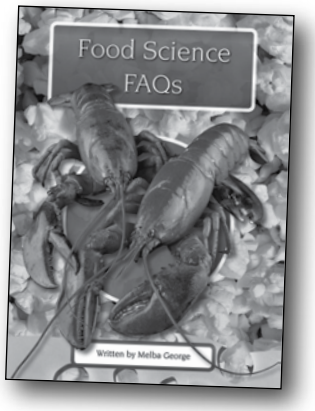

Food Science FAQs

	Text Type	Lower 1500–1800 words RA 8.8–9.2	Middle 1900–2400 words RA 9.3–9.7	Upper 2500–3000 words RA 9.8–10.2
Fact	**Procedure**	Build Your Own Easel	Making a Cheesecake	So You Want to Be a Cartoonist?
	Recount (Explanation)	Ten Milestones in Space	Rail Accidents	Three Terrible Hurricanes
	Information Report (Description)	Mythical Creatures	The World of Caves	Top Towers
	Information Report (Explanation)	A Weather Counting Book	Two Polar Regions	Seven Ancient Wonders
	Interview	Food Science FAQs	Hobbies	Fireflies and Glow-worms
	Biography	Ned Kelly	Mother Teresa: Saint of the Gutters	Edmund Hillary
	Explanation	How Forensic Scientists Work	How Musical Instruments Work	How Solar Energy Works
	Procedural Recount	How I Learned to Be a Nipper	How I Trained for the Junior Triathlon	How I Learned to Snowboard
Fiction	**Realistic Fiction** (Out of School)	Junkyard Treasure	Outback Betty's	Harry's Dream
	Realistic Fiction (In School)	On the Case	The Real-Life School Project	Ms McMahon
	Historical Fiction	The Wooden Horse Trick	Cheung Saves the Day	The Slave
	Fantasy	The Cloud Washerwoman	Sammy Stevens Sings	Finbar and the Long Trek
	Science Fiction	A New Source of Power	The Intergalactic Race	Eighth Moon
	Humour	The Upstairs Dragon	My Rhyming Grandpa	Catty Bimbar and the New-Age Pirates
	Mystery	Mystery Under the Big Top	The Mystery of Autoplane 500	The Mystery of the Missing Food
	Folktales	The Wicked Witch of the Singing Sands	Gulnara	Momotaro, Little Peachling

MACMILLAN

We have designed these lesson plans so that you can have the plan in front of you as you teach, along with a copy of the book. Suggestions for teaching have been divided into questions and discussion that you may have with students before, during, and after they read. You may prefer to explore the meaning and the language in more detail before students read. Your decisions will depend on the gap between students' current knowledge and the content, vocabulary, and language of the book they are about to read. The more information students have up front, the easier it will be for them to read the text.

FOOD SCIENCE FAQs

Lower level fact
Text type: Interview
Reading age 9.2
Word count 1,508

Before Reading

Ask students if they know what the letters FAQ mean. Explain that when a topic has questions that lots of people would like answered, authors may write FAQs.

Write FAQ on the board and ask students to try to predict what these letters may stand for. Direct students to chat to a partner or small group to encourage a collaborative response. Invite responses and guide students to understand that FAQ stands for 'frequently asked questions.' Explain that the word *frequently* means often or a lot. So what would frequently asked questions be? Explain that FAQs are usually associated with non-fiction topics.

Brainstorm where FAQs may be found. Find a website with FAQs and discuss the kinds of information contained in this sample.

COVER

Read the title and examine the cover photograph. Discuss what the book may be about. *Why do you think these images have been chosen for the cover?*

Read the blurb. What additional information does this give you? What do you expect to find inside this book? Guide the discussion to build understandings that this book is written using interview style. *Who have you seen interviewed? What sorts of people are usually interviewed?* Guide the conversation to include people who know a lot about a topic. *Why do you think people like to see interviews with famous people? What about non-famous people who know about particular things? Why might they be interviewed?*

What do you think the term food science *means? What do you expect a book titled* Food Science FAQs *to be about?*

CONTENTS PAGE

Open the book. *Tell me what you know about this page. Discuss features of the contents page. Where would I go to learn about why onions make you cry?* Students should quickly respond with the page number. Repeat for

other pages. Encourage quick responses. *What do you know about information books?* Students should indicate that the reader can choose where they'd like to start.

Students should also mention the terms *glossary* and *index*. Ask students to explain what each term means. Visit each of these pages to clarify that the glossary provides meanings for new or tricky words about the topic, and the index provides the page numbers to help the reader locate particular things in the book.

Revisit the contents page. Discuss the term *introduction*. *What does this mean? Do you think this might be a useful place to start?*

INTRODUCTION

During Reading

What do you notice first about this page? Guide students to discuss the information contained in the visual imagery. *Read the caption beneath the popcorn. What do you know about popcorn?* Students should generalize that popcorn has been eaten for hundreds of years. *What does this tell you about food science?* Guide the discussion to build understandings that food science has been around for a long time.

What else do you see? Students should indicate the photograph of Dr Radha Sharma. *What do you think Dr Radha Sharma does?*

What do you notice about the text on these pages? Students should notice the bold text on chemicals and chemical reactions and suggest that these words are located in the glossary. Direct students to the glossary and ask students to read these aloud. Clarify these meanings.

After Reading

Tell me what this book is about. Invite discussion. Probe for comprehension by guiding the conversation as follows:

- *What do you know about food?*
- *What are the chemicals found in foods?*
- *Explain what a chemical reaction is. What causes a chemical reaction to occur in food?*
- *Tell me what food science is. What sorts of changes do food scientists study?*
- *What else do food scientists do? What does the word* processed *mean?* Brainstorm foods that are processed. Encourage students to think of foods at home as well as fast foods and packaged foods.

WHAT MAKES POPCORN POP?

Before Reading

Tell me what you see on this page. Discuss the photographs and read the captions. *Tell me what you know about popcorn from these photos. Has anyone made popcorn at home?* Ask students to explain how popcorn is made.

What else do you notice on this page? Students may identify the *Did you know?* Ask students to read this box aloud or silently. *What did you learn?* Prompt students to elaborate as needed.

Read the FAQ

Are there any words we need to clarify before we begin reading? Revisit the glossary to unlock the word *pressure*.

Read this page and be ready to chat about what makes the corn pop.

After Reading

Chat with a partner about what you have learned. Be ready to explain how popcorn pops.

What is the secret to making popcorn?

Ask one pair of students to explain what makes popcorn pop. Give students a ball of play dough or a cotton-wool ball to assist with their explanation. Use the question guide to probe for elaboration and clarification:

- *Explain and demonstrate what happens when the kernel is heated.*
- *What happens to the water inside the kernel and what does this do to the inside of the kernel?*
- *What eventually happens to the kernel's hard shell? So what is it exactly that pops the shell?*
- *What are some ways to make popcorn?*

Extension idea: Make popcorn.

HOW DOES BREAD RISE?

During Reading

Cover the text page to focus attention on the recipe page.

Discuss the title of the page. *Why is making bread a process?* Invite discussion and probe for clarification as needed.

Cover the captions and ask students to explain what they think is happening in each photo. As each photo is discussed, read the caption to confirm or clarify what is occurring.

Read the FAQ together. Then read the first two sentences together.

What is yeast? What does the yeast do?

Tell me about the word fermenting. Students identify that the word is explained in the glossary. Visit the glossary and discuss the meaning of *fermenting*.

Instruct students to read the remainder of the text and think about how the yeast causes a chemical change in the dough. *Jot a few notes down to help you.*

After Reading

Allow students a couple of minutes to discuss their understandings with a friend or in small groups.

Regroup students for discussion.

Guide questions:

- *How does the yeast change the dough?* Prompt students to reread sections of the text to clarify if needed.
- *What other factor is needed to cause the chemical change?* (leaving the dough in a warm place)
- *What happens to the yeast when the bread is baked? What is left behind after baking that makes the bread soft and fluffy?*

Read the *Did you know?*

Ask students to infer why yeast might be used to make beer, wine, soy sauce, and some cheeses.

WHAT MAKES THE HOLES IN SWISS CHEESE?

During Reading

Read the FAQ. Ask students to examine the photograph on page 11 and read the caption. *What is the man mixing?* Discuss why the cheese may look like this. Invite inferences and explain that when we read page 10 we will learn the answer.

Let's look further. Turn to page 12. Examine the photographs and read the captions. Invite students to infer why the cheeses must be date stamped and what it means to ripen cheese. *What do you know that needs to ripen before*

eating? Invite responses. Guide students to generalize that perhaps cheese is similar in this way. *Do you think we will learn more about this as we read this page?*

During discussion of the photograph on page 13, ask students to explain the terms *firm texture* and *mild flavour*.

Read pages 10 to 13 and be ready to chat about what makes the holes in Swiss cheese.

After Reading

Ask students what causes the holes in the Swiss cheese. Direct them to reread page 12 if needed.

Guide questions:

- *Do the holes develop early in the cheese making process? Why not?*
- *When is it that the holes begin to form?*
- *What did you discover causes the holes?*
- *Tell me what you know about the word* bacteria*.* Invite students to share their knowledge of this term. *Can you think of another word for bacteria?* (germs) *So what do we know about bacteria?* Guide students to generalize that some bacteria are friendly and some are harmful. *What kind of bacteria would be in the cheese?*
- *Besides causing holes, what else does the bacteria do to the cheese?*
- *What are the holes in the cheese called? Can you think of another food that has eyes?* Prompt: potatoes.

WHY DO EGGS HARDEN WHEN YOU BOIL THEM?

During Reading

Read the FAQ. Examine the photographs of the eggs. Compare and contrast the differences.

Students may indicate that they'd like to read the *Did you know?* when they look at the photographs. If so, discuss:

- *What happens when a raw egg is boiled on high heat. What is this called? Is it edible? Has anyone ever eaten an egg that this has happened to?*
- *Tell me a nutritional fact about eggs. Does anyone know a common source of vitamin D? Is it uncommon to get vitamin D from foods? Which word tells you this?*

Read page 14 and jot down or sketch what happens as an egg is cooked. If you make a sketch, add labels to help you read your diagram later.

After Reading

Spend a few minutes chatting to a partner about what you have learned. If your understandings differ, revisit the text to clarify.

Invite students to share their understanding of why eggs harden when boiled. If students have attempted a sketch, ask them to show their diagram and explain what happens. As students share, probe for elaboration or clarification as needed.

- *Tell me what will happen if I cook my eggs on high heat for too long.*
- *What kind of heat setting should be used to boil eggs? What do you think the term* a moderate heat *means?*

Extension: Boil some eggs on moderate heat, high heat, and overcooked on high heat. Examine the differences after cutting. Do students notice any differences in taste or texture? *Do you think the same differences would occur if the eggs were fried?*

WHY DOES COOKED FOOD GO BROWN?

During Reading

Read the FAQ and examine the photograph. Compare the differences in appearance between cooked and raw chicken. Discuss other foods that change colour after cooking. Ask students to infer why the cooking process might cause this change. Discuss.

Read page 16. Jot down some positive effects of the cooking process. Note the cooking temperature that browning occurs at. The book names some foods that change colour as they are cooked. Think of other foods that turn brown during cooking that are not mentioned in the book. Jot some of these down to discuss. Be ready to tell me one of your favourite cooked foods.

After Reading

Guide questions:

- *In what way does browning enhance flavour? At what temperature does this occur? How do the changes to flavour occur?* Direct students to clarify by rereading the sentence beginning 'When the sugars and amino acids in food are heated…' and the two sentences following. Invite collaborative discussion.
- *Why do you think this reaction is called the Maillard reaction?* Invite inferences. *Where could we go to check?* Link to the multiliteracies (multimedia component) and ask someone to check this inference online.
- *The book mentions that foods such as fish, meat, and vegetables turn brown when they are cooked. Tell me some other foods that turn brown.* Share responses.

Discuss students' favourite cooked foods.

Ask students to think about how this food is different when it is uncooked.

Are there hazards to eating uncooked foods? Where could you check?

WHY DO ONIONS MAKE YOU CRY?

During Reading

Read the FAQ. Ask students if they know the answer. Activate or build prior knowledge by asking:

- *Has anyone cut an onion? Share what that was like. Can you recall what it smelled like and felt like? Does it feel just like crying, or is there extra discomfort? How does it make your eyes feel?*

Look at page 19. Read the caption with the photograph. Based on that sentence, can anyone guess what may cause our eyes to hurt? Discuss inferences.

Read pages 18 and 19. Be ready to discuss what happens to the onion that makes our eyes sting and water.

Note some tips that will make cutting onions much less worrisome.

After Reading

Guide questions:

- *What is it that makes our eyes sting and water?*
- *What causes the gas to escape into the air? What kind of gas is it?*
- *Describe what happens when the gas reaches our eyes? What happens to gas at this point?*
- *What is the exact name of the chemical that makes our eyes sting?*
- *How do our eyes react to this?*

- *What do you expect it might be like if you touched your eyes with your unwashed hand after cutting an onion?*
- *What are the tips for cutting onions to avoid this discomfort?*
- *What other things cause uncomfortable, sore, or watery eyes?* Guide students to link from the text to their world.

WHY DO LOBSTERS CHANGE COLOUR WHEN COOKED?

During Reading

Read the FAQ and look at the photographs.

Can you think of other things like lobsters that change colour when they are cooked? Prompt students to think of crabs, crayfish, bugs, prawns, etc.

What do these things have in common?

Do you think this is just a coincidence or could there be a reason why?

Ask students if they have ever eaten lobster or crab. *What is the meat like? What makes them difficult to eat?*

As you read pages 20 and 21, jot down what it is that makes the shell change its colour. Also record some interesting things that you learn as you read. Are there any new or unusual words on this page? During reading, visit the glossary to check the meaning of the word pigment*. Be ready to explain what that sentence means.*

After Reading

Guide questions:

- *What causes the lobster's shell to change from blue-purple to red?*
- *What is meant by the term* proteins*?*

Prompt students to think about what happens to eggs. Reread page 21 to clarify if needed.

Discuss the word *pigment*. Ask one student to read the sentence aloud and explain what the sentence means. Ask students to explain in their own words why a lobster looks blue-purple when it is alive even though it has a red pigment. Explain to students that some fabrics are like this. They may contain the threads of more than one colour and that this can affect the way the colour looks.

Are lobsters the sort of thing that most people eat daily or weekly? Explain that lobsters are more expensive than most meats. *What could make them expensive?* Invite interences. Explain that lobsters are considered to be a delicacy.

REACTION COMPARISON CHART

Read the heading. What do you think the title means? Discuss.

What do the headings tell us?

How do we read the information in this table?

Tell me what makes popcorn react. What is produced in the popcorn that causes it to change form?

One of the foods on the table contains bacteria. What is this food? Think about this food and be ready to chat about what activates the change and what causes the changes to this food to occur. Revisit the book and chat to a partner if you need to check your response.

One of the foods doesn't need to be heated for the reaction to occur. Which food is it? What is the cause of the reaction in this food? Check the book if you are unsure.

Think about eggs, browning, and lobsters. What do these have in common?

CODE BREAKER

Food Science *contains lots of words that we don't use in our day-to-day talk. For people who work in this area, these words are part of their daily vocabulary.*

Turn to page 4. On page 4 the author identifies the words chemicals *and* chemical reactions *as words that may be difficult for people who don't work in this area to understand. To make it easier to read the book, the author provides meanings for these tricky words in the glossary.*

Go through the book with a partner and find other words that could have been included in the glossary. Record these words, write what you think they mean, and then record their dictionary meanings.

MEANING MAKER

Ask students to think of a cheese sandwich and a toasted cheese sandwich. (You may wish to make these with students.)

Discuss the ingredients required to make each. *Are the ingredients the same?*

Discuss the method to make each. *Is the method the same? Discuss the ways they are different.*

Work with a partner to discuss and record the ways the cheese sandwich and toasted cheese sandwich are the same and different.

With your partner, think of another food that can be eaten uncooked or cooked. Discuss the ways the cooked and uncooked food is the same and different.

Which do you prefer to eat? Why?

Invite discussion of students' responses. Graph students' preferred choice of plain or toasted sandwiches.

TEXT USER

Read the blurb on the back cover of this book. The blurb has been written to make a strong link to the way this book is organized as a series of frequently asked questions. How has this been done? Guide students to notice that the blurb begins with a FAQ. *How does doing this help to set us up to understand the way this book is set out?* Guide students to understand that when we understand the way books are structured, it makes them easier to read.

In the blurb the author also tells us that this is an interview. Does this help us to build knowledge of this book? How?

In what ways is this book different to some other information texts?

TEXT CRITIC

This book is different from many other information books. Because it is an interview, the reader is getting the information from someone in general conversation. This is different from reading a book or article, or viewing a documentary that does not contain anyone's opinions. *How are fact and opinion different?*

When a viewer watches a documentary that is interview style, the viewer knows that the ideas presented are the opinions of that person. Therefore the viewer must think, "Is this true or is it just this person's understanding?' If it is just the person's understanding, then perhaps they are incorrect. *How is this tricky for the viewer?* Assist students to understand that it may be presented as if it is fact.

In this book we need to be thinking, is this true or is it just Dr Radha's opinion? How could we check the accuracy of the information? Discuss.

USING MULTIPLE INTELLIGENCES

Pair students with a friend for this task.

Organize: Write the letters A to Z in a list. Beside each letter, write a food that begins with that letter. When you are finished, read your list and circle your favourite foods. (I, V)

Design: a full day's menu for yourself and a good friend. Find out what your friend likes to eat so that you include foods that you both like. Use some foods from your list on your menu. You will need to plan for breakfast, morning tea, lunch, afternoon tea, and dinner. (V, P)

Share: Sit with your friend and take turns reading each other the menus you have designed. Tick the menu choices that both you and your friend enjoy eating. (V, P, L)

MULTIPLE INTELLIGENCES

The theory of multiple intelligences was developed by Howard Gardner, a professor of education at Harvard University. Howard Gardner's theory suggests that the current view of intelligence, as measured by IQ tests, is far too limited and discriminates against students who think in different ways. He proposes taking a broader perspective and has identified eight different intelligences. These are:

- verbal-linguistic intelligence – word smart
- logical-mathematical intelligence – number/reasoning smart
- visual-spatial intelligence – picture smart
- bodily-kinaesthetic intelligence – body smart
- musical-rhythmic intelligence – music smart
- interpersonal intelligence – people smart
- intrapersonal intelligence – self smart
- naturalist intelligence – nature smart

Multiple intelligences have enormous potential as a tool in furthering reading and language development. Traditionally, the teaching of language and reading has focused mainly on two intelligences: logical-mathematical and verbal-linguistic. This means that many students who possess different intelligences do not receive the necessary opportunities, encouragement, instruction, or reinforcement to succeed with reading as well as they might.

Food Science FAQs

Name _____

Cause and Effect

Food	Cause	Effect
Corn kernel	Heat expands the water inside the kernel until it gets so hot it explodes.	Popcorn

MACMILLAN

Food Science FAQs

Name _____

Multiple Intelligences (verbal-linguistic, intrapersonal, naturalist, logical-mathematical)

Draw your favourite food when it is ready for you to eat. Label this meal.

Draw the things that make up your favourite food before they are cooked. Label the ingredients.

Think of a few sentences to explain what you think changes the way the original ingredients look.

_____

_____

_____

Food Science FAQs

Name _____

Imagine being alive a long time ago when people didn't have kitchens and didn't even know how to start fires. There were no shops to buy food and you could only eat what you could gather or catch.

How would your life be different?

_____

_____

Think about your daily diet. List all the things that you eat now that you wouldn't have.

_____

_____

List the things that you think you would be able to eat.

_____

_____

Do you think people would eat as much meat? Explain why.

_____

_____

What foods would you miss the most? Why?

_____

_____

Food Science FAQs

Name _____

Think of two other words that belong to the same word families as these words from the book. Try to think of interesting words. If you need help, use your dictionary and don't forget that you can use -s, -ed, and -ing endings if you are stuck.

science	scientist	scientific
escape		
turns		
cause		
process		
pop		
contain		
thicken		
create		
react		
ferment		
acid		
safely		
naturally		
chemical		

Choose three words and use them in a sentence that makes sense.

_____

_____

_____

_____

Food Science FAQs

Name _____

1. Does the title of the book tell you what it is about? Why or why not?

_____

_____

2. Did the title, cover illustration, and blurb make you want to read this book? Give reasons.

_____

_____

3. What will you remember about this book?

_____

_____

4. Why do you think the author chose an interview style for this book?

_____

_____

5. What was the most interesting part of this story? Give reasons.

_____

_____

6. Did you find the glossary helpful in understanding some new words?

_____

_____

7. What does a reader need to know in order to find things quickly in a book like this?

_____

_____

8. How did this book help you learn more about your world ?

_____

_____

9. List some things that you have learned from this book.

_____

_____

10. Who do you think would enjoy a book like this? Why?

_____

_____

Food Science FAQs

Name _____

Some books and magazines contain information that is factual. Others present information as if it were true, but it may just be someone's opinion or what someone believes to be true.

Use a variety of information books, magazines, brochures, advertisements, and newspapers to complete the table below.

Fact	Opinion
For example: Book – *How Forensic Scientists Work*	For example: Magazine interview – *Shark Attack Took My Friend!*

Food Science FAQs

Name _____

Dr Radha Sharma certainly knows a lot about food science. What else would you like to know?

Write four more interview questions about food science for Dr Radha.

_____

_____

_____

_____

Think of four more things you would like to ask Dr Radha. These interview questions can be about anything you are curious about.

_____

_____

_____

_____

Who are some people or characters that you would like to see interviewed or read interviews with? Explain your interest in these people or characters.

_____

_____

_____

_____

What sorts of questions is it important to ask? Why?

_____

_____

_____

_____