived in Tasmania in 1820 and Queensland in 1840.

Appearance: Black, hornless (polled), usually short legs although modern breeding has selected for height and size a bit more than the original breed. Sometimes they can be red and some breeders select for red cows and call the herd Red Angus.

Interesting Facts:

- Meat is very tender and can be heavily marbled (fat runs through the meat in fine threads).
- Breed is known for its ease of calving.

CHAROLAIS

Origin: France, first registered the breed in 1846, although white cattle had been recorded in France as early as AD 878. Multipurpose animal used for beef, milk and draught animal. Imported to UK and USA to cross breed with their cattle to produce bigger, better calves. First came to Australia in 1969 and was the first of the European, heavily muscled breeds to be imported.

Appearance: Big, strong, heavily muscled animal with long legs and long body. Colour is white to creamy to beige with medium sized horns but can also be hornless (polled). Very docile cows, producing fast growing calves especially when crossed over a different breed of cattle.

Interesting Facts:

- Charolais cattle crossed with another breed of beef cattle results in 'hybrid vigour' meaning that the resulting calf is a very fast growing calf because of the mixed genetics (hybrid - cross, vigour - fast).

Continued over.

Australian Beef Cattle

DROUGHTMASTER

Origin: Bred in Australia in Queensland in the 1950s it was bred to withstand the dry, hot conditions of Northern Australia and be resistant to tickfever and eye cancer. It is a cross between Shorthorn, Devon and Zebu breeds of cattle and is a *Bos indicus* cattle species.

Appearance: Large sleek body, red in colour. Can be horned or polled. Can have a slight hump like a Brahman and loose flap of skin under its neck (pendulous dewlap), although they are not as distinctive.

Interesting Facts:

- The flap of skin that hangs under the Droughtmaster's neck is called a pendulous dewlap.
- The Zebu cattle from which Droughtmaster is said to have been bred came from the Melbourne Zoo and were loaned to Queensland cattlemen to cross over their Shorthorn cows.

MURRAY GREY

Origin: Bred in Australia in the Murray Valley on the border between New South Wales and Victoria. It was a cross between an Angus and a Shorthorn in 1905. They are a versatile breed which do well in most areas, are good converters of feed to beef and produce good quality beef.

Appearance: Similar size and shape to an Angus cow, medium size and polled. Range in colour from silver grey to dark grey.

Interesting Facts:

- The first person to breed Murray Grey cattle happened by accident and was embarrassed by the grey cattle in the herd of all black cows, but it was quickly recognized as a quality animal.
- Butchers prefer Murray Grey beef as it is tender with fine marbling like Angus but without large amounts of fat under the skin so good for health conscious markets like Australia and Japan.

Continued over.

Australian Beef Cattle

SHORTHORN

Origin: A British breed, originally from Durham, England, it was introduced into Australia in 1825. Was a very popular breed of beef cattle with Australia's early settlers and by 1890 the breed made up 50% of the beef herd in southern Australia and 100% in northern Australia.

Appearance: Medium in size. Colour is red, roan or white. Can be polled or horned. They have high fertility, make good mothers, are easy to handle and produce good quality beef.

Interesting Facts:

- Shorthorn cattle were one of the first purebred breeds of cattle imported into Australia.
- The breeding lines of shorthorn followed two lines which became the Beef Shorthorn and the Dairy Shorthorn in the 1950s.

SIMMENTAL

Origin: From Switzerland where it was used for both beef and milk. Imported into Australia in the 1972 due to an increased demand for European cattle to produce first cross calves.

Appearance: Very large animal, usually a reddish-brown body and pale or white face, belly and legs and can have white patches around the shoulders. New breeding in Australia is producing black Simmental cattle, like the USA. They are well-muscled animals with long, deep bodies and strong bones. The breed is known for its high milk production and good temperament.

Interesting Facts:

- High milk production so often crossed with Angus cattle to produce a first cross cow that has good milk production to feed a fast growing calf.
- Simmental are said to be heavier and leaner than other European breeds making their meat highly desirable and popular as a cross-breed with Angus cattle.

Name: _____ Date: _____

Compare and Contrast Different Breeds of Dairy Cattle

NAME	ORIGIN	APPEARANCE	INTERESTING FACT

Name: _____ Date: _____

Compare and Contrast Different Breeds of Beef Cattle

NAME	ORIGIN	APPEARANCE	INTERESTING FACT

Name: _____ Date: _____

Compare and Contrast Different Breeds of Dairy and Beef Cattle

NAME	ORIGIN	APPEARANCE	INTERESTING FACT

Caring for Dairy Cows

Dairy farmers follow strict food safety requirements to ensure that the cows stay healthy and produce high quality milk for dairy factories to turn into nutritious dairy products for us to eat and drink.

Each dairy cow is identified with a unique ear tag that helps the farmer to monitor her regularly. Dairy farmers keep records of all feed provided and any health problems of (or medical treatments given to) each cow.

Farmers see each cow every day and are very good at identifying sick cows. Sick cows are kept separately from the rest of the herd, close to the milking sheds so they don't have to walk around too much, and only rejoin the herd when they are well again. These cows are still milked but the milk is kept separate and thrown away.

Dairy farmers must keep their milking equipment and milking sheds very clean so cows can be milked in a clean environment. They also try to keep the milking shed a calm and enjoyable place for the cows to come in to - sometimes they even play soft music to relax the cows!

Cows need to drink a large volume of fresh water every day because milk is mostly composed of water. Cows can drink about 100 litres of water in a day.

Farmers make sure the water is fresh and there is always plenty to go around.

Caring for cows on a regular basis includes:

- Checking they are okay twice a day during milking after giving birth to a calf.
- Giving medicine to prevent worms.
- Vaccinating against diseases.

Milking and handling cows in a calm, stress-free environment is good for cows, people and milk production.

Routine practices that reduce stress include:

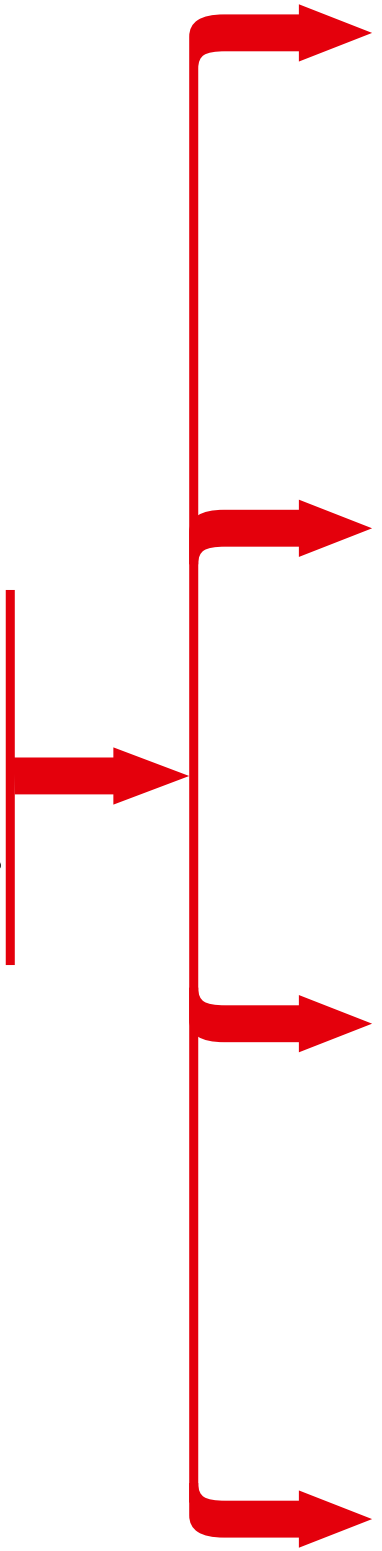
- Allowing cows to walk slowly in any order when coming to the milking shed.
- Providing an environment that respects normal cow behaviour.
- Preventing injury to animals by fixing things around the farm and keeping them safe.



Name: _____ Date: _____

Tree Map

Caring for Dairy Cows



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Interesting Facts about Cattle

- Cattle are herbivores that eat vegetation such as grass.
- Cattle stomachs have four chambers which help break down what they eat
- There are well over 1 billion cattle in the world.
- Cattle are sacred in India.
- There are an estimated 300 million cattle in India.
- Young cattle are generally known as calves.
- Adult females are generally called cows.
- Adult males are generally called bulls.
- Cattle are red/green colour blind.
- In the sometimes controversial sport of bull fighting, bulls are angered by the movement of the cape rather than its red colour.
- Cattle are farmed for a number of agricultural products including meat and dairy products.
- Meat from adult cattle is known as beef.
- Meat from calves is known as veal.
- Cattle trained to be draft animals are known as oxen (ox).



Use this information to springboard into cattle research on a computer or ipad.

A collage on a black background featuring a central photograph of a brown cow with white patches standing in a field. Three pink sticky notes are attached to the photo. The top-left note is titled 'Interesting Facts:' and contains handwritten text: 'Anubias cow, produce large amounts of milk'. The bottom note is titled 'Origin:' and contains handwritten text: 'The Jhawalra came from New South Wales & came to Australia in 1910.'. The right note is titled 'Appearance:' and contains handwritten text: 'They are a rich red with white on their flanks'.

Complete the following

Use your information sheet to complete the following.

What do you know about cows?

Who were the first people to have domesticated cattle?

What are some of the ways we can cook with cattle meat (beef)?

Where do you find cattle around the world?

List some of the different types of cows.

What do you call people who don't eat meat? What are some of the reasons they don't eat meat?

Other information.

Amazing Facts

Use the underlined words to complete an Interesting Words Chart.

Like humans, cows (cattle) form close friendships and choose to spend much of their time with 2-4 preferred individuals. They also hold grudges for years and may dislike particular individuals.

Cows display emotions and have been shown to produce more milk when they are treated better and as individuals.

Cattle get excited when they solve problems. When faced with a challenge of finding out how to open a door to reach food, their heartbeat went up, their brainwaves showed excitement, and some even jumped into the air.

Cows show their excitement when let out into a field after long periods confined indoors

Cattle like to sleep close to their families, and sleeping arrangements are determined by individuals' rank in the social hierarchy.

Cows are devotional mothers and are known to walk for miles to find their calves.

Cattle are extremely curious and inquisitive animals which will investigate everything.

Like many other grazing animals cattle have one stomach which is divided into four compartments or chambers: the rumen, reticulum, omasum and abomasum. This allows them to digest grain and grasses most effectively.

Cattle have almost 360° panoramic vision. This helps them to see predators coming from any direction.

Cattle have an excellent sense of smell. They can detect odours up to five miles away. They can also hear both low and high frequency sounds beyond human capability.

The cow is a protected animal in Hinduism, and Hindus do not eat beef. Cows are honoured at least once a year, on Gopastami. On this day cows are washed and decorated in temples.

Mahatma Gandhi described a cow as "a poem of compassion", also stating that "I worship the cow and I shall defend its worship against the whole world".

The meat of cows is widely eaten by people across the world. Cow milk is also drunk and used to make other products such as cheese.



Interesting Words Chart

WORD	WHAT I THINK IT MEANS	WHAT IT ACTUALLY MEANS

The Illustrated Guide to Cows by Celia Lewis

GRAPHIC ORGANISER

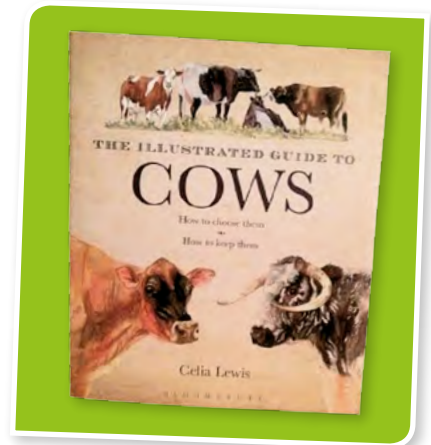
For this activity you will need the book pictured.

Have sheets photocopied from the book (no more than 10%). Place children into groups of three and give them a different sheet each from the book.

The aim is for the children to read their type of cow. Once they have read it, they share their information with the rest of the group.

Once all children have spoken, the children are to complete the graphic organiser with the cow they deem the best. They do not have to do their own but they must include the relevant information that their group member shared.

Use the blackline master provided. Once completed, bring to the rest of the class and share.



Name: _____ Date: _____

Graphic Organiser

Topic sentence: The best type of cow is _____

Reason 1:

Reason 2:

Reason 3:

Conclusion: A _____ is the best cow of all!

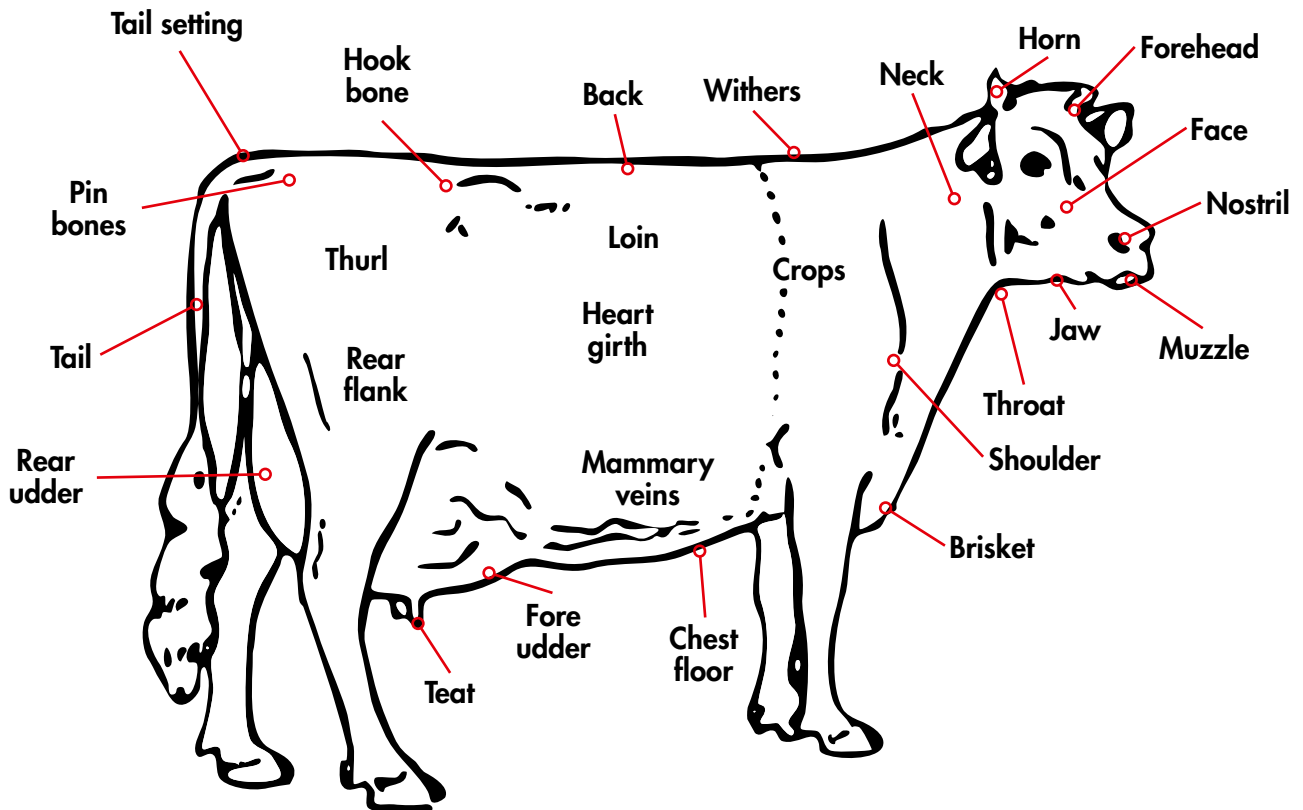
Parts of a Cow

Below is a picture of the parts of a cow (or cow anatomy is the proper term).

Cows vary in all different colours, some are brown, tanned, white, black, brown-white patched or black-white patched. In a female cow, milk is produced in the udders and extracted from the teats.

Use the following information to label your own cow.

A cow's udder has four compartments with one teat hanging from each.



A cow's mouth is adapted for grazing; the top part of the mouth is a hard pad and the bottom part a row of flat-topped teeth. Cows have 32 teeth in all, eight incisors on the bottom part and six molars on the top and bottom parts on each side.

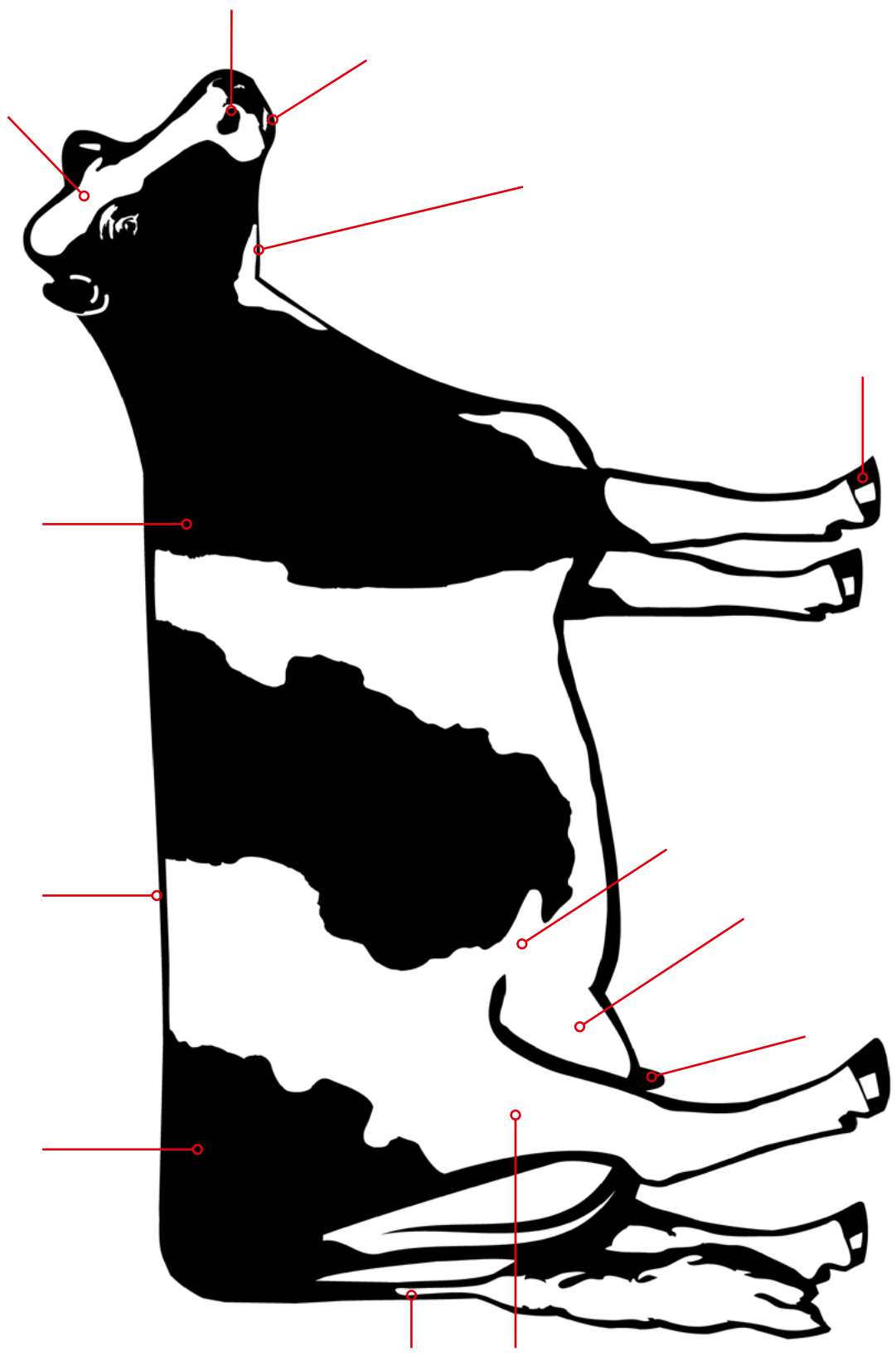
The cow tears grass from the field and grinds it between the two mouth parts.

A cow's ears are very flexible and can turn in any direction. They are used to hear danger from many directions.

Cows have long tails which they use to waft insects off them.

Name: _____ Date: _____

Parts of a Cow



Products made from Cattle

BRAIN

- Anti-aging cream
- Medicines

BLOOD

- Pasta
- Imitation eggs
- Cake mixes
- Dyes & inks
- Adhesives
- Minerals
- Medicines
- Laboratory research materials

BONES

- Refined sugar
- Charcoal
- Fertilizer
- Glass

HAIR

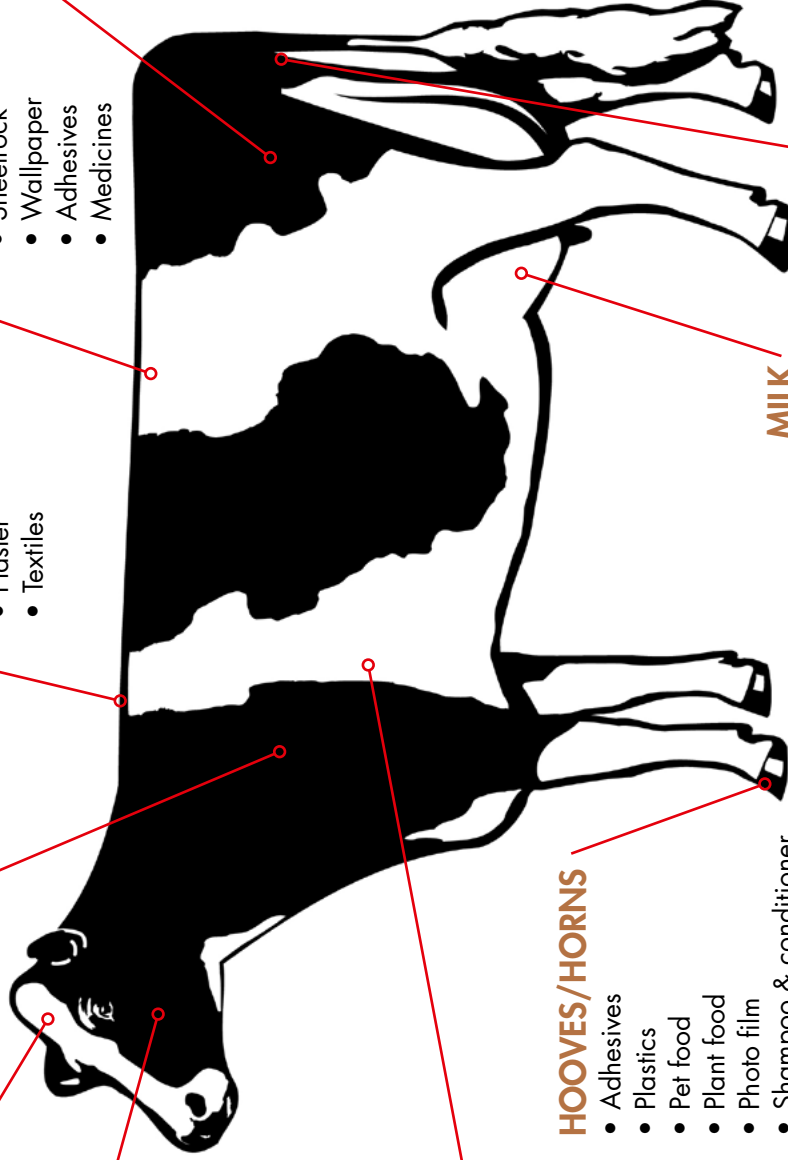
- Airfilters
- Brushes
- Felt
- Insulations
- Plaster
- Textiles

SKIN

- Gelatin
- Candles & confectionary
- Flavours
- Emery boards
- Sheetrock
- Wallpaper
- Adhesives
- Medicines

FAT

- Chewing gum
- Candles
- Detergents
- Fabric softener
- Deodorant
- Shaving cream
- Perfume
- Pet food
- Cosmetics
- Creams & lotions
- Crayons
- Paint
- Oils & lubricants
- Biodiesel
- Plastics
- Waterproofing agents
- Cement
- Ceramics
- Chalk
- Explosives
- Fireworks
- Matches
- Fertilizer
- Antifreeze
- Insulation
- Linoleum
- Rubber
- Textiles
- Medicines



INTERNAL ORGANS

- Instrument strings
- Tennis racket strings
- Hormones, enzymes, vitamins & other medical materials

HOOVES/HORNS

- Adhesives
- Plastics
- Pet food
- Plant food
- Photo film
- Shampoo & conditioner
- Emery boards
- Lamination
- Wallpaper
- Plywood

MILK

- Adhesives
- Plastics
- Cosmetics
- Medicines

MANURE

- Fertilizer
- Nitrogen
- Phosphorous

Careers with Cows

Resource: A-Z of Careers in Agriculture, Southern Forests SEED Program

Copy the A-Z of Careers in Agriculture page, one for each student.

Activity: Circle or highlight the careers in agriculture that have a direct or indirect link to cattle.

A-Z of careers in agriculture, horticulture and food science.

Have you thought about a career in agriculture?

- 3 jobs in agriculture for every university graduate in Australia
- 600 people fed by each Australian farmer every year
- 61% of Australia's landmass is cared for by Australian farmers

A Agronomist Ag Teacher Animal scientist Accountant Agribusiness consultant Auctioneer Aquaculture farmer/manager	B Banking agribusiness Beekeeper Biologist Biochemist Butcher Book keeper Brewer Business manager	C Chemist Chemical rep Climatologist Commodity trader Contractor Crop Scout Chef Computer programmer	D Diesel mechanic Drone operator Dog trainer Driver machinery	E Economist Ecologist Entomologist Engineer Earthmoving contractor Electrician Exporter Events manager	F Farm owner/manager/ hand Field officer Food scientist Fruit grower Floristry Financial advisor Feedlot manager Forester	G Geneticist Geophysicist GIS analyst Greenkeeper Grader Gardener	H Horticulturalist Horse breeder/trainer Hydrologist Human resource advisor/manager
I Inseminator Irrigation specialist Insurance broker	J Journalist Jackaroo/Jillaroo Jockey	K Kill floor operator Kangaroo shooter	L Livestock agent Livestock producer Laboratory technician Lawyer Landscaper	M Market analyst Marine scientist Mechanic Microbiologist Metal fabricator Machinery salesperson	N Natural resource manager/officer Nursery manager Nut producer Nutritionist	O Operations manager Occupational health and safety advisor	P Plant scientist Policy advisor Precision ag technician Pump specialist Pregnancy scanner/tester Pilot Public relations
Q Quality assurance manager Quarantine inspector	R Real estate valuer Roustabout Refrigeration specialist Rural finance counsellor	S Sales rep Soil scientist Stud breeder Shearer Stable hand Statistician Surveyor	T Tree farmer Truffle producer Transport logistics technician Toxicologist Turf manager Truck driver	U University lecturer	V Vegetable grower Veterinarian Vet nurse Viticulturalist Virologist	W Wool classer Wool handler Winemaker Waste management	XYZ Zoologist

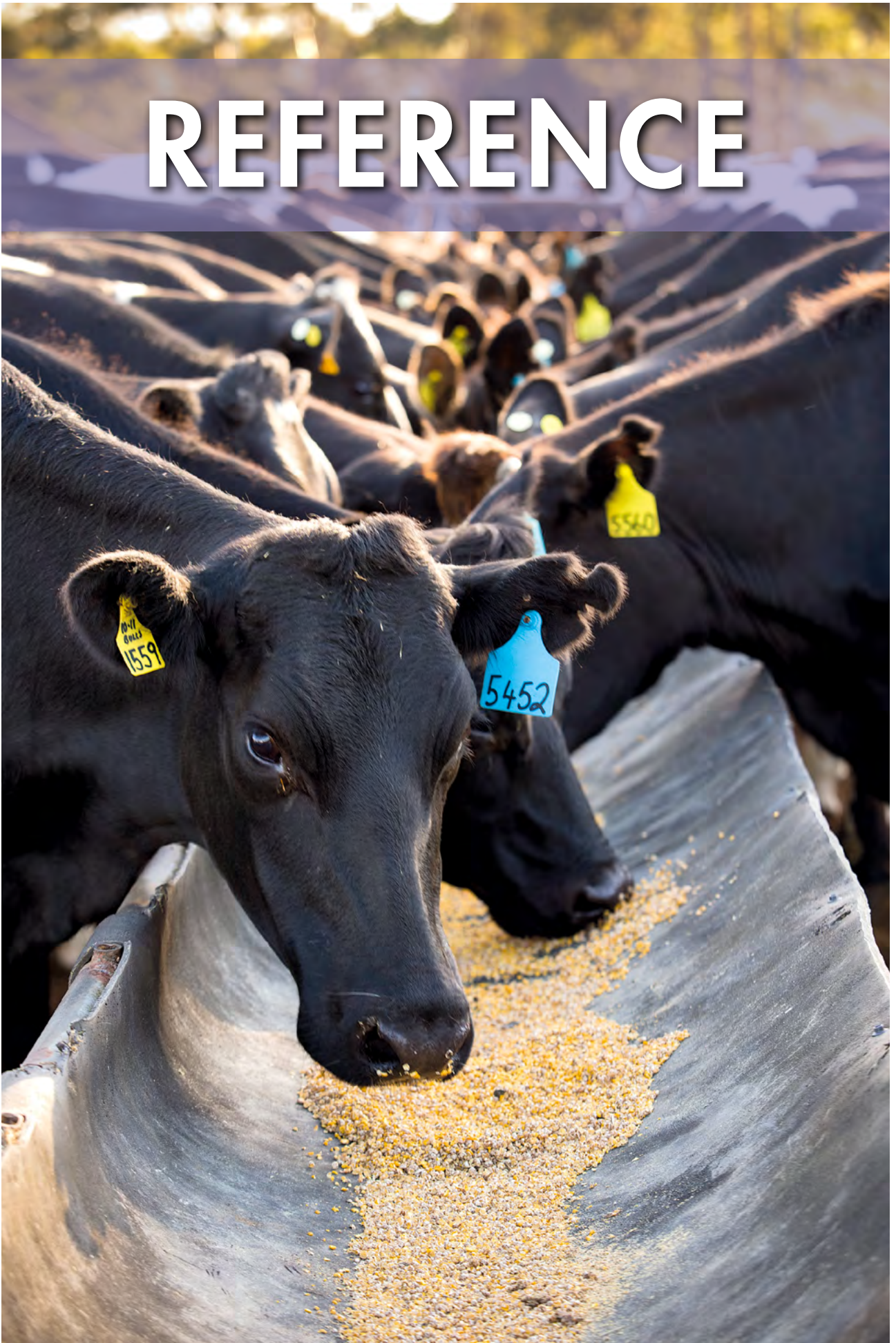
www.careerharvest.com.au
www.ruralskills.com.au

www.agrifoodcareers.com.au
ausagcareers.com

Sow the seed for a career in agriculture and see what grows...



REFERENCE



Cattle and the Environment

To produce the best beef in the world, Australia's cattle producers use the latest technology along with over 200 years of experience as caretakers of the land.



For anyone who lives off the land, taking care of the environment is the most important part of their day's work – without a healthy environment their livelihood is at risk. Our cattle producers have been finding new and better ways to live in harmony with their environment. They have bred more efficient herds and now they produce more meat from fewer animals.

Here are just some of the ways our cattle producers make sure the land is preserved for generations to come.

Soils and vegetation

Although in the past some agricultural land was cleared, these days farmers understand the importance of balancing plant, animal, insect and bird life with agriculture.

A healthy ecosystem helps keep soils, grass and trees healthy and keeps weeds away.

Trees and plants not only provide a home, shade and food for animals, birds and insects, they also help to stop soil erosion. Without trees and plants, the soil has nothing to hold it together and is in danger of washing away when rain falls.

Many of our cattle feed on pastures that are of little value for alternative food production, like the sort of grazing land found in northern Australia. In the south where crops are grown, farmers can use cattle grazing to rest paddocks from crops, helping to keep the soil healthy.



Water

The amount of water consumed by an animal to produce 1kg of beef is between 100–400 litres depending on environmental conditions and the productivity of the farm.

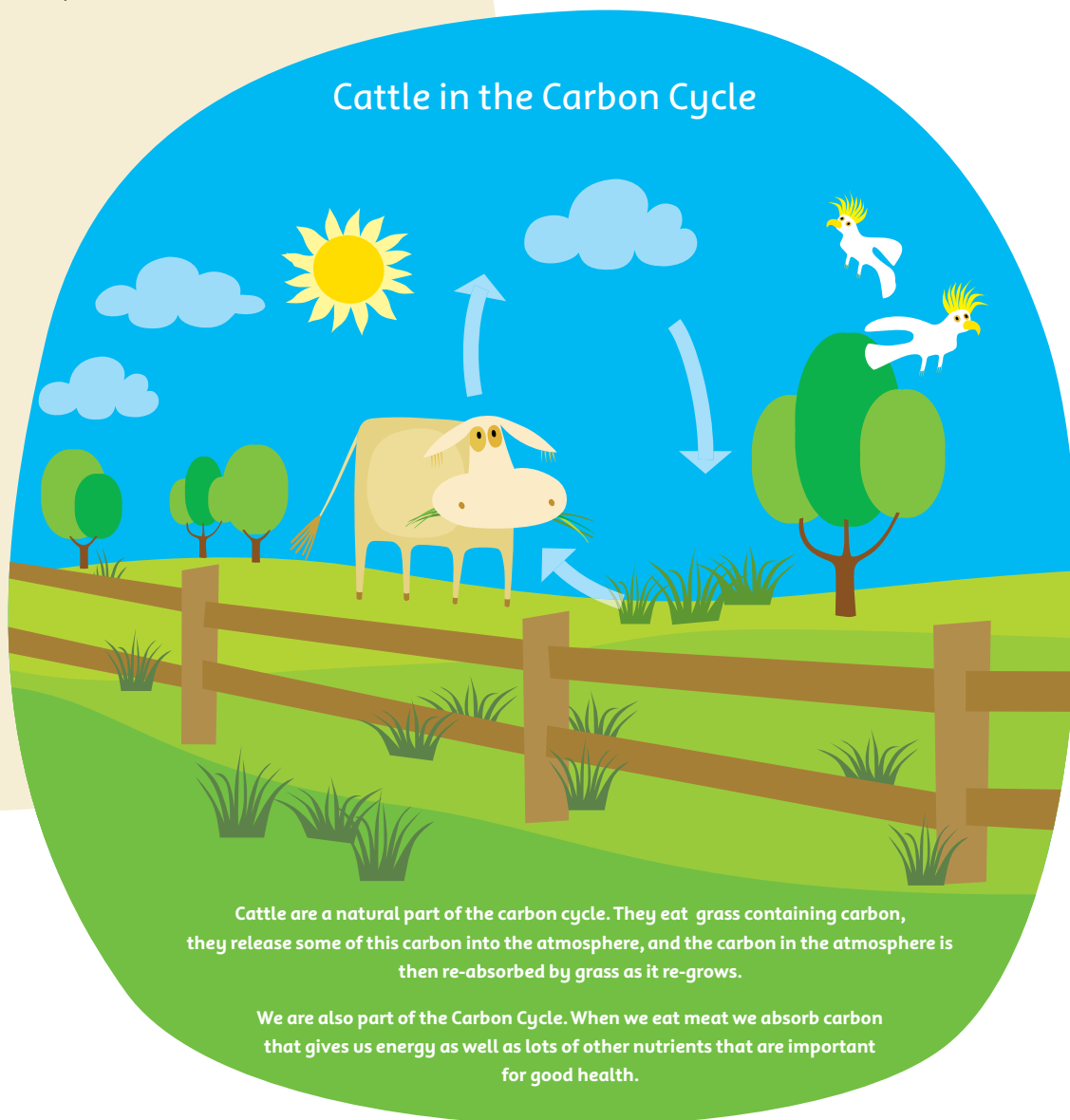
If you calculate all the rain that falls in an area where cattle are raised then the figure rises to around 50,000 litres. But that rain will still fall whether there are cattle there or not, so to say it takes that much to produce a kg of beef is not really correct.

Greenhouse gas

Cattle have four stomachs to help them digest the grasses they eat. The first stomach, called the rumen, holds grass that is only partly chewed – this is called the 'cud'. They keep the cud in the rumen, then burp it up and chew it again before digesting it – and that's known as 'chewing the cud'.

When they bring the cud up they emit methane, a greenhouse gas, from their rumen.

Unlike many other countries, in Australia our cattle generally graze on extensive, natural pastures which help to capture carbon dioxide, another greenhouse gas. The capture of carbon by plants and storing in the soil is known as 'sequestration'.



There are many animals that are ruminants, they include: cattle, camels, giraffes, bison, deer, sheep, alpacas, yaks, wilderbeests, goats, llamas, buffalo, water buffalo, antelope.

What are we doing to be even better?

Although carbon dioxide levels in the atmosphere are rising, methane concentrations are stable. However, cattle producers will still look for ways to reduce methane emissions.

Using genetics and science, farmers are breeding cattle that process their food more efficiently and so produce less gas, and scientists have developed special food rations that can help too.

Our scientists are working to find new ways to further reduce methane emissions, and our cattle producers will continue to improve their breeding programs and will keep planting trees and pastures that help look after the soil, the air and their cattle.

Quick facts

Although carbon dioxide levels in the atmosphere are rising, methane concentrations are stable.

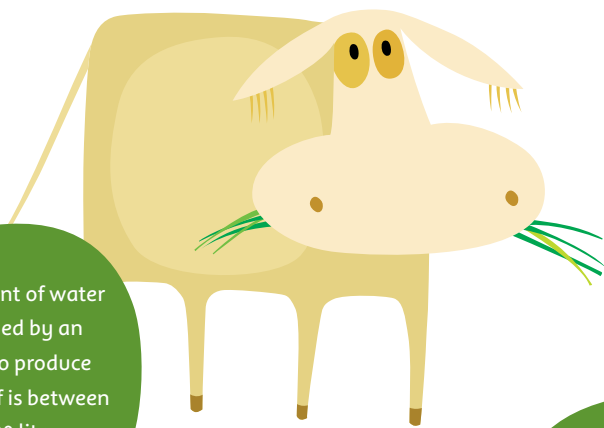
Agriculture is the only sector to have reduced its greenhouse gas emissions.

By 2001, Australian farmers had planted around 20.6 million trees. With each farmer planting around 150 each year, that number keeps growing.

The amount of water consumed by an animal to produce 1kg of beef is between 100-400 litres.

Agriculture's emissions are down by 6% compared with Stationary Energy – up 36%, Transport – up 30% and Industrial – up 16%.

The trees and plants that grow where cattle graze provide a home, shade and food for other animals, birds and insects, and they help keep the soil healthy.



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How Now Which Cow?



**DISCOVER
DAIRY**

To find out how cows make milk visit dairy.edu.au/discoverdairy