



Pier Vido Design
10 The Parkway
Chirnside Park Victoria 3116

e: piervido@bigpond.com
m: 0409 818 518

APA Book Design Awards

Shortlisted | 2002 | 2004 | 2005

Finalist | 2009 | 2010

APA Excellence in Educational Publishing Awards

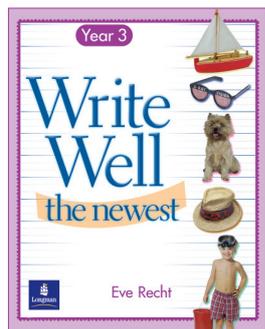
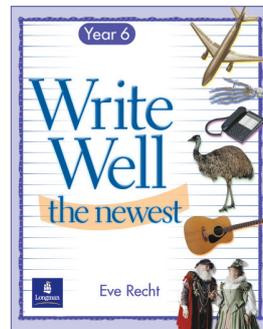
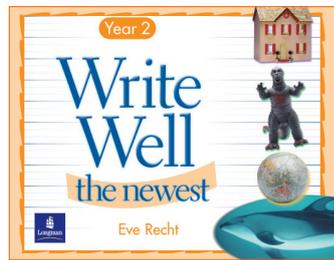
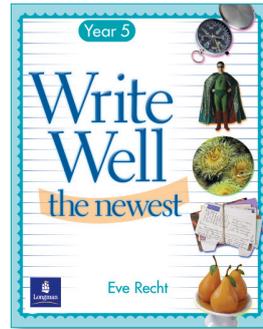
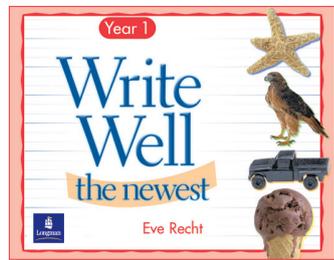
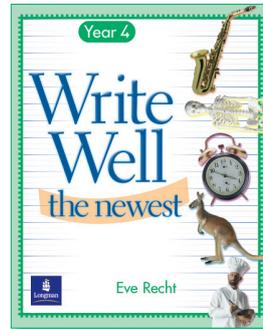
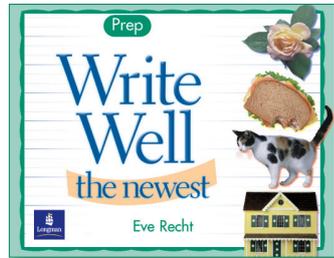
Shortlisted | 1998 | 2003 | 2005 | 2009

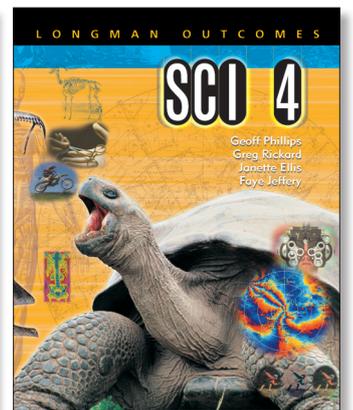
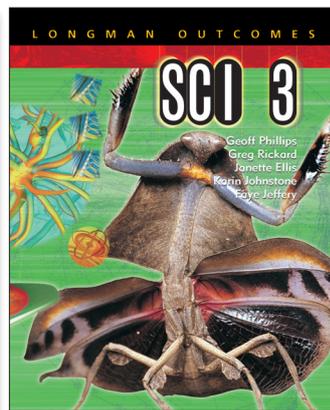
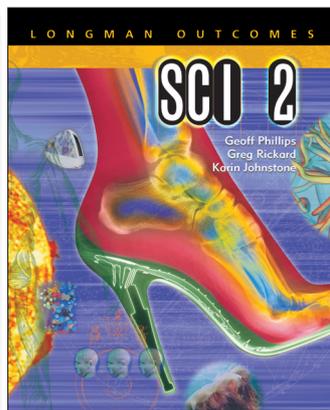
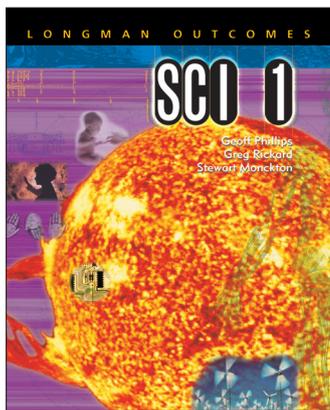
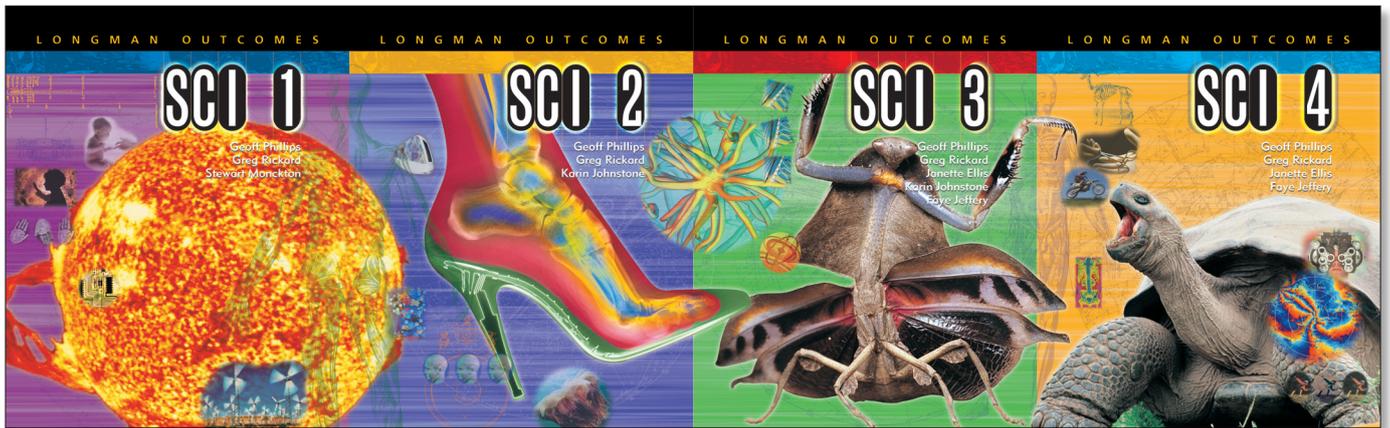
Commended | 2004

Highly Commended | 2002

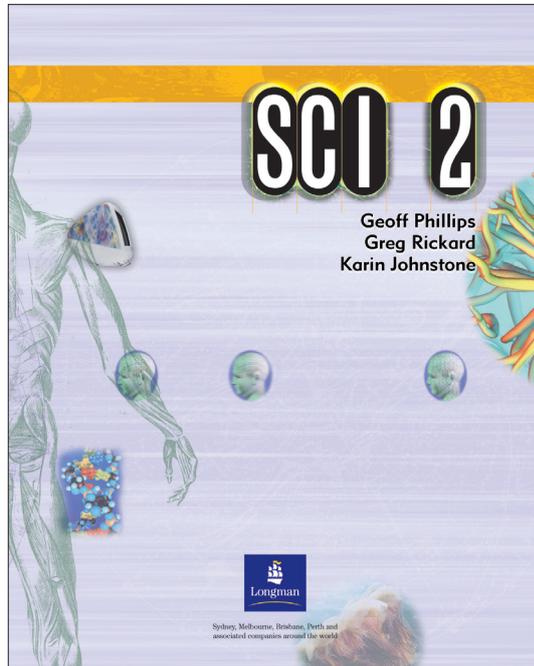
Joint Winner | 2009

Winner | 1999 | 2008 | 2011





Top: SCI series, original Photoshop file from which the 4 covers were 'cut' [Pearson Australia]
Bottom: SCI 1, Shortlisted 2002 APA Design Awards



CHAPTER 3 Geology

Outcomes Earth and space science

5.1
Describe the formation, composition and cycling of rocks.

5.2
Relate the properties of rocks to the ways in which they are used.

Stimulus questions

- 1 Do the terms 'rock', 'mineral' and 'ore' mean the same thing?
- 2 Why does a dentist's drill contain diamond?
- 3 How old is the Earth?
- 4 How can scientists tell an Aboriginal artefact is over 20 000 years old?
- 5 Which has been the most successful species on Earth?
- 6 How can dinosaur fossils reveal details such as their diet and social behaviour?
- 7 How can a chemical in layer of rock provide evidence of why the dinosaurs became extinct?

Unit 3.1 Rocks and minerals

Rocks may not be alive, but they can still tell us quite a lot about the past.

The study of rocks, known as **petrology**, is one of the many branches of **geology** (the study of the planet Earth) which also includes **mineralogy** (the study of minerals) and **palaeontology** (the study of fossils).

Though many people are familiar with the words 'rocks' and 'minerals', not so many people could give a good definition of what each really means.

Minerals

Minerals are naturally occurring substances, each with its own particular chemical composition, and are found in the Earth's crust or lithosphere. Examples of minerals are quartz, mica, feldspar, and various carbonates.

Ninety-nine per cent of all minerals are made up of only eight elements—oxygen, silicon, aluminium, iron, calcium, sodium, potassium and magnesium. Minerals are the building blocks of rocks.

Since the two most common elements that make up the Earth are oxygen and silicon, it is not surprising that these are also common in minerals. Quartz is made up of silicon and oxygen.

Some minerals such as gold, silver and platinum are made up of only one metal element and are called **native metals**.

Characteristics of minerals

There are several characteristics or properties that help scientists identify various minerals.

Many minerals have a distinctive **crystal structure**. The word 'crystal' comes from the Greek word *krystallos*, meaning 'icy cold' (in ancient times it was believed that quartz crystals were composed of water that had frozen so solid it could never melt). The overall shape formed by a mineral's crystals is called a **habit**.

Science snippet

Piezoelectricity

When two brothers, Pierre and Jacques Curie, conducted a thin slice of quartz between two layers of tin and applied pressure to it in 1880, they detected a short pulse of electricity. Many years later, scientists realised this so-called 'piezoelectricity' could be generated using tiny quartz crystals, and used to keep time in watches and clocks.

Title page and double page spread from *SCI 2* [Pearson Australia]



Fig 3.14 Crystals of wulfenite



Fig 3.15 The white body paint used in Aboriginal ceremonies is made from pipe clay and gypsum.

A mineral may have a distinctive colour or pigment. Such minerals have been crushed into powder form and used to colour paints, though some are toxic and have now been replaced by safer synthetic dyes.

The term **streak** is also used to describe the colour of a powder made from a mineral. Streak may be observed by rubbing a mineral on an unglazed white tile. Some minerals do not produce a streak, while others have a different colour streak from the mineral itself. Luster is a term that refers to the way a mineral reflects light.

Proc 1 p. 52

Proc 2 p. 52

Mohs' scale of hardness				
1	2	3	4	5
Talc	Gypsum	Calcite	Fluorite	Apatite
Orthoclase	Quartz	Topaz	Corundum	Diamond

Hardness of some common objects	
Fingernail: 2.5	Glass: 5.5
Copper coin: 3.5	Steel knife: 6.5
Iron nail: 5.5	Emery board: 8.5

Uses of minerals

Mineral	Uses
Salt	Food preservation, source of sodium and chlorine.
Graphite	Lined in pencils, electric motors.
Phosphate	Matches, fertilisers.
Tungsten	Light bulb filaments, saw blades and drill bits.
Sulfur	Used to make sulfuric acid, fertiliser.



Fig 3.16 Malachite is a copper compound; sample contains high quality pyrites.



Fig 3.17 Several cleavage planes may be seen in these crystals.



Fig 3.18 A drill bit has diamond pieces on its surface—why?

SCI 50

Rocks

A rock is made up of one or more minerals. Granite is a rock made from three minerals—quartz, mica and feldspar. Limestone rock contains only one mineral—calcium carbonate.

Rocks usually contain no more than six or so minerals. You may be surprised to learn that clay and sand are types of rock.

WS 3-2



Fig 3.19 Can you identify the quartz, mica and feldspar in this granite rock?

Ores

Ores are rocks or minerals that contain elements that may be profitably extracted. For example, iron may be extracted from an iron ore called haematite, and aluminium may be extracted from the ore bauxite.

Ore	Element that may be extracted
Azurite	Copper
Bauxite	Aluminium
Carnotite	Potassium
Chalcocite	Copper
Chukoyite	Copper
Galenite	Lead
Haematite	Iron

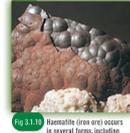


Fig 3.110 Haematite (iron ore) occurs in several forms, including its natural luster.



Fig 3.111 Iron ore (bauxite) being created early in the production process.

Unit 3.1 Questions

1. What is the difference between geology and petrology?
2. What name is given to the study of:
 - a. fossils?
 - minerals?
3. Each of the following statements is incorrect. Correct each so it becomes true:
 - A mineral is any substance found in the ground.
 - All minerals are made up of eight elements.
 - Gold and silver are metals, not minerals.
 - Mineralogy is the study of minerals.
4. Silicates are types of minerals containing silicon and oxygen. Why are these very common?

5. List four characteristics of minerals.
6. How many ancient or current day people use pigments from minerals?
7. Sketch two types of crystal structure.
8. How many some minerals be broken more easily?
9. Draw a line representing Mohs' scale of hardness, and mark on it where each of the following would go:
 - Fingernail
 - Copper
 - Iron nail
10. Rank the following minerals from softest to hardest: apatite, calcite, talc, quartz, diamond.
11. Would:
 - orthoclase scratch gypsum?
 - quartz scratch topaz?
 - calcite scratch your fingernail?

SCI Chapter 3 Geology

Ancient tools

Axes made from igneous rocks have been found in Australia's Kakadu National Park in ancient Aboriginal quarries near volcanic outcrops. These axes have been dated using scientific methods and found to be over 20 000 years old!



Fig 3.20 An Aboriginal axe-head made from igneous rock



Fig 3.23 Distinct layers of sedimentary rock are visible above this arch at Loch Ard Gorge on Victoria's Great Ocean Road.

Sedimentary rocks can be made by the weathering of rocks by wind and water, by chemical changes in sediment, or from plant and animal remains.

Sedimentary rock	Made from
Sandstone	Sand
Mudstone	Mud
Conglomerate	Particles of different sizes
Limestone	Remains of sea organisms (e.g. fish, corals)
Chalk	Skeletons of tiny sea animals
Coal	Compressed plant material

The white cliffs of Dover in England are made of powdery chalk composed of the tiny skeletons of sea creatures over 70 million years old.



Fig 3.24 The white cliffs of Dover, England

Sedimentary rocks

Sedimentary rocks derive their name from the Latin word *sedimentum*, meaning 'settling' and *strata*, meaning 'to sit down'. They are made from sediment—small, broken-down bits of other rocks, or animal or plant remains that have been compressed and stuck together in a process known as **lithification**. There are two main stages in lithification. First, sediment builds up in a layer (for example, at the bottom of a river bed or the sea). Sediment at the bottom of the layer is squeezed by the pressure of material above it so that air gaps are reduced and particles interlock.

Second, water seeping through the compressed sediment carries with it minerals which cement sediment particles together even more strongly.



Fig 3.22 Conglomerate rock

SCI 54

Science snippet

Tourist-attracting rocks

The Uluru are a group of thirty or so huge rocks in Central Australia and are the weathered remains of rhyolite rock. The largest of the Uluru rocks is 348 metres above ground level.

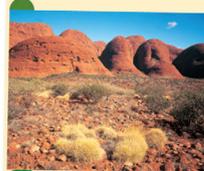


Fig 3.25 The Uluru

Stalactites and stalagmites

These fascinating natural structures are formed when slightly acidic rainwater dissolves calcium carbonate (lime) out of limestone rock. This lime solution may then drip from the roof of a limestone cave, leaving deposits on the ceiling (stalactites) and floor (stalagmites) when the water evaporates.



Fig 3.26 These stalactites are part of a more complex limestone cave system

Sedimentary rocks are easy to split and so are often used as building materials. Sandstone comes in a variety of colours, and blocks of it are used to make bridges and buildings.

Limestone may be ground to make cement, which in turn is a key ingredient in concrete, one of the most important building materials of all.

Coal is burnt to provide power for electricity generation and heating.

Metamorphic rocks

Pressure cooker conditions deep in the Earth's crust can change rocks into new types of rocks. The word 'metamorphic' comes from the Greek words *meta* (meaning change) and *morpha* (meaning form), so a metamorphic rock is one that has changed form.

Sedimentary, igneous or indeed metamorphic rocks may be changed by heat or pressure or a combination of both within the Earth. A rock made this way is actually stronger than the original material, as its particles are fused together. This is similar to the process of squeezing a snowball to make it stronger.

Original rock	Original rock type	Changed by	Metamorphic rock
Limestone	Sedimentary	Heat	Marble
Granite	Igneous	Heat, pressure	Gneiss (pronounced 'neigh')
Shale	Sedimentary	Pressure	Slate
Slate	Metamorphic	Heat, pressure	Schist
Schist	Metamorphic	Heat, pressure	Gneiss

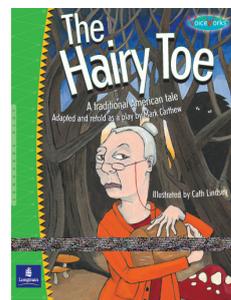
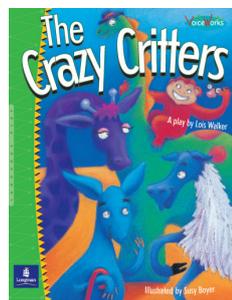
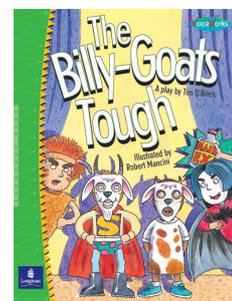
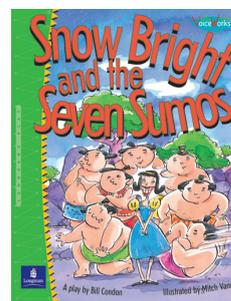
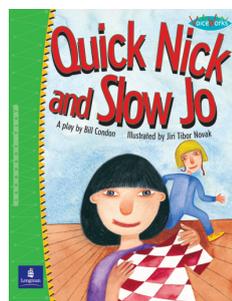
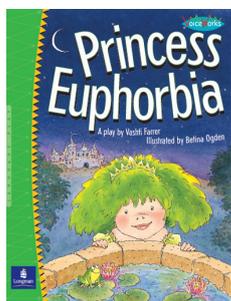
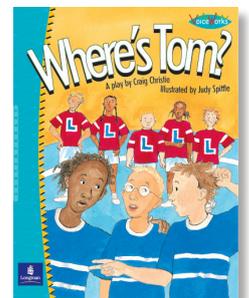
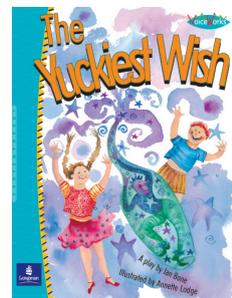
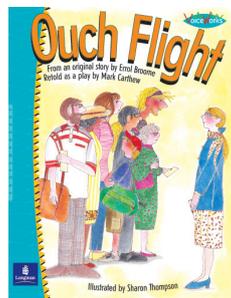
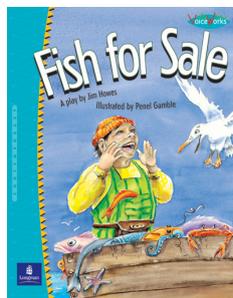
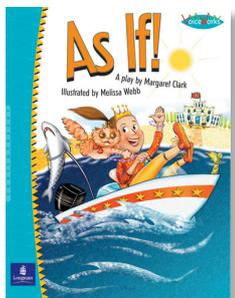
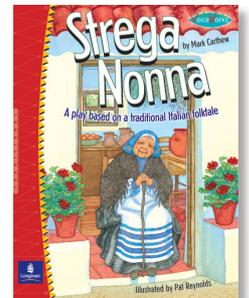
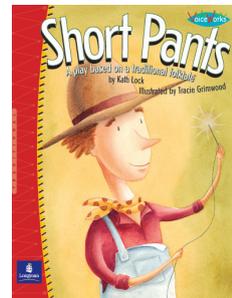
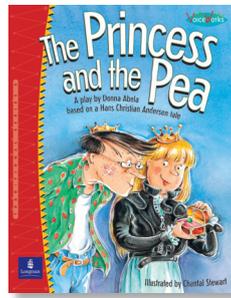
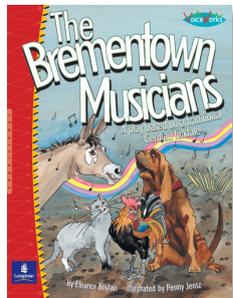
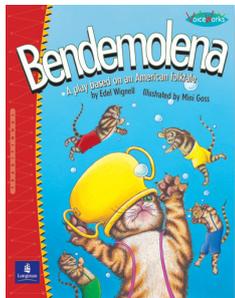
Science snippet

Oyster mortar

The first white mortar of Sydney had its limestone from which to grind lime (the mortar used in brickmaking). Instead they collected oysters which were in abundance around Sydney harbour, and burnt and crushed them.

Proc 2 p. 50

SCI Chapter 3 Geology



Narrator: Mother Cat took the pot off Bendemolena's head. She made two holes for her ears, and put it back on the kitten's head.

Mother Cat: Bendemolena, give me a hug.

Narrator: Did Bendemolena give her mother a hug or a rug? No, she gave her just what she wanted.

Bendemolena: A great big hug!



Sound and Stage Tips
About this play
 This play is a story that you can read with your friends in a group or act out in front of an audience. Before you start reading, choose a part or parts you would like to read or act. There are eight main parts in this play, so make sure you have readers for all the parts.

Reading the play
 It's a good idea to read the play through to yourself before you read it as part of a group. It is best to have your own book, as that will help you too. As you read the play through, think about each character and how they might look and sound. How are they behaving? What sort of voice might they have?

Rehearsing the play
 Rehearse the play a few times before you perform it for others. In Bendemolena, it is fun to act the silly, muddled actions, e.g. inventing the meat and putting soap in the cat! Remember you are an actor as well as a reader. Your facial expressions and the way you move your body will really help the play to come alive!

21

Scene 6 Friday
(The Sign Carrier carries a sign, which reads, 'Friday'. Tom is serving a couple of customers who take their parcels and leave. The sign now reads 'Fish.' Tom is beside the barrow, calling out.)

Tom: Fi-ish! Fi-ish!
(Winnie enters and approaches Tom.)

Tom: Morning, Winnie. I fixed the sign up. Pretty simple now, eh?

Winnie: I guess so. *(Pauses, looking at the sign again. Tom follows her gaze, looking worried.)*

Tom: Is something wrong?

Winnie: No. Not really. I was just thinking.

Tom: *(nervously)* Yeeees?

Winnie: Well, it's just that, well, do you ever sell anything else, apart from fish?

Tom: *(grudgingly)* Sell something else? Oh deary no. I've been coming here for more than fifty years and I always sell just fish, the best fish. Everybody knows what Tom sells.

Winnie: I have a suggestion.

Tom: Another suggestion? I don't believe it! How exciting. What is it?



16

17

Characters



The Billy-Goats Tough

Scene 1
(Somewhere in the mountains. There is a little footbridge centre stage and a tree stump mid-stage right. The Narrator stands to the extreme left of stage. A hairy Troll, Brian, sits on the stump and looks grumpily at the Audience.)

Brian: G'day you creep! I'm the Troll.

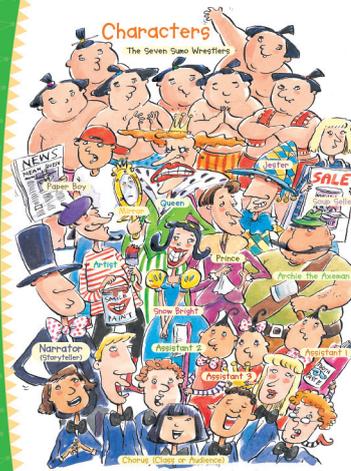
Audience: Boo! Hiss!

Turn to pages 21, 22 and 23 for Sound and Stage Tips

2

3

Characters
 The Seven Samo Wrestlers



Turn to pages 29, 30 and 31 for Sound and Stage Tips

2



Inquizitive Maths, Emergent [Pearson Australia]
 Australian version based on an American series, with changes to text, graphics and photographs to suit the Australian market, then re-purposed for the Canadian and United Kingdom markets

12

Fractions and Percentages



Chapter contents

12.01 Exploring fractions	12.06 Multiplication	12.12 Finding a percentage of a quantity
12.02 Comparing fractions	12.07 Division of fractions	12.13 One quantity as a percentage of another
12.03 Investigating Fractions ID Card	12.08 Fractions of quantities	12.14 Applications of Fractions and percentages
12.04 Addition and subtraction of fractions	12.09 Review of percentages	12.15 What chance of survival? (extension)
12.05 Addition and subtraction of mixed numbers	12.10 Changing fractions and decimals to percentages	12.11 Changing percentages to fractions and decimals (extension)

Learning outcomes

PAX Substrand: Numbers counting and renumeration

- > Rename common fractions as decimals and percentages
- > Compare and order common and decimal fractions and percentages

PAX Substrand: Mental computation and estimation

- > Rename common fractions as decimals and percentages
- > Compare and order common and decimal fractions and percentages
- > Rename common fractions as decimals and percentages
- > Compare and order common and decimal fractions and percentages

12:02 | Comparing fractions

Exercise 12:02

1 Figure

Figure shaded	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$
---------------	---------------	---------------	---------------

As the denominator increases, the value of the fraction ...

a Which fraction has the smallest denominator?
 b Which fraction has the largest shaded part?
 c Which fraction has the largest denominator?
 d Which fraction has the smallest shaded part?
 e Complete the following.

2 Which is bigger?
 a $\frac{1}{4}$ or $\frac{1}{2}$ b $\frac{1}{3}$ or $\frac{1}{10}$ c $\frac{2}{5}$ or $\frac{1}{6}$
 a $\frac{1}{3}$ of 12 b $\frac{1}{4}$ of 12 c $\frac{1}{5}$ of 12
 d $\frac{1}{6}$ of 12 e $\frac{1}{12}$ of 12 f $\frac{2}{3}$ of 12

3 

Copy the diagram above into your book.
 Use the answers to question 3 to place the fractions, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{12}$ and $\frac{2}{3}$ in their correct places along the lower edge.

4 List the fractions that have been graphed on the number line below.

5 Graph each set of fractions on a separate number line.

a $\{\frac{1}{4}, \frac{1}{2}, \frac{3}{4}\}$ b $\{\frac{1}{10}, \frac{1}{20}, 1\frac{1}{10}\}$ c $\{\frac{1}{12}, \frac{1}{3}, \frac{1}{4}\}$

Any number that can be written as a fraction is called a **RATIONAL NUMBER**.

6 < means 'is less than'.

12:03 | Review of fractions

Summary | Fractions

- The size of a fraction is unchanged if both the numerator and the denominator are multiplied or divided by the same number. eg. $\frac{3}{8} = \frac{3 \times 5}{8 \times 5} = \frac{15}{40}$
- $\frac{2}{3}$ and $\frac{10}{15}$ are equivalent fractions.
- To compare fractions, make their denominators the same. Then compare the numerators. eg. $\frac{2}{3} < \frac{3}{4}$
- An **improper fraction** has a numerator that is greater than its denominator. eg. $\frac{7}{2}$, $\frac{11}{3}$
- A **mixed number** is one that has a whole number part and a fraction part. eg. $2\frac{1}{3}$, $1\frac{2}{5}$
- When fractions have the same denominator, we can add them by adding numerators. eg. $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$
- We can subtract them by subtracting numerators. eg. $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$
- $5 \times \frac{2}{3}$ means '5 lots of $\frac{2}{3}$ ' or $5 \times \frac{2}{3}$
- To find $\frac{2}{3}$ of a number, find $\frac{1}{3}$ of the number and then multiply by 2.
(To find $\frac{1}{3}$ of a number, divide it by 3.)

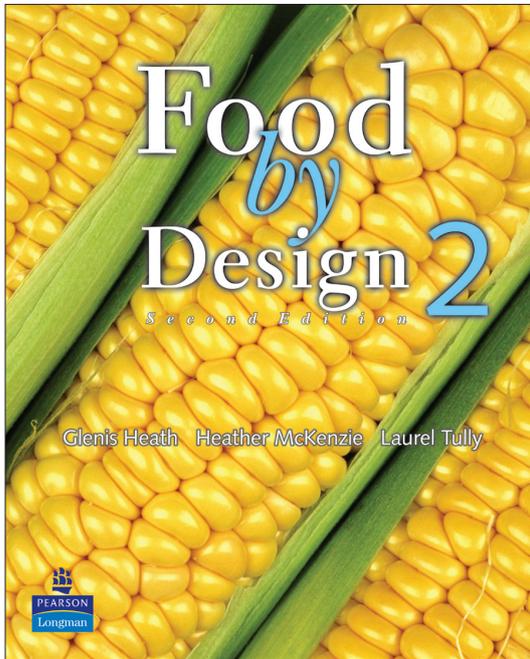
Exercise 12:03

1 Complete each set of equivalent fractions.

a $\frac{1}{2} = \frac{4}{8} = \frac{10}{20}$ b $\frac{1}{4} = \frac{3}{12} = \frac{10}{40}$ c $\frac{1}{5} = \frac{3}{15} = \frac{10}{50}$
 d $\frac{1}{2} = \frac{4}{8} = \frac{10}{20}$ e $\frac{1}{4} = \frac{3}{12} = \frac{10}{40}$ f $\frac{1}{5} = \frac{3}{15} = \frac{10}{50}$

2 In each case find the value of n that makes the sentence true.

a $\frac{1}{5} = \frac{n}{25}$ b $\frac{n}{10} = \frac{3}{100}$ c $\frac{3}{5} = \frac{20}{n}$
 d $\frac{n}{20} = \frac{1}{4}$ e $\frac{n}{18} = \frac{1}{3}$ f $\frac{3}{100} = \frac{20}{n}$



CHAPTER

6

Fabulous fast foods

Key Knowledge

- Adolescent food needs
- Calcium
- Iron
- Zinc
- Fat
- The Dietary Guidelines
- Adolescent food choices
- Eating habits of adolescents
- Fast food in the diet
- Fast and healthy
- Rice
- Food court design
- Drive-in designs

Key Terms

Ergonomics Study of the relationship between individuals and their work or work environment.

Fast foods Takeaway and other pre-prepared foods that are quick, easy and convenient to prepare. Generally contain a high proportion of fat, salt and sugar and are low in complex carbohydrates.

Monounsaturated fat Best source of fat. Have also been shown to reduce blood cholesterol levels. Can be found in olives, olive oil, avocado and nuts.

Saturated fat Fat linked to raised cholesterol levels and found mainly in foods of animal origin such as meat, cheese and butter. Coconut oil and palm oil are also high in saturated fat.

◆ **Noodles** ◆◆◆

Varieties of noodles

Noodle get-to-know-you chart				
Type	Origin	Description	Purchase and storage	Method of cooking and serving
Somen	China	White, fine. Prepared from wheat flour.	Bundles of tightly packed short sticks.	Cook lightly and serve cold with dipping sauce. Can be added to soups.
Cellophane noodle	Found throughout Asia	Shiny, thin and translucent. Prepared from mung beans.	Tied in bundles and wrapped in cellophane.	Soak for 10 minutes before deep-frying or stir-frying.
Egg noodles	China	Golden colour. Prepared from wheat flour and eggs.	Available either fresh (vacuum packed) or dried (formed into small bundles). Available in varying thicknesses.	To serve cold: boil for approximately 5 minutes. To serve crisp: soften in water, drain, cook in oil in hot wide thicknesses.
Dried rice noodles	Vietnam, China, Indonesia, Malaysia	Prepared from ground rice and water.	Available as rice vermicelli or rice sticks.	Pre-cook before use. Add to stir-fries or soups. Used as a bed for stir-fried dishes.
Fresh rice noodles	China, Vietnam, Malaysia, Thailand	White rice noodles that are softer and thicker than dried noodles.	Sold in plastic or vacuum packs.	Plunge briefly into boiling water, drain, stir-fry in oil.
Hokkein noodles	South-East Asia	“Wet” noodles prepared from a wheat flour and water and salt dough. Cut into thick strips.	Pre-boiled and sold in vacuum packs.	The most popular noodle in South-East Asia. Can be rebaked or fried.

ACTIVITY 9.2

Cooking noodles

◆ **Aim**

To determine the best cooking method for a variety of noodles.

◆ **Equipment**

2 saucepans
wok
sieve
tongs
3 different types of noodles

◆ **Method**

- 1 Select three noodles from the chart on page XX that are available from your local supplier.
- 2 Cook according to the instructions given in the chart below.
- 3 Observe the changes in each type of noodle. Comment on the appearance, texture and flavour of the noodles after cooking.

Noodle type	Soak in hot water for 5 minutes	Plunge in boiling water and cook for 5 minutes	Soften in water, drain, toss in wok with 1 teaspoon oil for 3 minutes
1			
2			
3			

◆ **Analysis**

- 1 How did soaking affect each of the noodle types?
- 2 Was plunging in boiling water effective for each noodle type?
- 3 How did the physical appearance change after tossing the noodles in the wok?

◆ **Conclusion**

Which method of cooking gives the best results for each noodle type tested?

◆ **Tools and equipment** ◆◆◆

Wok. Perfect for stir-frying, steaming, deep and shallow frying.

Bamboo skewers. Used for threading and spearing food pieces, for example satays and kebabs. Soak for several hours before use to prevent burning while cooking.

Bamboo steamer. Important method of cooking vegetables and other foods, as nutrients are preserved and it is economical on fuel. Steaming is an excellent way of reheating food as the juices

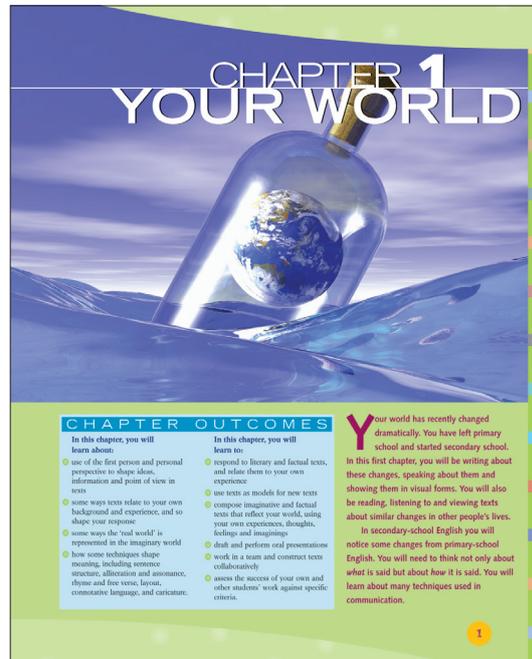
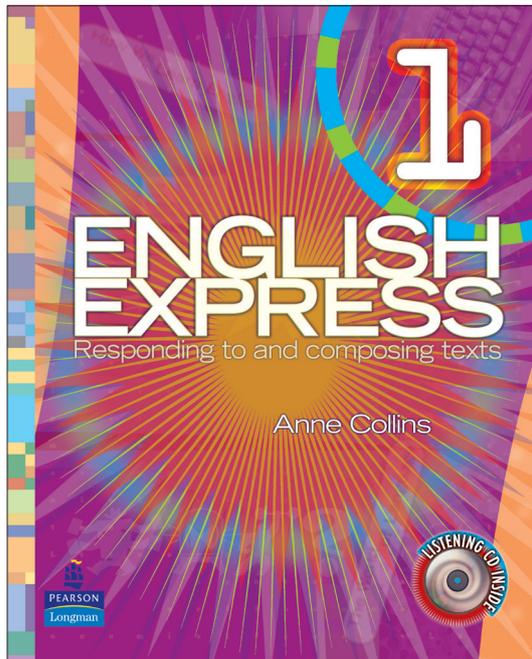
Asian cooking equipment

152

Food by Design 2

CHAPTER 9 The Pacific Rim – East meets West

153



Does he show prejudice against the lower classes when, on page 155 of the book, for example, he says, ... some of us, even on the sunniest days went without his faded umbrellas. The umbrellas was our badge of office. We felt naked without it. Also it was a sign of respectability, Road-menders and plumbers never went to work with umbrellas. Businessmen did.

Roald is also a boy living in a time when society was marked by important gender differences. Is there a feeling that he should have been allowed to play tricks such as the mouse plot because he was a boy? Apart from his mother, women don't seem to have a very important part in the novel. When his mother isn't upset that he's going away for three years, he praises her by saying, on page 158, 'I was her only son and we were very close.' His mother, however, had several daughters. Does he believe that his place as a son is more important than his sisters' place in the family? In the story, his sisters seem to be of little importance, and their education isn't discussed as is his.

Word Power
Gender is about the different ways in which males and females are expected to act.

Word Power
A caricature is a description or drawing in which only some aspects of a person are shown and are ridiculously exaggerated.

Character and caricature
Reading and Writing

Characters such as Mrs Pratchett, and later the Matron and Captain Hardcastle, are not presented as real, rounded human beings in the same way that Roald and his mother are presented as being real. Instead, they're caricatures. Caricatures are often created in picture form, such as the one on the right.

The child Roald knew only some parts of the characters of Mrs Pratchett, the Matron and Captain Hardcastle. He might have exaggerated these parts of their characters because he was afraid of them. To a child, a threatening adult can seem like a monster in a fairytale.

No doubt Dahl drew on these childish impressions to create some of the monstrous characters in his fiction, such as Miss Trunchbull in *Matilda*.

Do you recognise this eminent person?



Activity 1.17

1 If you can buy or borrow *Boy*, read or re-read the chapter entitled 'Captain Hardcastle'.

2 Think about the way in which Roald is treated by Captain Hardcastle. Alternatively, if you can't read this chapter, think about the way in which Roald is treated because of the Great Mouse Plot.

3 Recall an incident from your past in which you were treated unfairly by an adult who seemed monstrous to you. Write an account of the incident. If you wish, present the person as a caricature.

Telling a book by its cover
Reading and Writing

'You can't tell a book by its cover', as the old saying goes. Nevertheless, most of us try to tell the book by its cover when we are deciding whether or not to read the book. We are influenced by the front cover, and if we are interested in that, we usually turn to the back cover to find out more about the book.

When we look at the front cover, we might be influenced by:

- the title
- the graphics
- the layout
- who the author is
- any quotations included
- how colour is used.

In the cover's design and layout, one of these features might be more prominent than the others. For example, for a book by a well-known author such as Roald Dahl, the designer might decide to make the author's name the cover's most prominent feature, in the hope that Dahl's fans will be attracted to that aspect. If the book's title is about something in which a lot of interest is held in the community, such as the Bali bombings, the designer might make that title the most prominent feature.

If neither the title nor the author is likely to attract readers' interest, the designer might rely on using interesting graphics. How the designer uses colour can be very important in establishing mood, as you'll learn in Chapter 3.

Activity 1.18

Boy has been published many times, and each edition has had a different cover. Below are four of the covers. In your team, discuss each cover in terms of the six points above. Which cover do you prefer, and why?



Continued next page

Introduction

The word **trigonometry** comes from two Greek words—*trigon* (triangle) and *metron* (measure). So, trigonometry is the study of the relationship between the **angles and side lengths** in a triangle.

Pythagoras' theorem gives us information relating to the relationship between the side lengths of a right-angled triangle. Trigonometry gives us information relating to the relationship between the angles and side lengths in a triangle. Trigonometry is used in science, engineering and, particularly, in surveying where distances need to be calculated in inaccessible terrain. We will start by considering relationships in right-angled triangles, however there are similar relationships in non-right-angled triangles.

44 OXFORD MATHEMATICS FOR VICTORIA

TRIGONOMETRY WARM UP

- The triangle shown is best described as:
 - A isosceles
 - B scalene
 - C right-angled
 - D obtuse
- The value of x in the diagram is:
 - A 2.65 cm
 - B 4 cm
 - C 5 cm
 - D 7 cm
- The value of a , correct to one decimal places, is:
 - A 16.3 cm
 - B 10.3 cm
 - C 4.7 cm
 - D 2.2 cm
- In the triangle shown $\angle ABC$ is:
 - A 37°
 - B 43°
 - C 45°
 - D 52°
- Which one of the following statements is true?
 - A Each of the angles in an equilateral triangle is 60° .
 - B All sides of an isosceles triangle are equal in length.
 - C The line joining the vertex of an equilateral triangle to the midpoint of the base makes an angle of 60° with the base.
 - D The diagonals of a rectangle always intersect at right-angles.
- Find the value of x , correct to one decimal place.
- Find the value of h , correct to one decimal place.
- Find $\angle ABC$.
- Find $\angle BAC$.
- Find the value of d , correct to one decimal place.

Triangles 45

2A Labelling right-angled triangles

A **right-angled triangle** is a triangle where one of the angles is 90° . The other two angles in the triangle are complementary, that is, they add to 90° .

One of the important things to consider is the naming of the sides in the triangle.

The longest side of the triangle is opposite the right angle and is called the **hypotenuse**.

The other sides of the triangle are labelled relative to one of the other angles in the triangle. The angle is often denoted by a Greek letter, such as theta (θ), alpha (α) or beta (β). The names for the other two sides of the triangle are **adjacent** and **opposite**.

The **adjacent** side is the side next to the given angle. The **opposite** side is, as the name suggests, **opposite** the angle.

The diagram on the right shows a correctly labelled triangle.

For Robinson Swain's Story (1988) is a steel sculpture based on triangles and quadrilaterals. It created a storm when it was placed in the Melbourne City Centre after being commissioned. It was installed in the Victoria Gallery at the Arts Centre Melbourne.

Explore the geometry of making such a sculpture by constructing a model based on right-angled triangle from cardboard. What are the best mathematical methods for having your shapes 'hang together'?

46 OXFORD MATHEMATICS FOR VICTORIA

EXAMPLES

EXAMPLE A1
Label the sides of the triangle shown with the words **Hypotenuse**, **Adjacent** and **Opposite**, relative to the angle θ .

Need to know

- The longest side of a right-angled triangle is called the **hypotenuse**.
- The side next to the angle θ is called the **adjacent** side.
- The side opposite the angle θ is called the **opposite** side.

Need to do

- Label the hypotenuse.
- Look for the angle, θ .
- Find the side next to the angle θ and label it **Adjacent**.
- Find the side opposite the angle θ and label it **Opposite**.

EXAMPLE A2
Label the sides of the triangle shown with the words **Hypotenuse**, **Adjacent** and **Opposite** relative to the angle θ .

Need to know

- Hypotenuse—**longest** side.
- Adjacent—**next** to the angle.
- Opposite—**opposite** the angle.

Need to do

As in Example 1:

- Label the hypotenuse.
- Look for the angle, θ .
- Find the side next to the angle θ and label it **Adjacent**.
- Find the side opposite the angle θ and label it **Opposite**.

TRIGONOMETRY 47

EXAMPLE A3
Label the hypotenuse and opposite side and the angle θ , where necessary, in the following right-angled triangle.

Need to know

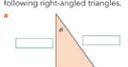
- The adjacent side is next to the angle, θ .

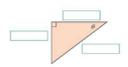
Need to do

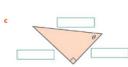
- Label the hypotenuse.
- Label the angle, θ , next to the adjacent side.
- Label the opposite side.

Exercise 2A

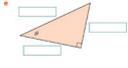
1 Label the diagrams with the words: **Hypotenuse**, **Adjacent** and **Opposite** in the following right-angled triangles.

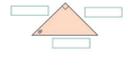
a 

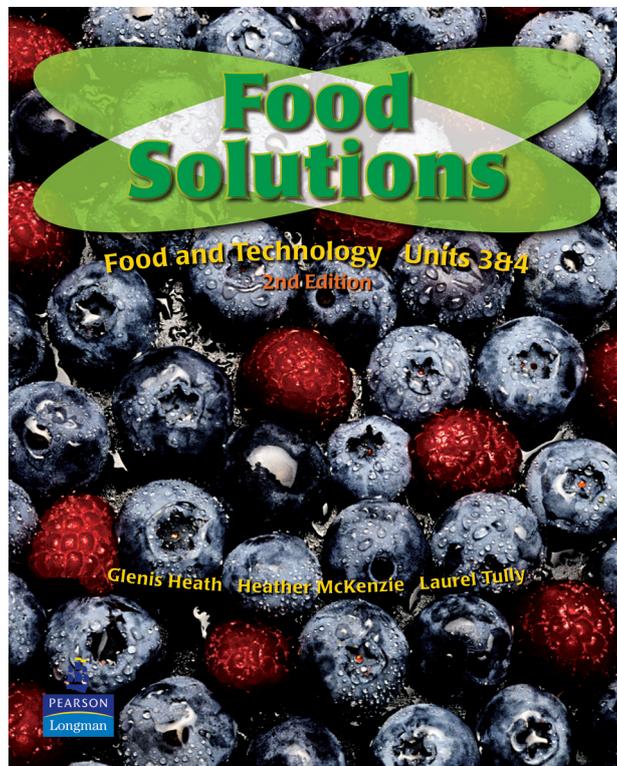
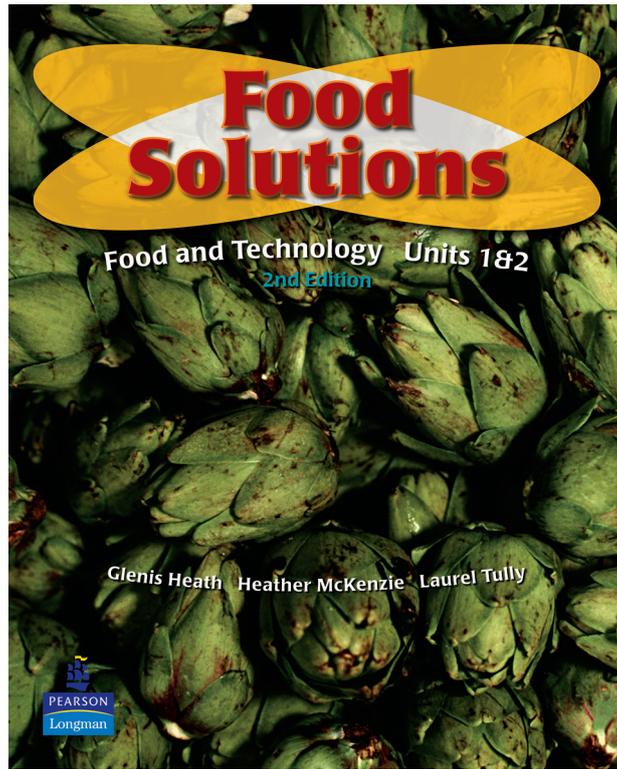
b 

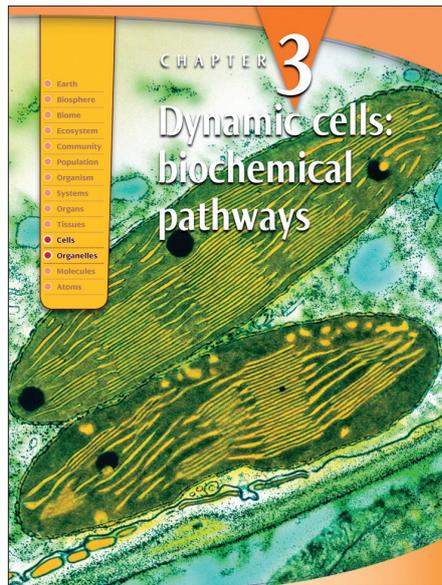
c 

d 

e 

f 





REVIEW

- Define the term 'catalyst'.
- What is the role of enzymes in a cell?
- What happens to an enzyme after it has catalysed a reaction?
- How do enzymes affect the activation energy required by reactants for a reaction to occur?
- Explain what is meant by the 'induced fit model' of enzyme action. How is this different from the 'lock and key model'?

Factors affecting enzyme activity

The intracellular and extracellular environments that enzymes work in are regulated to ensure that enzymes perform in a manner suitable to the cell's needs. Enzymes are sensitive to changes in substrate and product concentrations, temperature, pH and other substances that may compete with a substrate for an active site.

Effect of temperature

The temperatures that enzymes work best in are the temperatures of the environment they can be found in. For example, enzymes operating in the human body work best at temperatures of about 37°C (Figure 3.10), which is the relatively constant core temperature of the body. The enzymes of psychrophilic microorganisms that live in near-freezing environments such as the wind-blown rocks of snow-covered mountain summits, can operate at very low temperatures. This may be caused by the loss of some of the bonds that keep the protein rigidly folded. Having a more flexible structure means enzymes require less energy to work. The microorganism *Psychroflexus* exists in the geothermal-heated areas of the sea floor. It is a thermophile and its enzymes operate best at temperatures of about 95–105°C. Enzymes from another thermophile, *Thermus aquaticus*, are utilised in biotechnology. The enzyme, Taq polymerase, is used in a technique called the polymerase chain reaction, which is used to make millions of copies of DNA, because it operates at the required reaction temperature of 70°C and is not denatured at elevated temperatures of 90°C. This technique is discussed in Chapter 6.

So how does a change in temperature affect enzyme activity? As the temperature increases molecules become more excited and collide more often. This increase in collisions increases the opportunity for a substrate to bump into its enzyme so that it binds at the active site. The rate of reaction therefore increases. But if the temperature goes too high, the bonds that determine the three-dimensional shape of proteins can break. As a result, the protein loses its functional shape. It becomes denatured and the substrate can no longer bind with the active site.

Consider the boiling of a lobster. Living lobsters obtain their blue-purple colour from the pigment astaxanthin. These pigment molecules are an orange colour until they bind to a protein in the lobster shell, which alters their shape and light-absorbing properties. This protein denatures when exposed to high cooking temperatures. As a

Figure 3.10 The temperature range for five different enzymes. Activity generally increases and then ceases as temperature for enzyme activity is reached. Temperature increases to increase, enzyme activity decreases as the reaction rate decreases.

Figure 3.11 The change in colour from blue-purple to orange when lobster is cooked is caused by a pigment-binding protein in the shell, which denatures on cooking. As the lobster stays orange when it cooks, it is apparent that the astaxanthin pigment is not reversible.

Figure 3.12 The optimum pH range for five different enzymes. The enzyme pepsin operates in the acidic juices of the stomach, the enzyme amylase digests carbohydrates in the mouth at a neutral pH and the enzyme alkaline phosphatase operates in the relatively alkaline environment of the bone.

bioBYTE

Enzymes are proteins that act as catalysts to speed up chemical reactions. They are made of amino acids and are sensitive to changes in their environment. Enzymes are sensitive to changes in substrate and product concentrations, temperature, pH and other substances that may compete with a substrate for an active site.

The pH of the solution surrounding enzymes, whether it is acidic, basic or neutral, can have a profound effect on the structure and activity of the active site of an enzyme and its interactions with a substrate. Each enzyme has an optimum pH at which it works (Figure 3.12). Some enzymes can work in a range of pH environments, while others are very sensitive and will only work in a narrow pH range. Most enzymes work most effectively around a neutral pH of 7. The optimum pH of an enzyme relates to the environment in which it works. Some work in environments of extreme pH, such as the enzyme pepsin, which operates in acidic gastric juices. It has an optimal pH of 1.5. Catalase, which works in the neutral environment of cells in the liver, has an optimal pH of 7 and alkaline phosphatase, which is found in the relatively alkaline environment of the bone, has an optimal pH of 9.5.

Buffered solutions, such as sodium phosphate, are better for enzyme activity than are non-buffered solutions, such as water. Cellular solutions need to be buffered because proteins influence the pH of a solution by donating hydrogen ions or hydroxyl ions. Changes in pH affect the amino acids making up a protein. As a solution becomes more basic, proteins tend to lose hydrogen ions. In acidic solutions, proteins gain hydrogen ions. If the charges on the amino acids in a protein are changed, then the bonds that maintain the three-dimensional structure of a protein can be changed. Some enzymes change shape in response to changes in pH by this mechanism. In some cases the protein shape can alter so much that the enzyme becomes denatured and can no longer catalyse a reaction, or the substrate may change shape so it no longer fits into an active site.

Figure 3.13 The change in colour from blue-purple to orange when lobster is cooked is caused by a pigment-binding protein in the shell, which denatures on cooking. As the lobster stays orange when it cooks, it is apparent that the astaxanthin pigment is not reversible.

Figure 3.14 The optimum pH range for five different enzymes. The enzyme pepsin operates in the acidic juices of the stomach, the enzyme amylase digests carbohydrates in the mouth at a neutral pH and the enzyme alkaline phosphatase operates in the relatively alkaline environment of the bone.

bioBOX 3.4 EAT YOUR REDS AS WELL AS YOUR GREENS!

A group of scientists from Radford University got together to solve a mystery: why do some forest floors turn in harsh environments? Kevin Gould, a biologist, decided to find out. He studied patches of forest, the first plants to colonise the Earth around 470 million years ago, and found that red plants with harsh stressful environments better than green plants. Why?

In high stress conditions, such as drought or extreme temperatures, plants produce more free radicals. Free radicals are atoms or groups of atoms with unpaired electrons. Free radicals are formed in the electron transport system of cellular respiration when oxygen does not combine with hydrogen ions to become water but instead is reduced as a superoxide molecule, with an extra electron. When electrons are paired they are stable, but in the unpaired state they become unstable and highly reactive. To regain their stability they steal an electron from other molecules. The molecule that loses an electron in turn becomes a free radical and the process continues like dominoes. This process can result in the disruption of a living cell. The major danger occurs when free radicals steal electrons from cellular components, such as DNA in the cell membrane.

Free radical formation is increased by certain stressors. For example, in humans free radical formation is increased as a result of ultraviolet light, inflammation, ionising radiation, smoking and air pollution. If free radicals accumulate in the body, they damage DNA, thus contributing to ageing, heart disease, cancer, cataracts and a weakened immune system.

Free radicals can be removed by binding to **antioxidants**. Antioxidants, which are found in brightly coloured fruits and vegetables, neutralise free radicals by donating one of their own electrons to the cascade of electron stealing. They don't become free radicals themselves because they are stable before and after giving away an electron. Vitamin E, a fat-soluble antioxidant, protects against membrane damage.

Figure 3.28 Lactic acid fermentation starts in muscle cells. In the presence of NADH (oxidised NAD⁺), allowing glycolysis to continue.

Visual summary

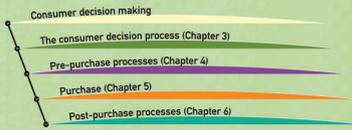
Cellular Metabolism

The diagram shows the flow of energy and matter in cellular metabolism. It starts with photosynthesis in plants, which produces glucose and oxygen. Glucose is used for cellular respiration in plants and animals, producing CO₂ and water. Cellular respiration involves glycolysis, the Krebs cycle, and the electron transport chain. Key components include:

- Photosynthesis:** Light-dependent reactions (producing ATP and NADPH) and light-independent reactions (Calvin-Benson cycle producing glucose).
- Cellular Respiration:** Glycolysis (producing pyruvate), anaerobic respiration (lactic acid or ethanol), and aerobic respiration (Krebs cycle and electron transport chain producing ATP and CO₂).
- Energy Flow:** ATP is converted to ADP + P_i to release energy for cellular reactions.
- Enzymes:** Factors affecting enzyme activity include pH, substrate concentration, enzyme concentration, temperature, cofactors and coenzymes, and competitive inhibitors. Enzymes are affected by back and forth, induced fit, and light-independent processes.

PART 2

Consumer decision making



Each and every day all of us are confronted with a myriad of consumer behavior issues. Whether you are deciding which television show to watch, diving by billboard advertisements, listening to the radio, or surfing the Internet, you are interacting with types of relevance to the study of consumer behavior.

Laying the foundation for studying how consumers make purchase decisions is the goal of Chapter 1. It focuses on identifying the activities included in consumer behavior and how consumer analysts monitor consumer trends. Various methods of consumer research allow all of us, whether we are consumer analysts or marketing students, to observe, record, and analyze a variety of consumer reactions, behaviors, and characteristics. Whether you take this information and learn how to be a smarter consumer or how to become a marketing professional, studying consumer behavior can affect many areas of your life.

Chapter 2 focuses on incorporating consumer behavior into strategic planning for nonprofit firms and for-profit corporations. In today's hypercompetitive business environment, satisfying consumers is required to remain competitive—regardless of the size or scope of the organization. Moreover, identifying consumers' needs, formulating strategies to fulfill those needs.

CHAPTER 5

Purchase

LEARNING OBJECTIVES

After reading this chapter you should be able to:

1. Identify the factors that influence purchase decisions
2. Understand how the retail environment is changing
3. Explain the determinants of retail success or failure
4. Why marketers should capitalize on direct marketing
5. Understand purchase behavior and e-commerce revolution
6. Identify how the impact of consumer resources affects the decision process
7. How to communicate with consumers through integrated marketing communications

The purchase process begins when a consumer realizes he/she needs something. The behaviour of consumers in the purchase process and the elements influencing it is an important process. Studying this process helps marketers to understand the underlying issues in consumer purchases, in what way can retailers influence consumers? Retailers who base their offerings on recognition of consumer needs will always find a ready market for their products. Providing value or competing on price is one of the approaches retailers could use to help elevate sales. By doing so, these retailers are also likely to survive in a competitive market despite adverse economic conditions. Marketers need to be aware of trends that affect the retail trade system, and identify what resources consumers spend when they make decisions on retail outlets.

This chapter evaluates the purchase process. It discusses the changing trends in retailing, the impact of consumer resources and what determines retail success or failure. It examines the resources that consumers use to make purchase decisions and it focuses on the importance of direct marketing. In this chapter, you will learn more about purchase, specifically, retail strategies. Think carefully about how you and other consumers make purchase decisions. You may find that you understand your own purchase better, allowing you to receive more value for your purchase dollars. If you work for a retailer, you obviously can understand in more detail the purchase and retail processes and how to influence consumers to buy from your store.

Part 2 Consumer Decision Making

4

Consumer in focus 5.1

A hyper market; Asian retailing; Asian retailing transformed. (Business) (Brief Article)

To get a feel for what is happening to retailing in Asia, take a visit to Rama 9, a busy thoroughfare in Bangkok. Alongside a packed canal, shoppers jostle among stalls, haggling for fresh produce being unloaded throughout the day from toletries. This is Bangkok's oldest 'wet market', and it is how Asians have shopped for centuries. Then walk a few minutes up the road to another market. Shoppers assemble through spacious, air-conditioned aisles in both the size of large supermarkets, peering the price labels on Thai rice, soybean, furniture and food. This is a new hypermarket that has opened in the past few months on opposite side of Rama 9. Betting that this is how Asians will want to shop in future, Tesco, a British retailer, and Carrefour, a French rival, were racing each other to open their stores first. In the end, it was a tie.

Asian retailing is being transformed by two changes. The first is the move from wet markets and small shops to hypermarkets. The second is the invasion of western multinationals with the skills, technology and culture to run megastores. A decade ago, Asian retailing was a local business run by locals. Today it is on the verge of becoming an international business dominated by foreigners. Indeed, western entrants are now less concerned with local competition than with each other. Faster than anybody could have guessed, says Joe Lubatkin, a retailing expert at Accenture, a consulting firm, the market is 'leapfrogging' from store to store.

Retailers also observe advantages in such switching places, of air conditioning for both the shopper and the produce; the convenience of 'all under one roof' appeal to Asians as much as to everybody else. Asians are more price-conscious than western

shoppers, because they are poorer, so the discount store must at least match the wet market on price. But as long as they do, they should sales.

The first to realize this opportunity, in the mid-1990s, was Carrefour. America's Wal-Mart, and other European giants such as Royal Ahold, Makro, Casino and Tesco soon followed. At first, it appeared that they would barely have to break sweat.

But only was there little direct domestic competition to begin with, but those factors that were established suffered badly from the Asian financial collapse of 1997-98 and, in most cases, agreed to sell out. Tesco, for instance, bought a leading chain of stores from Charoen Pokphong, the biggest conglomerate in Thailand.

Even in countries that were less affected by the crisis, foreigner did well. After less than six years, Carrefour is already the third-largest retailer in China, and Wal-Mart the ninth-largest. In a market so hounded by red tape that even many local operations find it difficult to open, this is quite an achievement.

The multinationals make up for their lack of local connections with superior logistics networks. Unlike local retailers, they have centralized purchasing and the resources to set up their own distribution networks from scratch. Most of their produce is sourced locally, and the cheaply-globed local suppliers prefer the western chains, which promise to put their goods on shelves throughout the country, or even across Asia.

Source: The Economist, 10 April 2001, p. 44

Why people shop

Whether consumers buy from bazaars, flea markets, or department stores, the most basic question to answer when examining purchase behaviours is 'why do people shop?' The most obvious answer is 'to acquire something,' but there exists a myriad of personal and social reasons that consumers shop, as described in Figure 5.1. For some

Figure 5.1 Why do people shop?

Source: Adapted from Edward M. Tauber, 'Why do people shop', *Journal of Marketing* 10 (October 1972), 86-90

5. How might the relationship between time budgets and economic budgets affect the marketing strategy of a major retailer?
6. What are some of the trends affecting time budgets for most consumers? How do you think these trends will be changing in the future?
7. Create an IMC strategy for a specific brand of clothing. What promotional elements would you include, and what would be the look and feel of the message?

Case 3

Amazon.com

In the massive jungle of retail concepts that appear around the globe, Jeff Bezos created a unique bookstore—both Amazon in proportion and significance. Command central for the 'earth's biggest bookstore' is located in Seattle, Washington, a city known for being on the progressive edge in a variety of areas, including retail (the home of Starbucks' Coffee), computer software and graphics, and contemporary music. Imagine entering a store that offers millions of titles, open 24 hours a day, and can locate any book ever printed (although it may be used and repinned) by its customer. When you enter Amazon.com, you won't be able to sip coffee from the now commonplace bookstore cafe, and you won't be able to take books from the shelves and skim the pages. But you will be able to buy the book you want, when you want it, without ever leaving your home. This is no ordinary bookstore, and Mr. Bezos is no ordinary bookbinder.

Business by the Book

Amazon.com was born as a result of Jeff Bezos's search for an entrepreneurial venture. His search began with a focus on the Internet, which was growing at 230 percent a year at that time. Mr. Bezos, a graduate of Princeton University in electrical engineering and computer science, did not start out specifically wanting to open a bookstore, but the impossibility of actually building a bookstore that could hold millions of books was the 'elephant' that led to incorporating Amazon.com in 1994 and opening its doors for business in July 1995.

By January 2000, Amazon increased its offerings to 4.7 million books, music, and movie titles, and became the nation's best-selling online retailer in all three categories. It has quickly become one of the most widely known, used, and cited e-commerce web sites, boasting an online auction house and free electronic greeting cards. It offers more than 18 million unique items in categories, including books, CDs, toys, electronics, videos, DVD, home improvement products, software, and video games.

Customers enter Amazon.com through its web site (<http://www.amazon.com>). Customers simply click on a button to add books to their virtual shopping baskets (or add them if they change their mind) and then click on a 'Buy' button, 'reply shipping and credit card details, select delivery services, and execute the order. But Amazon.com is not just a retailer—it is an information supplier. Consumers can enter the site and conduct targeted searches for specific titles or various topics, browse, and add items to their virtual carts for personalized services, participate in promotions, and check order status.

Marketing, Advertising, and Promotion

Bezos decided early on to leave the majority of his warehousing and physical distribution aspects of the business to his supply chain partners. Instead, his focus would be on the marketing side of the venture—understanding a variety of marketing strategies, including advertising, alliances, and customer-interactive promotions to grow and sustain its customer base.

30

Part 2 Consumer Decision Making

Case 6

National Pork Producers Council

If the National Pork Producers Council (NPPC) had its way, retailers around the world would sell more pork, restaurants would increase their pork offerings, and consumers would buy and eat more pork. The NPPC, headquartered in Des Moines, Iowa, is the largest agricultural commodity organization in the United States. It is funded principally by a national collection of producers to support activities such as product research and promotion, market development, and producer education. NPPC is responsible for category marketing and industrywide marketing—promoting the entire pork industry rather than a particular brand. Its association focuses its efforts on increasing the overall demand for pork, individual firms have to make it cost for market share of what the NPPC hopes will be a growing market. Category management often is built relationships with retailers, a practice common among large, sophisticated packaged goods marketers.

The state of the pork industry

Pork production has risen in a worldwide global industry. Meat consumption—which includes beef, pork, poultry, and other types of meat (including but not limited to mutton, balfish, turkey, and venison)—has increased in recent years in the global marketplace. In 1998, domestic retail value of pork was \$20.7 billion and food service was \$13.3 billion, for a total retail supply chain production of \$34 billion. The pork supply industry is a smaller portion of sales than in the past—between 63 and 68 percent of the pork sold today is further processed, such as hocking and sausage.

In response to consumers' concern, the pork industry increased production of lean pork by raising lean pig in the 1990s, which it received premium prices. But as more producers produced lean pork, it became a commodity product and failed to yield the premium prices it did in the beginning. The beef industry is attempting to provide value-added items with more processed beef products, as the poultry industry did in the 1990s. The beef industry found a way to identify, create, and capture value. Whether it was Chicken McNuggets, chicken wings, rotisserie chicken, chicken breast, or any other product variations they have developed, the poultry industry has been able to supply chains to get the end users what they want.

The pork industry recognizes that it must do the same. It is to become the 'meat of choice' in the next decade. In order to do this, pork producers need to tap the consumer market and figure out what types of pork products consumers want, how often

and product development is key to the future of pork sales in domestic and foreign markets.

A key element in the advancement of pork sales throughout the United States and in international markets is Demand Enhancement—the NPPC department that acts as the industry's marketing department. It is made up of three principal program areas or areas of activity. These include:

- Consumer Marketing—which is a mix of advertising and research, as well as the Risk Information Bureau (RIB), the public affairs and public relations operation
- Trade and Distribution Marketing—which involves retail marketing, food-service marketing, and new product support activities
- Foreign Market Development—which examines global markets in terms of consumer trends and potential trade relationships

The overriding goal of Demand Enhancement is to promote pork's acceptability and availability in the marketplace. Acceptability is defined as making the product desirable to consumers with advertising, public relations, promotion, direct and interactive marketing. Availability is moving the product through distribution, which is advanced with trade advertising, promotion, publicity, category management, national accounts programs, sales force, and trade show support.

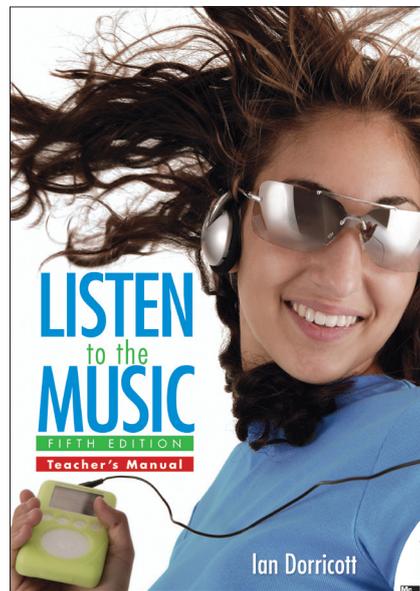
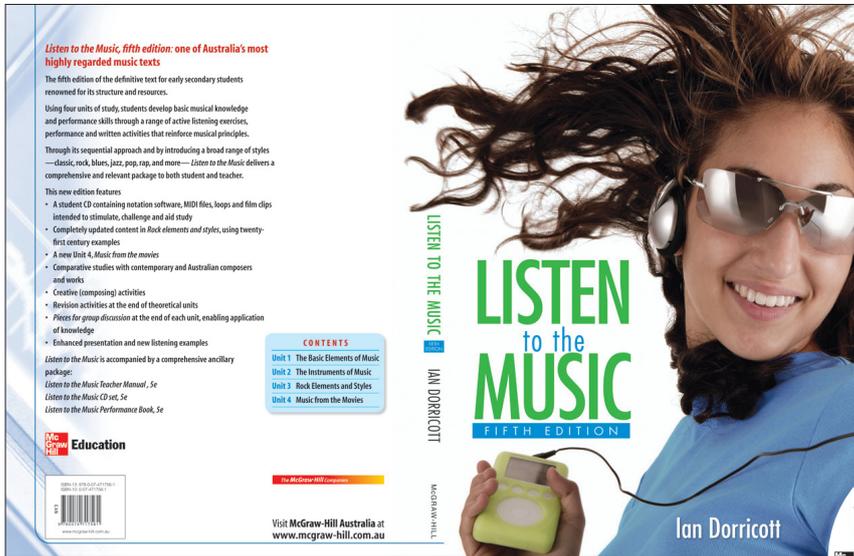
The remainder of this case study will focus on the efforts of the NPPC in each of the marketing areas as they relate to acceptability and availability in the marketplace. Included will be consumer information provided by the NPPC to assist in developing your answers to the focal topics appearing at the end of the case.

Consumer marketing

In the 1980s, the pork industry took on the challenge of changing the perception of pork in the minds of consumers and key distributors. At that time, total per capita consumption of pork had experienced growth as it rode the coattails of consumer increases in total meat consumption. Though consumers were actually increasing the amount of meat they ate annually, pork's share of total meat protein had declined by almost 10 percent in the preceding 10 years. Pork had fallen out of favor with retailers and consumers alike. It was not featured regularly by retailers, food-service operations, the food press, or other publications. Pork's promotion was almost nonexistent. Thought of it as fatty and old-fashioned, even though producers had spent much of their attention in the 1980s in developing leaner cuts and improved products.

31

Chapter 5 Purchase



Covers and cd labels of *Listen to the Music 5e* Course Book and Teacher's Manual [McGraw-Hill]. There was also a Performance Book and DVD slick and booklet produced for this series. Winner, Secondary Teaching and Learning Package, 2008 Excellence in Educational Publishing Awards.

UNIT 1 The basic elements of music

In this important foundation unit you will learn:

- what music is
- how sounds are made
- the four qualities of sounds: pitch, volume, duration and timbre
- how pitch and duration of sounds are notated on paper
- how composers use sounds and silences to tell a story or create a mood
- other important basic elements of music, including harmony, dynamics, texture and tempo, rhythm and structure
- how composers create variation in their music
- how silences are notated on paper
- about melodies—their phrase structure and how their notes move
- the C major scale.

By the end of the unit, you should be able to:

- write a small simple rhythmic pattern and melodies played to you by your teacher
- work out the metres of pieces played to you
- conduct the three basic metres
- sing songs in various metres
- perform rhythmic patterns
- perform melodies
- write your own rhythmic pieces and melodic phrases
- work out the phrase structure of melodies played to you
- play the C major scale
- play the C-G-F-G chord progression.

Choosing sound qualities for mood

Composers often deliberately select the qualities of the sounds in their compositions so as to create a mood or an atmosphere. This is particularly the case with film and stage composers, whose music is very important in highlighting the dramatic effect of a scene. Let us study two examples, the first involving instrumental sounds and the second (on page 27) primarily vocal sounds.

Listening example—Theme from *Jaws* (John Williams)

The American composer John Williams is one of the great writers of film music today. He has written more than 200 film scores, some of which have received Academy Awards. His music is colourful and imaginative and often as powerfully emotional as the visual scenes it accompanies. His terrifying theme from *Jaws* (1975), an film about a giant, ferocious shark, is a good example. Just the opening notes of this well-known theme, heard each time the shark attacks,



A scene from *Jaws*

contributes enormously to the building of tension and the expectation of disaster.

At the very start of the piece, the lurking presence of the shark is suggested by the two low, short 'growling' notes of different pitch that are heard in the following manner. (The dots represent silences.)

1. 1.2. 1.2.1. 1.2.1.2.

By organising the sounds in this hesitant manner, the composer cleverly creates an uneasy and threatening mood, which grows in tension with the addition of each note. After the first silence, the two notes are played repeatedly one after the other, halving in duration to further raise the tension as the shark approaches.

Continued next page

The rhythmic pattern in time names of the opening four bars of 'In the Hall of the Mountain King' would be:

C
 ti - ti ti - ti ti - ti taa ti - ti taa ti - ti taa

ti - ti taa - aa

PERFORMANCE ACTIVITIES

1. Perform the rhythmic patterns in the Appendix on pages 203–5. Say them in time names first and then clap them or play them on instruments.
2. Sing the sight-singing exercises on pages 208–9. (The exercises should be attempted at the rate of 2–4 per week.)

AURAL ACTIVITIES

1. Identify which of the following rhythmic patterns is the one played to you by your teacher:
2. Write the rhythmic patterns played to you by your teacher.

WRITTEN ACTIVITY

Write the time names underneath the rhythmic patterns below.

(a)
 (b)
 (c)

What is rock?

Rock is a term that can be used for most of the popular music of today. Because rock is so wide ranging it is impossible to define exactly. About the best we can say is that rock usually involves amplified instruments and has a strong beat. Rock began in America in the 1950s when young people, for the first time, were financially independent of their parents. A new 'youth culture' developed involving special clothes, hairstyles and music. It was the era of rock 'n' roll with stars such as Buddy Holly, Elvis Presley, and Bill Haley and the Comets. Since that time rock music has seen a huge number of artists and musical styles, too numerous to investigate here.

Despite the incredible diversity of rock, most rock songs—old and new—have certain elements in common. Let us listen to a typical rock song and discover some of these basic features.



Bill Haley and the Comets

Listening example—'Stumblin'' (Powderfinger)

The five-man rock group Powderfinger was formed in Brisbane in 1989 and rose to prominence in the late 1990s. The group has since become one of the most successful Australian rock bands of the past decade, selling more than one and a half million albums and winning many Australian music

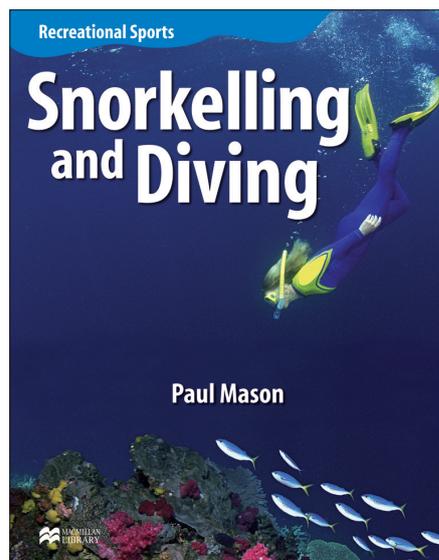
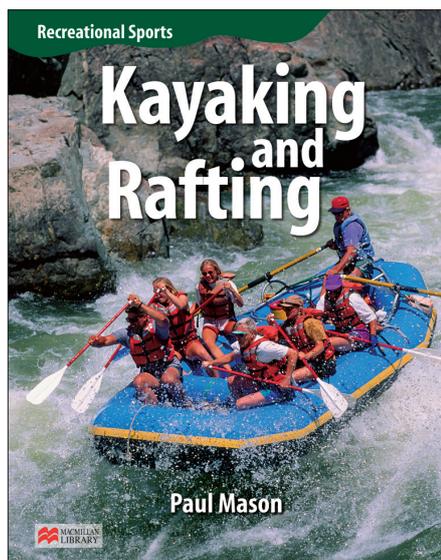
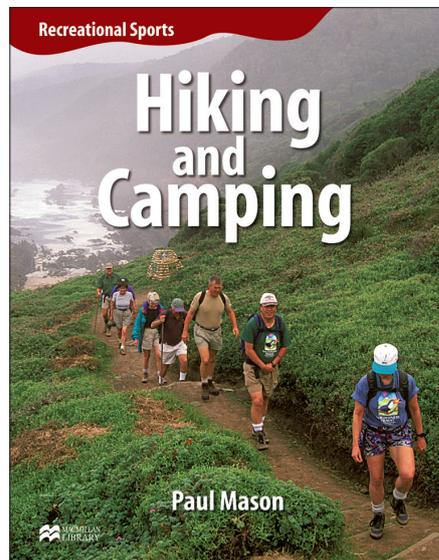
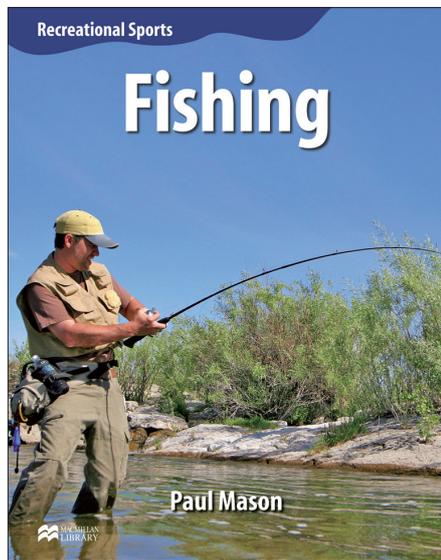
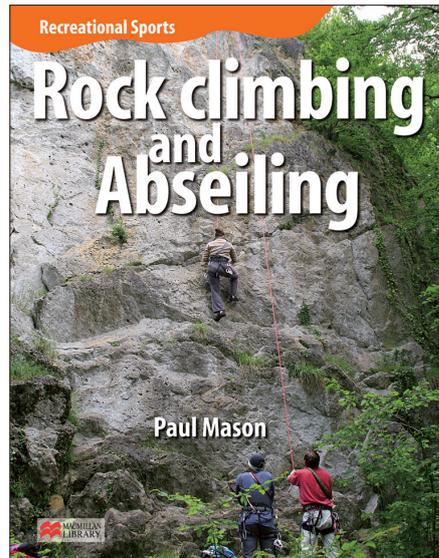
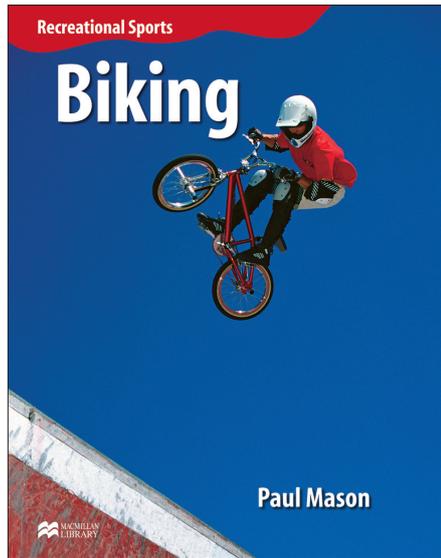
awards, including the ARIA Award for Best Band of 2003. Their album of the same year, *Vulture Street* (named after a street in Brisbane where the group had its rehearsal room), was hailed for its aggressive, melodic rock style and familiar Aussie pub rock sound. 'Stumblin'', one of the hits from the album, is typical of the group's style and is a good example of a basic rock song.

Listen to 'Stumblin'', following the lyrics given below. Then read the text to discover its basic rock characteristics.

Stumblin'
 0:00 Introduction
 0:25 Verse 1
 I get to feeling low for making light of whatever you said
 The pain went straight to my head despite me try
 turning me to stone
 No sign of lifting or two coming soon as I'll get out of
 your way
 1:47 Chorus 2
 Better blue blackened and braided chopping it up at the end
 of the day
 0:46 Chorus 1
 You better stop back and see the mess that you left
 What you left it to somebody who cares
 You better stop back and see the mess that you left
 What you left it to somebody who cares
 You better stop back and see the mess that you left
 What you left it to somebody who cares
 I'm stumblin' all the way 'cause it's not such a beautiful day
 It's not such a beautiful day
 1:50 Verse 2
 You stopped to see the show but don't believe everything
 that you read
 2:33 Verse 3 (Instrumental)
 2:51 Chorus 3
 It's still stuck there in my head pulling me close now that
 I've been alone
 Don't stop because of me you'll never know just how long
 you've been alone
 So sleep through the sickening scenes cutting me loose at
 the end of the day
 3:07 Chorus 2
 You better stop back and see the mess that you left
 What you left it to somebody who cares
 You better stop back and see the mess that you left
 What you left it to somebody who cares
 I'm stumblin' all the way 'cause it's not such a beautiful day
 It's not such a beautiful day
 But I'll stumble through all the same
 The bright lights are fading away
 It's not such a beautiful day
 3:33 Verse 3 (Instrumental)
 3:51 Chorus 3



Powderfinger: www.powderfinger.com



Bike maintenance

Being able to do some basic maintenance is important for any cyclist. It means they are able to keep their bike running smoothly and safely.

Regular checks

Every biker needs to do regular checks to make sure their bike is safe to ride. Brakes, gears and forks are among the most important things to check.

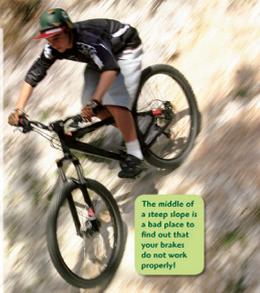
Brakes

Check that the brakes work smoothly and stop the bike quickly. If not, do not ride until they have been adjusted.

WATCH OUT!

If you cannot fix a problem yourself, make sure someone else does. Otherwise your bike could be dangerous to ride.

10



The middle of a steep slope is a bad place to find out that your brakes do not work properly!



There should always be plenty of space between the brake lever and the handlebars.

Gears

Do the gears change smoothly, and does the bike stay in gear properly? If not, they need adjustment before you ride.

Forks

Check that the forks are secure by gripping the front wheel between your knees, then rocking the handlebars back and forth. If there is any movement or clicking, they need to be adjusted. Another sign that the forks are loose is a knocking feeling when you brake hard.



Make sure the forks are not loose before riding your bike.

Top tip!

Use these tips to identify common problems with your bike:

Problem	Cause
squally brakes	brake pads are not lined up or brake rims are dirty
squeaking noise while pedalling	chain needs lubrication
clicking noise while pedalling	cranks are loose
steering wobbly around corners	tires need more air in them

11

Climbing equipment

If you try climbing and decide you want to do more, you will need some equipment of your own.

Basic equipment

The basic equipment for climbing is very simple and fairly inexpensive. You will need:

- a pair of climbing shoes. These have soft, sticky rubber soles that grip the footholds really well.
- a climbing harness.
- a karabiner. This is an oblong piece of metal with a gate in it. The gate can be opened and closed, and on some karabiners the gate can be screwed shut. Karabiners are useful for attaching one thing to another.
- a belay device.
- a helmet.

Top-roped climbs also need a rope, two or three slings, and three or four extra karabiners. The cost of these can quickly add up. You could share them between a group of friends, so that no one needs to spend too much of their pocket money.



The right climbing equipment is important for a safe climb.

WATCH OUT!

Always check that your clothes cannot get caught up while you are belaying someone!

10

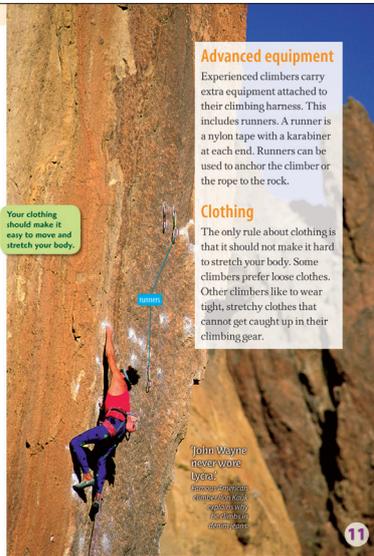
Advanced equipment

Experienced climbers carry extra equipment attached to their climbing harness. This includes runners. A runner is a nylon tape with a karabiner at each end. Runners can be used to anchor the climber or the rope to the rock.

Clothing

The only rule about clothing is that it should not make it hard to stretch your body. Some climbers prefer loose clothes. Other climbers like to wear tight, stretchy clothes that cannot get caught up in their climbing gear.

Your clothing should make it easy to move and stretch your body.



John Wayne never wore lycra!

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11

Fishing around the world

Almost anywhere there is water there will be anglers! These are just a few of the best fishing spots in the world.



Salmon and trout fishing
Name Scottish Highlands
Location United Kingdom
Description Probably the most famous salmon and trout-fishing area in the world, it's beautiful (if often rainy) scenery.

Fighting fish
Name Southern India
Location India
Description Southern India is home to the mahaseer, a giant fish that can weigh over 50 kilograms. Mahaseer are famous for the way they fight against being landed.

Salmon fishing
Name Pacific North-west
Location United States/Canada
Description The north-west corner of North America is famous for its salmon fishing. When the fish swim up the river to breed, anglers have to watch out for bears standing in the water looking for fish!

Reefs, rivers or mangroves
Name Queensland
Location Australia
Description Queensland has almost everything an angler could want. You can boat fish the offshore reefs or coastal mangroves, or head for the region's rivers.

Trout and salmon fishing
Name Lago Nahuel Huapi
Location Argentina
Description The Patagonian region is among the world's most beautiful fishing areas. Trout and salmon were introduced from Europe a hundred years ago, and now live in many rivers and lakes.

28

29

CHAPTER 1 Australia to 1914

Richard Twopenny, *Town Life in Australia*, 1883

Angela Gill, *The Bells*, Sydney, around 1900

Chapter 1 Australia to 1914

Time line

- 1883 Sydney and Melbourne are joined by rail. Germany annexes part of New Guinea.
- 1887 Melbourne and Adelaide are joined by rail.
- 1889 Sydney and Brisbane are joined by rail. John Freeman Sir Henry Deane calls for a federal parliament with responsibility for national affairs in his 'Tasmania speech'.
- 1890 Colonial representatives meet and call for a Constitutional Convention to draw up an Australian Constitution.
- 1892 Australia shares in the suffering of a worldwide depression.
- 1894 Women in South Australia are granted the vote.
- 1895 The 1901 Government passes the Franchise and Shop Act.
- 1896 A national referendum is held on whether to accept the Constitution proposed for the new Federal Australia. All colonies vote 'yes' except Western Australia. Australian troops fight alongside Britain during the Boer War (war between Britain and the South African Boers 1899–1902). There is an outbreak of bubonic plague in Sydney.
- 1900 The British Government passes the Commonwealth of Australia Constitution Act. In July, Western Australia votes to accept the Constitution.
- 1901 On 1 January the federation of Australia becomes a reality. In October, the Immigration Restriction Act becomes law. In December the Pacific Island Labourers Act becomes law.
- 1902 The Franchise Law Amendment Act gives over 21 years of age the right to vote. Britain and Japan sign an alliance.
- 1903 The High Court of Australia is established.
- 1904 Daytime bathing at the beach is allowed. The Court of Conciliation and Arbitration is established.
- 1905 The Immigration Restriction Act is altered to make it possible for immigrants to have to sit a dictation test in any prescribed language.
- 1907 The Harvester judgment establishes the principle of the 'basic wage'.
- 1908 The site for the new national capital is chosen.
- 1909 Federal old-age pensions are introduced.
- 1917 Visiting Bury Griffin is chosen to design the new capital. The Federal Government introduces a system of mandatory allowances.
- 1918 The name 'Capital' is chosen as the name of the future national capital.
- 1914 In August 1914, Australia entered the Great War in support of Great Britain.

Discovering Australian History Stage 5

Chapter 1 Australia to 1914

Australia to 1914

What was life like in Australia at the turn of the century?

How and why did federalisation occur?

What were the voting rights of women granted in Australia at the turn of the century?

How and why was the Immigration Restriction Act (IRA) introduced?

How did the IRA affect living standards before 1914?

What was life like in Australia at the turn of the century? How people lived around the turn of the century. Compared to the early twenty-first century, life at the turn of the twentieth century seems incredibly hard. Whatever aspect of life is used for a comparison – health, housing, hygiene, education, together for far more people than they are today. Many working-class people lived in rat-infested shams while the middle class managed a more refined existence. In 1901, with the advent of Federation, Australia became a united country for the first time. Racist attitudes were not considered unusual and from the Prime Minister down, the superiority of the white race was an accepted truth. It is not surprising, therefore, that the first law enacted by the new Federal Parliament was designed to keep Australia a 'white man's country'.

Figure 1.1 Inquiry questions – Australia to 1914

Figure 1.2 Variables affecting living standards before 1914

These people who had access to the new technology had more comfortable lives than those who did not.

Availability of technology

Working-class people had a much higher life than middle-class people.

Social class

Variables affecting living standards before 1914

Gender

Men tended to have a better standard of life than did women.

Urban versus rural life

Life was often much harder to make living in the country than for those living in the cities.

Figure 1.3 Glossary – Australia to 1914

middle class the section of society between the poor and the wealthy, including many business and professional people

Federation the joining of the separate colonies into one nation

parliament the group of elected government representatives that makes laws

Prime Minister the head of the government

bill a written law made by parliament

arrest to take someone and make it one's own

arbitration the process by which parties to a dispute submit their differences to the judgment of an independent umpire

assent Governor-General's agreement to make a bill a law

ballot paper paper on which electors select their favoured candidate in an election

bicameral parliament with two houses

bill a proposed law

cabinet leading group of government ministers

census the process of obtaining information about every member of a population

constituency a geographical area for which a member of the House of Representatives is responsible

constitution the rules under which a government operates

double dissolution the closing of both houses of parliament followed by an election for both

economic depression period in which an economy is poorly affected by unemployment, low output and poverty

egalitarian equal

election process of the people choosing a government

Federal Government government constituted with matters affecting the entire nation

Federation the joining of the separate colonies into one nation

founding factory whose molten metal is cast into objects

freedom of contract the idea that individuals should be free to bargain the terms of their own contracts with employers without government or union interference

Governor-General the person representing the English monarch in Australia

High Court the top-level court in Australia

immigration entry and settlement in another country

irony to express something differently and often opposite to the true meaning, as a joke or form of ridicule

Kanakas Pacific Islanders brought to Queensland to work on sugar plantations

legislative that part of government that makes the law

middle class the section of society between the poor and the wealthy, including many business and professional people

mother country affectionate term for Britain

parliament the group of elected government representatives that makes laws

penal colony a colony established for convicts to serve their sentences

prevalent voting method of voting in which electors choose candidates in order of preference

primary source a source from the time being studied

Prime Minister the head of the government

propaganda information designed to persuade people to think, act or feel a certain way

reading a stage in the passage of a bill through parliament

referendum a national vote on a proposed change to the constitution

secondary source a source produced after the event being studied

social legislation laws enacted to protect those who are economically weak

suffrage the right to vote

trade union organisation of workers formed to protect the rights and advance the interests of its members, such as wages and working conditions

Discovering Australian History Stage 5

Chapter 1 Australia to 1914

Working conditions in Australia around the turn of the century

There is much debate regarding the position of workers at the turn of the century. At the time, the view was developing that Australia was a 'working man's paradise', an 'egalitarian' society where anyone could become what they wanted if they put in the effort. The notion that Australia was an egalitarian, classless society is a myth. A person's prospects depended very much on where they lived, who their parents were, their health, their education and, if an education was attainable, what school they went to. All of these things depended on which social class they were born into.

The phrase 'a working man's paradise' became popular following the publication of several works around the turn of the century.

In 1883, Richard Twopenny wrote a book called *Town Life in Australia* in which he tried to argue that there was no poor class in Australia.

In 1893, Timothy Coghlan produced a statistical work called *The Wealth and Progress of NSW* in which he tried to argue that Australian workers were better off than those in any other nation.

These views seemed so optimistic all the evidence. Workers were expected to work long hours in poor conditions that took little account of health and safety. Shop assistants were on their feet for up to twelve hours a day and child labour was still common. Laws against such practices were enforced haphazardly at best. The failure of the 'shearer' and maritime strikes of the 1890s had left employers in a much stronger position than workers and the trade unions that represented them.

Source 1.1

Extract from *Report on the Working of the Factories and Shops Act 1902*, *Notes and Proceedings of the Legislative Assembly of New South Wales*, 1902, p. 15

There is still a great tendency to employ young children in factories ... in most cases the cause is cheapness. I found a lad of 13 years of age working about 3 feet away from an unguarded gas-engine with a fly-wheel 6 feet in diameter, and in another large factory a lad of 12 was making ... in many cases parents complain that they cannot compel them to attend school as they send them to work, and find in the factory occupier a cheap workman.

Source 1.2

Extract from *Report on the Working of the Factories and Shops Act 1902*, *Notes and Proceedings of the Legislative Assembly of New South Wales*, 1902, p. 15

In a factory in Sussex Street, the driver had to stoop over the engine to get at the stop-valve, and at a **Footery** the men had to get under the main driving belt and step over the shafting, all unguarded, to get to the water tap. ... In another large factory in which there is an 8 horsepower engine with a large fly-wheel on the same floor as the machines and with only a small rail as guard close up and open before the occupier filled it in below the rail as soon as the danger was pointed out.

Figure 1.4 Employment of children, 1880s, Australia

Workers were being forced onto individual contracts under which the employer had most of the power. The 1890s had been a time of economic depression around the world with high levels of unemployment. Employees were in a position to dictate terms and conditions to employers. When offering work, an employer was able to say 'take it or leave it'. Employees had little choice but to accept whatever the employer offered.

Figure 1.7 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.8 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.9 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.10 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.11 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.12 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.13 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.14 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.15 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.16 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.17 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.18 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.19 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.20 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.21 Workers at the Harbord Wharves in Queensland, around 1900

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Figure 1.25 Workers at the Harbord Wharves in Queensland, around 1900

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Figure 1.27 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.28 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.29 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.30 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.31 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.32 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.33 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.34 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.35 Workers at the Harbord Wharves in Queensland, around 1900

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Figure 1.37 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.38 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.39 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.40 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.41 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.42 Workers at the Harbord Wharves in Queensland, around 1900

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Figure 1.51 Workers at the Harbord Wharves in Queensland, around 1900

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Figure 1.59 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.60 Workers at the Harbord Wharves in Queensland, around 1900

Figure 1.61 Workers at the Harbord Wharves in Queensland, around 1900

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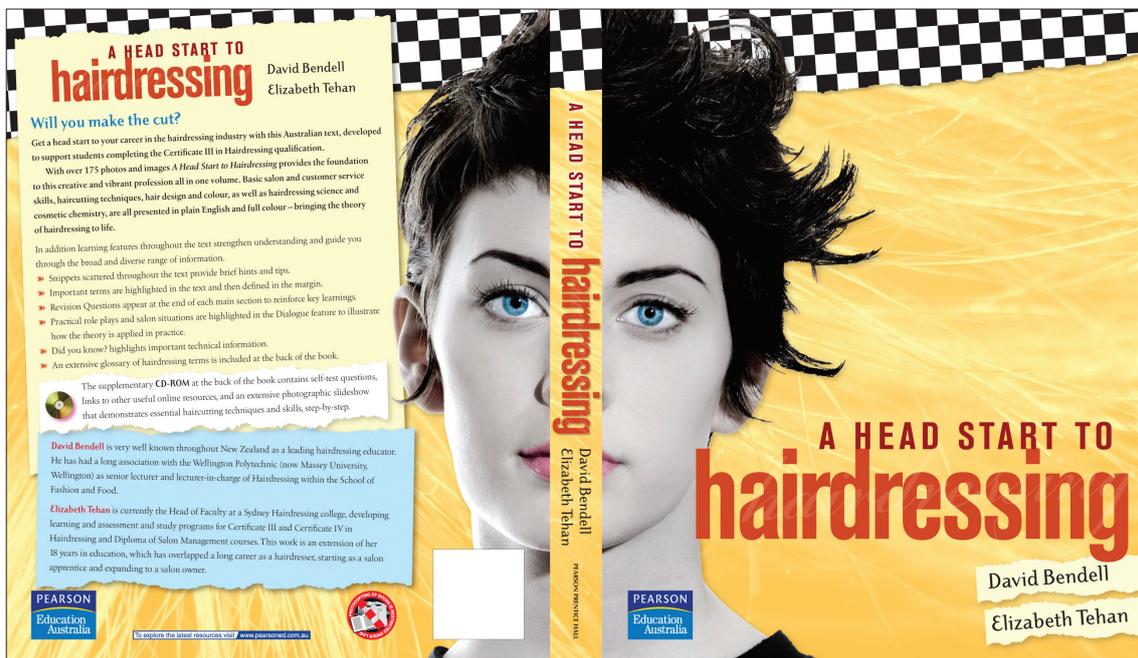
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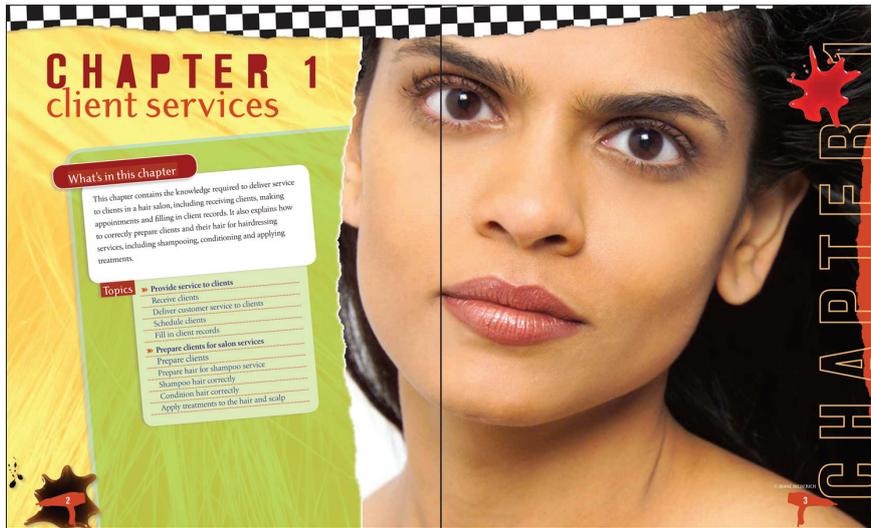
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Cover of *A Head Start To Hairdressing* text design [Pearson, Sydney]
 Joint Winner, TAFE and Vocational Education Single Title, APA Excellence in Educational Publishing Awards 2009
 Finalist, Best Designed Tertiary and Further Education Book, APA Book Design Awards 2009



a head start to hairdressing

Provide service to clients

Receive clients

The first important task you have when starting work in a hair salon is receiving clients in a friendly professional manner. The initial greeting the client receives at the reception area can influence the whole salon's wellbeing. First impressions are critical for the salon's future business.

Welcoming the client

Attend to the client immediately (even if it means excusing yourself from another client). Greet them politely using their name if possible. Smile and make them feel welcome. Check the appointment book, and confirm the time and who will be attending to the client. This is also a good time to retrieve relevant client records if they have not previously been prepared. Some salons organise client records at the start of each day or shift to help plan the day's activities and ensure the salon runs efficiently.

Help the client with their belongings according to salon policy. Arrange storage for their coat, bag and other items, and ask them to take a seat. Clients often like to keep their personal belongings with them; if this creates a problem with salon safety then a suitable alternative should be available. Some salons have places for storing bags under benches, on work-situation shelves or in lockers.

If the salon has a policy for mobile phone use or other electronic equipment, ensure that this is explained to the client once they have been greeted.

A suitable welcome from a salon staff member to a client could go like this:

mary: Good morning, Mrs Johnson. How nice to see you (again).
(four weeks)

mary: Let me help you with your coat and umbrella. I'll place them over here and remind you before you leave.
(four months plus things it won't rain)

client: Please take a seat. David is on time and won't keep you long. Can I offer you a coffee or something?

client services

With such a pleasant and warm approach, this client will feel at ease and immediately comfortable, and will know that you are interested in looking after her. Clients will notice your effort to serve them.

Alerting other staff

The next step is to advise the hairdresser that their next client is waiting, what time the client's appointment is, what the time is now, and what the service is. If the hairdresser is working, you might say something like: 'David, Mrs Johnson has arrived for her appointment. She's five minutes early, but the area's ready for her colour consultation, and I have organised coffee and a magazine until you are available.'

Lead the client to the appropriate area when it is clean and ready. The hairdresser knows exactly what is happening and can now approach Mrs Johnson by name and discuss the service to be done. This will impress the client.

If the stylist is delayed, tell the client how long the delay will be—don't hedge. Explain the situation, and offer coffee or alternative opportunities such as:

- seeing an alternative stylist
- attending to other duties outside the salon while waiting
- rescheduling the appointment.

Rescheduling should be the last option, however, as it disrupts the salon's plans and daily productivity levels. Don't leave the client waiting to become agitated; their time is valuable.

Deliver excellent customer service to clients

Clients expect excellent customer service when they enter a salon. With so much competition in hairdressing today, no staff member can afford to risk losing a client through inappropriate or unfriendly behaviour. An unhappy client will simply take their business elsewhere. The following points will help you deliver quality customer service.

a head start to hairdressing

Figure 1.1 In some parts of the world, all you need is a chair, a mirror to view around your client's shoulders, a set of scissors and a comb—and you're in business.

Figure 1.2 This is an example of an old-style barber chair from 1900s New York. Even the barber shop quartet came into being, a product of too much time and not enough creative stimulation, and a few hair-wash basins.

client services

Cash registers

Cash registers are used to control the point of sale, for an entire day's trading. Operating a cash register requires knowledge of how to:

- set the **float** for the day
- process the transactions during the day
- make sure all transactions are completed correctly
- ensure cash transactions are processed in the correct manner
- ensure non-cash transactions are processed correctly, e.g. electronic transfers, cheque payments, store vouchers, credit coupons
- keep the cash flow tidy according to salon security policy.

Most modern electronic cash registers have several programmed features to allow different users to be identified. Individual key codes are given to each person with permission to access the payment process. Modern cash registers also allow key codes for different service areas. This means that managers can process and record the percentage of sales for retail products versus the percentage for salon services. They can also itemise different sales according to pre-set areas.

Before any person is authorised to use electronic cash registers, they should be trained by the salon or by the manufacturer of the cash register.

Manual systems

Some salons, due to décor, cost or personal preference, will use a manual system to collect and store sales takings. These systems require you to document all transactions, manually open cash drawers, transfer cash and physically enter all sales calculations.

Business computers

Point-of-sale cash registers are often combined with a salon business computers in modern salons. These computers use salon management software that records client details, service history, current services and stock control. They can also be linked to the register that processes the payments from the customer.

Business computers

Point-of-sale cash registers are often combined with a salon business computers in modern salons. These computers use salon management software that records client

float is set amount of money to provide change at the start of any transactions; the equivalent sum should remain in the bank at the proceeds.



SECTION ONE

TOPICS



CHAPTER ONE

RELIGION–STATE RELATIONSHIPS

‘A religion that takes no account of practical affairs and does not help to solve them is no religion.’

Richard Dawkins

CHAPTER OVERVIEW

This chapter discusses:

- Religious states
- Active state religion
- Area of inquiry: anti-Semitism in Europe
- Area of inquiry: religious fundamentalism

KEY TERMS	KEY TERMS	KEY TERMS	KEY TERMS
religion	religious state	decide	fundamentalism
nationalism	active state religion	Concordat	nationalism
employment	secularisation	Divine	anti-Semitism

Introduction

Religion has always been influential in society. It is among the basic elements of modern society and has been an intrinsic part of all major civilisations. In fact, and contrary to many expert predictions, religion has not disappeared, rather it has evolved and reformed itself in new social and political settings.

For religions have been left unaffected by the rise of the secular movement. Interaction between religion and nation-states will vary from some governments are aggressive towards religion, while others have tried to win support from religious organisations for their own purposes. Throughout history, religions have both supported and opposed the state at different times.

In the nineteenth century, nationalism replaced religion-based allegiances in the leading force in society. However, in the latter half of the twentieth century, religion nationalism again had a significant impact. For example, we have witnessed the growth and impact of Hindu nationalism in India and ultra-Orthodox Judaism in Israel. The rise of the religious right in the US has highlighted religion's role in political affairs, education, welfare and community organisations.

The terms 'church' and 'state' are grounded firmly in a Christian understanding of Western culture. The notion of the 'nation-state' emerged from post-Reformation European political experience and the 1688 Flight of William, which marked when to decide which Christian denomination, Protestantism or Catholicism, would be favoured in their region. Since the Enlightenment, Western society has endorsed the principle of the separation of church and state, however, debate over their relationship today.

This debate over church and state is predominantly a Western phenomenon influenced by European culture and history, but the question goes as far back as Jesus' statement, 'Give to Caesar the things that are Caesar's and to God the things that are God's' (Mark 12:17).

Religious states

There is a subtle distinction between religious states and active state religions. Religious states are where religion controls the state or the government. In active state religions, the state supports religion while maintaining a level of independence from it.

Activity 1.1

1. What understandings of 'religion' and 'state' exist?
 2. What states are classified as religious states?
 3. How does the state interact with religion?
 4. What does the separation of religion and state mean?
 5. List cases in which the state and religion work together.
 6. What different levels of relationships exist between religion and state in different parts of the world?
 7. What different texts or organisations have shaped the relationship between religion and state in different times and places?

Activity 1.2

Investigating reasoning and judging

Use three courses in Asia, Europe and the Middle East.

- Classify them as religion or state or as active state religion.
- Provide evidence to support your claims.

Poland

Roman Catholics make up 96 per cent of Poland's population. During the 1980s, the Catholic Church, encouraged by Pope John Paul II, played a significant role in mobilising, organising in Poland and in Eastern Europe generally. The Polish Roman Catholic Church (PRCC) played an important role, supporting the Solidarity party's opposition to the communist government. The government was eventually defeated in the 1989 elections. Polish Catholic opposition to communism is a classic example of religion versus state.

The role of the Solidarity party, which started as a trade union movement, can be traced to the organisation of workers and intellectuals in the 1970s. Workers were increasingly dissatisfied with growing hardship and the inability of Poland's economy to recover from the worldwide recession and the government's repression of dissent. The Catholic Church not only supported the rights of the workers but also formed independent intellectual movements and made public statements supporting workers and human rights.

During the 1970s under the communist regime, many Catholic clergy were arrested including the Polish Cardinal. The government was actively trying to control and divide the Church and to interfere in the appointment of church leaders. While still in prison, Cardinal Wyszyński instigated a process, the *Great Syncretism* (great prayer devotion of the day), as a symbolic and unifying strategy. The *Great Syncretism* (1978–1984) also involved the 'Black Madonna' icon meaning all positive and healing in a single person. This year helped the society bond together, which increased the religious vitality of Poland and the political dissemination of ideas. Wyszyński blessed Polish legend folklore and passed inspiration with Polish Romantic poetry to create a reimagined vision of the Polish nation.

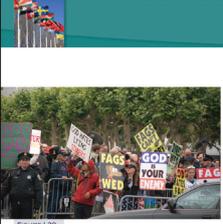
The process and the working class were opposed by government authorities who eventually tried to disrupt the celebrations. The disruptions backfired, however, instead of stifling national opposition sentiments. In Calcutta, state authorities refused to allow people to disrupt the streets for the procession. In protest, people placed hundreds of candles along the perimeter of the Church's boundaries, making the lines they were allowed to discuss. This allowed the ground of conflict from the political to the symbolic, where the church could make a powerful statement.

Catholicism inspired other opposition groups such as the Constitution for an Independent Poland (KIP), formed in 1979. It also contributed to the development of civil society by supporting cultural activities and expanding its role in education, raising literacy levels and empowering people. Catholic publishers encouraged pluralism by publishing poetry written by agnostic political dissidents.

Activity 1.3

Investigating and reasoning

- Search the web for information on Catholic Social Teaching (CST). This document states that its content is: www.vatican.va/human_development/docs/human_development/encyclicals/hf_ap_1988_enc_061188a.html
- Locate Roman Catholicism (RC) in the Constitution of Poland 1997 and compare it with the rights of workers?
- How might Catholic Social Teaching as expressed in Human Development and the CST document have influenced the Solidarity party?
- How relevant are Catholic Social Teaching documents regarding the rights of workers today?
- What role did the Church play in influencing state decisions in Poland? Use evidence to support your claims.



Activity 1.12
Investigating, reasoning and judging

Identify evidence, referring to evidence where possible, how fundamentalism in religion differs from the common features listed in the reader. Complete the table on Worksheet 1.12. Some answers may require lateral thinking and/or further research.

Activity 1.13
Judging

Design your own set of criteria for assessing the degree to which a religious movement is fundamentalist.

Conclusion

Religion is increasingly adapting to a changing social and political environment. The role of religion in modern society is multifaceted and over the past twenty-five years has increasingly interested political scientists. Since the attacks of 11 September 2001, religion has again entered the public space and become a focus for international relations.

There is great diversity in relationships between the state and religion but some common patterns have emerged. Increasingly, states have given preference to one religion over others and each state has its own policy towards religion. States see the need to protect their citizens from religions that they perceive to be dangerous. In many states, religion is linked to national identity, particularly states with Muslim, Hindu, or Buddhist majorities. In India, many Hindus strongly associate Hinduism with the national identity. In a number of Asian states, such as Singapore, India, Indonesia and Vietnam, restrictions are placed on conversion from the national religion and converts suffer harassment. Religious and religious institutions often have a symbiotic relationship with the state as each supports the other. Religion remains a significant influence on society and politics and the state.

Activity 1.14
Framing

- 1 Create a table in which you list the main differences between religion and state in different contexts.
- 2 Identify and explain the following statements:
 - a Religion and state should never interact.
 - a Religion and state should operate in isolation.
 - a Religion and state should be one because...
- 3 List all religious states. Do those that have state religion exist in secular states?
- 4 Pick a line from a national anthem that refers to God. What does this suggest about the country to whom the anthem belongs?

Activity 1.15
Investigating

- 1 List countries which have religious symbols on their national flags.
- 2 What percentage of the world's countries uses religious symbols in the state?
 - a Are the countries concentrated in particular areas or spread evenly throughout the world?
 - a Are symbols from all five major world religions represented?
- 3 Compare the symbols, what, where, when, why and how states based on a religious reformer who also influenced politics.
- 4 Create a comic strip using the story of a line which first was important strategy of opposition between religion and state.
- 5 Prepare an information brochure for Australian teachers planning to visit a religious state of your choice.

Activity 1.16
Reasoning

- 1 Construct a paragraph identifying a basic principle, elaboration and evidence on religion and state in Australia.
- 2 Complete a Venn diagram showing the unique and common features of States with an official religion and Religious states. Elaboration – complete a three-way Venn diagram showing the unique and common attributes of 'Speaker of State' States with an official religion and Religious states.
- 3 Create and produce a summary chart showing the attributes of secular states, states with an official religion and religious states.

Activity 1.17
Investigating, reasoning and judging

Investigate the 2000 consultation vote in the Australian House of Representatives on the abolition of the RMA Act.

- 1 What is a 'consultation vote' and what distinguishes it from other parliamentary votes?
- 2 Are consultation votes ever appropriate in your opinion? If so, under what circumstances?
- 3 To what extent should the consultation of politicians (often formed by religious and other) influence the law in Australia?
- 4 To what extent should religious lobby groups influence the law in Australia?

Activity 1.18
Judging

- 1 Assess whether the religion-state relationship in a chosen country is consistent with the country's declarations about religion-state relationships in its constitution. Provide evidence to support your assessment.
- 2 To what extent do the sacred texts of a chosen religion mandate a particular view of religion-state relationships? How well is this kind of religion-state relationship upheld in countries around the world?

CHAPTER REVIEW



JUDAISM: THE FACTS

Number of adherents

- Approximately 14 million worldwide
- 300 000 (Australia)

Sacred text

- The Torah

Place of worship

- Synagogue

Symbol

- Star of David

CHAPTER NINE

JUDAISM

‘You shall love the Lord your G-d with all your heart and with all your soul and with all your might.’

(Deuteronomy 6:5)

‘You shall love your neighbour as yourself: I am the Lord.’

(Leviticus 19:18)

CHAPTER OBJECTIVES

This chapter discusses:

- the history of Judaism
- sacred texts of Judaism
- groups within Judaism
- Jewish festivals and celebrations
- Jewish prayer and worship
- Synagogue

KEY TERMS

Rosh Hashanah	Passover	Seder	Sukkot
Shema	Shema Yisrael	Torah	Tzitzit
Yom Kippur	Yom HaShoah	Yom HaZikaron	Yom HaNatzah
Yom HaZikaron	Yom HaNatzah	Yom HaShoah	Yom HaZikaron

Introduction

Judaism, one of the oldest world religions, dates back approximately 4000 years. What sets Judaism apart from other religions of that time is its belief in only one G-d, who is personal and intervenes in human history. The Jewish religion is based on revelations which began when G-d called Abraham and Noah to leave their homes and worship faith in faith.

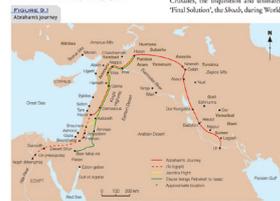
In his old age (and through a miracle from G-d), Sarah gave birth to a son, Isaac, and in turn, his twelve sons became the founders of the twelve tribes of Israel. In the covenant made between G-d and Abraham (see Abraham, G-d promises Abraham, ‘I’ll give you many offspring’ (Genesis 15:2)).

The belief that G-d intervenes in history on behalf of the Jews is illustrated in the Book of Exodus. It tells the story of Moses leading the Hebrew people to escape from slavery in Egypt, the receiving of the Ten Commandments at Mount Sinai and the eventual arrival at the Promised Land. G-d’s covenant continues with the Jewish people as it does by Exodus 19:4-6. For Jews, Abraham is considered the ‘father’ of Judaism and Moses their greatest prophet.

Activity 9.1
Framing

- 1 What do you know about Judaism?
- 2 What do you know about Israel?
- 3 What are some distinctive customs of Judaism?
- 4 What are the main beliefs and religious texts? Do you have any impact on Western culture?
- 5 How has Judaism changed over time?
- 6 What are some key people associated with Judaism?
- 7 What is the Shema?
- 8 How do the Jewish communities in Australia, your state or your local area?
- 9 How do the Jewish communities in Australia, your state or your local area?

FIGURE 9.1
Abraham’s journey



TIMELINE (DATES ARE APPROXIMATE)

BCE

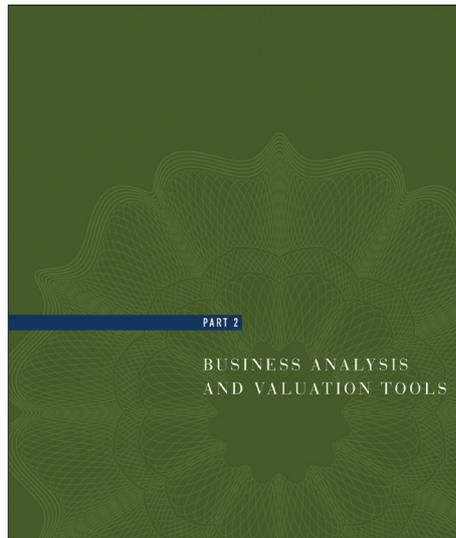
- 1900 Abraham enters the Promised Land
- 1200 Moses, Exodus
- 1200 Re-entry into the Promised Land
- 1000 Saul, David, Solomon
- 950 Construction of First Temple in Jerusalem
- 922 Northern Kingdom separated from South after Solomon
- 720 Isaiah
- 722 Assyrians conquer Northern Kingdom
- 586 Babylonians conquer Jerusalem, destruction of First Temple, deportation of Jews
- 500 Return from Babylonian exile
- 331 Jerusalem conquered by Alexander the Great
- 165 Maccabean revolt, rededication of Temple
- 63 Romans, under Pompey, take Jerusalem
- Age of Rabbinic Judaism

CE

- 70 Destruction of Second Temple by Romans
- 200 Mishnah completed
- 500 Golden Age of Judaism in Spain
- 1500 Jews expelled from England and France
- 1492 Jews expelled from Spain
- 1700s Haskalah movement
- 1800 Hasidim granted state European citizenship
- 1817 Chovev Kadim established in Sydney
- 1881 Persecution of Jews in Russia, migration to US
- 1938 Kristallnacht
- 1942 The Balfour Declaration
- 1948 First-way migration of Jews
- 1948 Establishment of State of Israel
- 1950 Israel parliament passes Law of Return
- 1967 Six-Day War
- 1972 Ordination of the first female rabbi
- 1983 Reform Judaism accepts patrilineal Jewish descent

Shoah

A word used by Jews to refer to the Holocaust, also referred to as the genocide or Jewish Holocaust. It involves the systematic, worldwide persecution and murder of Jews, including the Holocaust, during the Shoah.



CHAPTER 5

FINANCIAL ANALYSIS

The goal of financial analysis is to assess the performance of a firm in the context of its stated goals and strategy. There are two principal uses of financial analysis: ratio analysis and cash flow analysis. Ratio analysis involves comparing how various financial ratios in a firm's financial statements relate to one another. Cash flow analysis allows the analyst to measure the firm's liquidity, and to assess the management of its operating, investment, and financing cash flows.

Financial analysis is used in a variety of contexts. Ratio analysis of a company's present and past performance provides the foundation for making forecasts of future performance. As we will discuss in later chapters, financial forecasting is central to company valuation, credit evaluation, financial distress prediction, security analysis, mergers and acquisitions analysis, and corporate financial policy analysis.

The four levels managers can use to achieve their growth and profit targets are (1) operating management, (2) investment management, (3) financing strategy, and (4) dividend policies. The objective of ratio analysis is to evaluate the effectiveness of the firm's policies in each of these areas. Effective ratio analysis involves relating the financial numbers to the underlying business factors in as much detail as possible. While ratio analysis may not give all the answers to an analyst regarding the firm's performance, it will help the analyst frame questions for further probing.

RATIO ANALYSIS

The value of a firm is determined by its profitability and growth. As shown in Figure 5-1, the firm's growth and profitability are influenced by its product market and financial market strategies. The product market strategy is implemented through the firm's competitive strategy, operating policies, and investment decisions. Financial market strategies are implemented through financing and dividend policies.

Thus the four levels managers can use to achieve their growth and profit targets are (1) operating management, (2) investment management, (3) financing strategy, and (4) dividend policies. The objective of ratio analysis is to evaluate the effectiveness of the firm's policies in each of these areas. Effective ratio analysis involves relating the financial numbers to the underlying business factors in as much detail as possible. While ratio analysis may not give all the answers to an analyst regarding the firm's performance, it will help the analyst frame questions for further probing.

CHAPTER 5 FINANCIAL ANALYSIS

FIGURE 5-1
Levels of an Organization's Profitability and Growth

In ratio analysis, the analyst can (1) compare ratios for a firm over several years (a time-series comparison), (2) compare ratios for the firm and other firms in the industry (cross-sectional comparison), and/or (3) compare ratios to some absolute benchmark. In a time-series comparison, the analyst can hold firm-specific factors constant and examine the effectiveness of a firm's strategy over time. Cross-sectional comparison facilitates examining the relative performance of a firm within its industry, holding industry-level factors constant. For most ratios there are no absolute benchmarks. The exceptions are measures of rates of return, which can be compared to the cost of the capital associated with the investment. For example, subject to discounts caused by accounting, the rate of return on equity (ROE) can be compared to the cost of equity capital.

In the discussion below, we will illustrate these approaches using the example of Michael Hill International, an Australian jewelry manufacturer and retailer. We will compare Michael Hill's ratios for the financial year ending 30 June 2006, with its own ratios for the financial year ending 30 June 2005, and with the ratios for CrownGroup Limited, an Australian wholesaler and retailer of fashion, clothing and accessories, for the financial year ending 29 July 2006.

In 2006, Michael Hill is in the middle of implementing an expansion into Canada, so analyzing its performance over time allows us to assess how well the strategy is working in terms of financial performance. Comparison of Michael Hill with CrownGroup allows us to see the impact of different strategies on financial ratios, including their competitors, investing and financing strategies. CrownGroup relies on several strong brands for its continued success, whereas Michael Hill is expanding geographically to effect growth. CrownGroup contracted during 2006, as a result of asset sales and write-downs, and the repayment of debt from its operating cash flows, and it indicated plans to continue asset write-downs and disposals in the subsequent financial year, to refocus its operations on its two key brands, Orson and Pivo/Ralph Lauren. Michael Hill, in contrast, increased its debt levels to finance its expansion, and experienced negative net cash flow from operating activities. Both firms experienced increased revenues but decreased profits in 2006. We will illustrate how these differences between the two companies affect their ratios. We will also try to see which strategy is delivering better performance for shareholders.

6 PART 2 BUSINESS ANALYSIS AND EVALUATION TOOLS

CASE STUDY

BACKGROUND INFORMATION ON MICHAEL HILL AND ORSON

Michael Hill International is a manufacturer and retailer of jewelry in New Zealand, Australia and Canada. Its objective is to be people focused, having both its jewelry and stores diversify offshore, a product range focused exclusively on jewelry, and to advertising at a high impact level.

It has been successful in following the objectives, including asset growth. From its beginnings in New Zealand with one store in 1979, by 1987 it had expanded to 10 stores, had opened its first store in Australia, and had listed in the New Zealand stock exchange. In 2002, the company listed on the Toronto stock exchange. In 2005, the company listed on the London stock exchange. In 2006, Michael Hill employed over 1000 full-time and part-time staff, including manufacturing and administration.

Michael Hill's financial strategy in 2005 was to increase sales per store (which revenues increased), its operating results were set as follows in 2005. It opened new stores in Australia, New Zealand and Canada, and purchased retail for future profitable growth by establishing 12 supply chains, which improved its merchandising and distribution facilities.

The headquarters consists of two brands, Orson and Pivo/Ralph Lauren. Its business can be described as wholesaler and a retailer of fashion, clothing and accessories.

But the brands cover more than this. They combine the fashionability with functionality, sophistication with modernity.

The Orson brand is street in history and renowned for quality and style. Orson began trading as Ralph Lauren & Co. (later as Ralph Lauren & Co.) specialised in importing luxurious and high quality fabrics from Europe to meet the need of the burgeoning fashion industry.

Orson began to achieve customer satisfaction through its unique product quality and premium level of customer service. Understanding and interpreting international trends remains the central part of its business.

Ralph Lauren began fifty years ago in the U.S. with a collection of ties. For nearly 25 years its focus has been led by PoloGroup for the Australia and New Zealand territory. The first Polo Ralph Lauren store in Australia opened in 1991 in Sydney's Queen Victoria Building.

Today Ralph Lauren merchandise is distributed across 7 forwarding stores, 12 department store concession sites, 3 factory stores and selected wholesale accounts. It is levels is prior to that of Orson, being associated with the aspirational lifestyle.

CHAPTER 5 FINANCIAL ANALYSIS

Measuring Overall Profitability

The starting point for a systematic analysis of a firm's performance is its return on equity (ROE). This is also referred to as return on common equity (ROCE), because preference capital is excluded from equity to distinguish the return that is earned by the ordinary or common shareholders who are the residual claimants of the firm. For simplicity the term ROE will be used.

ROE can be found towards the bottom of Item 5.1 and is defined as:

$$ROE = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average shareholder's equity}}$$

ROE is a comprehensive indicator of a firm's performance because it provides an indication of how well managers are employing the funds invested by the firm's shareholders to generate returns.

In calculating ROE, the analyst gains an understanding of the return being generated by the business's operations on the equity capital provided by (ordinary) shareholders. For this reason the numerator, net income (or 'profit for the year' using the standardized income statement format), must be adjusted for payments (dividends) to preference shareholders. If the firm has not issued preference shares or other types of priority capital, then preferred dividends can be disregarded.

In the long run, the value of the firm's equity is determined by the relationship between ROE and its cost of equity capital. That is, those firms that are expected over the long run to generate ROE in excess of the cost of equity capital should have market values in excess of book value, and vice versa. (We will return to this point in more detail in the chapter on valuation.)

Table 5-1 shows the ROE based on reported earnings for Michael Hill and Orson.

Ratio Item & Ratio	Michael Hill 2005	Michael Hill 2006	Orson 2005	Orson 2006
Profit for the Year or Net Income (\$'000)	15,714	16,642	-2,942	366
Average Shareholder's Equity (\$'000)	479,815	593,415	212,345	354,621
Return on equity	32.75%	27.75%	-1.38%	4.7%

Michael Hill's ROE shows a decline from 27.75% to 23.2% between 2005 and 2006. Whilst asset decline in a performance ratio is a cause for concern and further analysis, Michael Hill's 2006 result is well above that achieved by most companies, based on historical trends, and it exceeds its expected ROE.¹⁷

The positive nature of these ratios is even more apparent when they are compared to those of Orson. Even though both companies are in a similar industry, Michael Hill is situated at the top of the range of reported ROE for Australian companies, whilst Orson is situated at the bottom. Orson reports a substantial loss in 2006 and a small profit in 2005. Its ROE is -16.7% in 2006 and 4.7% in 2005, both very low rates. Therefore, because both companies experience a decline in 2006 compared to 2005, the very low decline for Michael Hill compared to its competitor is one of a concern.

Decomposing Profitability: Modified DuPont Approach

A company's ROE is affected by two factors: how profitably it employs its assets and how big the firm's asset base is relative to shareholders' investment. To understand the effect of these two factors, ROE can be decomposed into return on assets (ROA) and into measures of financial leverage. As follows:

$$ROE = ROA \times \text{Adjusted Financial Leverage}$$

$$ROE = ROA \times \text{Common earnings leverage} \times \text{Capital structure leverage}$$

12 PART 2 BUSINESS ANALYSIS AND EVALUATION TOOLS

CASH FLOW ANALYSIS

The ratio analysis discussion focused on analyzing a firm's income statement (net profit margin analysis) or its balance sheet (asset turnover and financial leverage). The auditor can get further insights into the firm's operating, investing, and financing policies by examining its cash flows. Cash flow analysis also provides an indication of the quality of the information in the firm's income statement and balance sheet. As before, we will discuss the concepts discussed in this section using Michael Hill's and Creston's cash flows.

Cash Flow Statements

Under IASB Cash Flow Statements, companies are required to include a statement of cash flows in their financial statements. In the reported cash flow statement, firms classify their cash flows into three categories: cash flow from operations, cash flow related to investments, and cash flow related to financing activities. Cash flow from operations is the cash generated by the firm from the sale of goods and services after paying for the cost of inputs and operations. Cash flow related to investment activities shows the cash paid for capital expenditures, non-current investments, acquisitions, and cash received from the sales of long-term assets. Cash flow related to financing activities shows the cash raised from (or paid to) the firm's shareholders and debt holders.

Analyzing Cash Flow Information

Cash flow analysis can be used to address a variety of questions regarding a firm's cash flow dynamics:

- How strong is the firm's internal cash flow generation? Is the cash flow from operations positive or negative? If it is negative, why? Is it because the company is growing? Is it because its operations are unprofitable? Or is it having difficulty managing its working capital projects?
- Does the company have the ability to meet its short-term financial obligations, such as interest payments, from its operating cash flow? Can it continue to meet these obligations without reducing its operating flexibility?
- How much cash did the company invest in growth? Are these investments consistent with its business strategy? Did the company use internal cash flow to finance growth, or did it rely on external financing?
- What type of external financing does the company rely on? Equity, short-term debt, or long-term debt? Is the financing consistent with the company's overall business risk?
- Does the company have excess cash flow after making capital investments? Is it a long-term trend? What does management have to do with the free cash flow?

Analysts use a number of different approaches to restate the cash flow data. One such model is shown in Table 5-1. This process classifies cash flow from operations into three categories: cash flow from operations before working capital investments, in computing this cash flow model includes interest expense and interest income. To compare this model starting with a firm's net income, an analyst adds back those types of items (1) after net interest expense because this is a financing item that will be considered later, (2) non-operating gains or losses typically arising out of asset disposals or asset write-offs because these items are investment related and will be considered later, and (3) cash flow from operations such as depreciation and deferred taxes because these are non-cash operating charges.

CHAPTER 5 FINANCIAL ANALYSIS 13

Table 5-1 Cash Flow Analysis

Item	Michael Hill 2008	Michael Hill 2007	Creston 2008	Creston 2007
Cash flow from operations	-230	10221	1480	6795
Net investment in (or liquidation of) operating working capital	(660)	(414)	798	1317
Cash flow before working capital	790	1466	2278	8112
After tax net interest expense (income)	129	1893	1063	903
Operating cash flow before investment in long-term assets	919	1114	3341	7919
Net investment in (or liquidation of) operating long-term assets	(948)	(884)	(865)	(791)
Free cash flow available to debt and equity	(129)	230	2476	7198
After tax net interest expense in income	(129)	(1893)	(1063)	(903)
Net debt (repayment) or issuance	1570	0	(466)	956
Free cash flow available to equity	292	1377	4474	8250
Dividend payments	(816)	(496)	(225)	(424)
Net stock (repurchase) or issuance	238	389	72	278
Net increase (decrease) in cash balance	(316)	(130)	1320	7294

The model in Table 5-1 suggests that the analyst should focus on a number of cash flow measures: (1) cash flow from operations before investment in working capital and interest payments, to examine whether or not the firm is able to generate a cash surplus from its operations; (2) cash flow from operations after investment in working capital, to assess how the firm's working capital is being managed and whether or not it has the flexibility to invest in long-term assets for future growth; (3) free cash flow available to debt and equity holders, to assess a firm's ability to meet its interest and principal payments; and (4) free cash flow available to equity holders, to assess the firm's financial ability to sustain its dividend policy and to identify potential agency problems from excess free cash flow. These measures have to be evaluated in the context of the company's business, its growth strategy, and its financial policies. Further, changes in these measures from year to year provide valuable information on the ability of the cash flow dynamics of the firm.

KEY ANALYSIS QUESTIONS

The cash flow model in Table 5-1 can be also used to assess a firm's earnings quality as discussed in Chapter 3. The reconstruction of a firm's net income with its cash flow from operations facilitates this exercise. Following are some of the questions an analyst can pose in this respect:

- Are there significant differences between a firm's net income and its operating cash flow? Is it possible to clearly identify the source of this difference? Which accounting policies contribute to this difference? Are there any one-time items contributing to this difference?
- Is the ratio between operating cash flow and net income changing over time? Why? Is it because of changes in business conditions or because of changes in the firm's accounting policies and estimates?
- What is the time lag between the recognition of revenues and expenses and the receipt and distribution of cash? What type of uncertainties need to be resolved in between?
- Are there changes in receivables, inventories, and payables? If not, is there adequate explanation for the change?

Analysis of Michael Hill's Cash Flow

Michael Hill and Creston reported their cash flows using the direct method for the cash flow statement. Table 5-1 recasts these statements using the approach discussed above so that we can analyze the two companies' cash flow dynamics.

18 PART 2 BUSINESS ANALYSIS AND EVALUATION TOOLS

THE ROLE OF CAPITAL MARKET INTERMEDIARIES IN THE DOT-COM CRASH OF 2000

The Rise and Fall of the Internet Consultants

In the summer of 1999, a host of Internet consulting firms made their debut on Nasdaq. Most companies, which had been founded less than two years earlier in March 1999, went public in May 1999 at IPO prices of \$25 to \$30 per share. By the close of the first day of trading, they were \$200. Other Internet consulting companies that went public that year included iPlanet Corporation, 3M Enterprises, and US Interactive (see Exhibit 3).

The main value proposition of these companies was that they would be able to solve in the near future all the problems that would be created by the Internet. They were selling their services to companies that wanted to go Web-based businesses, as well as to the emerging e-commerce companies like e-Planet Corporation and Cambridge Partners had been doing IT consulting for years, but this new breed of companies was able to capitalize on the burgeoning demand for Internet expertise.

Over the following months, the stock prices of the Internet consultants rose dramatically. Some traded at a high of \$120 in March 2000. However, this was after a 2.5-fold rise in each share was actually worth this amount on a pro-rata basis. This stock rise represented a 120 percent increase from the IPO price and a valuation of \$2 billion for the company. The rise in the stock price of these companies was the result of the IPO boom of 2000. Similar performance was seen in other companies in this group. However, these valuation levels proved to be unsustainable. The stock prices of web consulting firms dropped sharply in April 2000 along with most others in the Internet sector. However, what was different was a general "correction" in the market. The prices of the new consultants seemed to stabilize for a while, and many analysts continued to write favorably about their prospects and maintained buy ratings on their stocks. But starting early in September 2000, some bad news from their customers and new customer acquisition and earnings, the stocks went into a free fall. All were traded in the single digits by February of 2001, representing a greater than 95 percent drop from their peak valuations (see Exhibit 3).

Context: The Technology Bull Market

The 1980s and 1990s marked the beginning of a global technology revolution that started with the personal computer (PC) and led to the Internet, e-Commerce, Home Appliances, Microsoft, Intel, and Dell Computer.

One of the hallmarks of this new wave of technology that promised to enhance productivity and efficiency through the computerization and automation of many processes.

The capital markets recognized this potential by being created by these companies. Microsoft's stock was listed in 1979, had a market capitalization of over \$600 billion by the beginning of 2000, making it the world's most valuable company, and its founder, Bill Gates, one of the richest men in the world. High values were also given to many of the other blue-chip technology firms such as Intel and Dell (Exhibit 4).

Internet sites and e-commerce products had the most direct effects of the Internet. The following examples represent the mood of the time.

Follow the general computer and you can reach the pot of gold. Follow anything else and you will end up in a barometer. What the Model T was to the automobile era, the PC is to the information age and so it goes with the wave of sustainable technology—innovations in fact had had a profound impact on the individual one, so the lines that you see in the picture and led to the face of the dramatic connectivity of information in the information era.

—George Gilder, 1992

Due to technological advances in PC-based communications, a new medium—the Internet, the World Wide Web, and ISP or e-commerce—emerged rapidly. The market for Internet-related products and services appears to be growing more rapidly than the early emerging markets for print publications, television, film, radio, recorded music, telephone, and personal computers. Based on our market growth estimates, we are still of the very high impact of a potential growth point.

—Willy Wastel, Morgan Stanley Equity Research, February 1999

Social Corporatism

The history of Creston, considered a leader in the Internet consulting sector, is representative of what happened in the entire consulting sector. The firm was founded in November 1997. Its initial capital sources included investment banks such as Bear Stearns and BancBoston Capital Corp (Exhibit 3).

Social disclosure that led to "leading promoters of a new category of professional services called 'consulting solutions' that would 'rapidly improve a client's competitive position' through the development of 'innovative business structures' created by the integration of emerging and existing technology." Its aim was to

CHAPTER 5 CASE STUDY 19

provide services in information technology and systems design as well as high-level strategy consulting, providing the domain of companies such as McKinsey and the Boston Consulting Group.

We have included research coverage of Creston with a BUY investment rating on the shares. In our view Creston possesses several key competitive advantages: (1) an outstanding management team; (2) a highly scalable and recognizable operating model; (3) a strong track record; (4) a highly visible and profitable; (5) a private equity portfolio, which enhances long-term liquidity and reduces volatility; and (6) a strong focus on the high-end services market, superior client retention, and industry expertise, which are not to be missed in an integrated approach. Creston shares are currently trading at roughly 20x greater CEO turnover, industry ahead of our peer leaders like the Intel and Procter & Gamble, and ahead of an attractive single-year price gain of just over 100%. Our 12-month price target is \$25.00. It is a stock we would want to own.

Performance of the Nasdaq

The performance of the stock prices of Creston and its peers mirrored that of many companies in the Internet sector. So dramatic was the pace in valuation of these companies that their performance subsequently often referred to as the "dot-com crash."

In the months following the crash, the equity markets essentially closed their doors to the Internet firms. Several state high-tech parks, operating at a loss and unable to cash, filed for bankruptcy or closed their doors (see Exhibit 3).

Capital Market Intermediaries

The Role of Intermediaries in a Well-Functioning Market

In a capital market, individuals and institutions have savings that they want to invest. Capital markets provide a way for this to occur efficiently. Companies issue debt or equity to investors who are willing to part with their cash now because they expect to earn an adequate return in the future for the risk they are taking.

However, there is an information gap between investors and companies. Investors usually do not have enough information or expertise to determine the good investments from the bad ones. And companies do not usually have the infrastructure and know-how to directly raise money from investors. Therefore, both parties rely on intermediaries to help them make these decisions. These intermediaries include accountants, lawyers, regulatory bodies such as the SEC in the United States, investment banks, venture capitalists, money

management firms, and even the media (see Exhibit 10). The focus of this case is on the equity markets in the United States.

What happened during the dot-com bubble?

Many investors believed that something was wrong with the system during the dot-com bubble. In April 2000, *BusinessWeek* wrote about "The Great Internet Mania Game: How America's top financial firms raised billions from the hot Internet, while investors got burned." The following month, *Fortune* magazine asked "Can we trust that these guys are really serious? Is this the way in which, in some people's opinions, the Street firms had led investors and companies astray before and after the dot-com debacle."

Key Intermediaries

One can only wonder if those questioned to look more closely at some of the players in the Internet crash. Much of the material in the following sections is based on research interviews with representatives from each sector.

Venture Capitalists

Venture capitalists (VCs) provided capital for companies in their early stages of development. They sought to provide a very high rate of return to their investors for the associated risk. This was typically accomplished by selling their shares in their portfolio companies after the public launch of the VC or a smaller company in a hot sector.

The partners in a VC firm typically had a substantial percentage of their net worth tied to their funds, which in turn had their interests with their investors. Their main form of compensation was a large share of profits (typically 20 percent) in addition to a relatively low base on the equity after management.

The Role of Information

The Accounting Profession

Independent accountants audited the financial statements of public companies to verify their accuracy and freedom from fraud. If they were reasonably satisfied, they provided an unqualified opinion statement which was attached to the company's public filings. If auditors were not fully satisfied, they would issue a "qualified" opinion, which had a negative impact on the auditor's opinion if it provided an additional level of assurance of the company's information that they were receiving from them.

In the mid-2000s, the accounting profession in the United States was dominated by the major accounting firms, collectively referred to as "the Big Five": Ernst & Young, Deloitte & Touche, KPMG, PricewaterhouseCoopers, and Arthur Andersen. The Big 5 accounting firms had roughly a 50 percent share of the market and the Big 10 accounting firms had about 80 percent of the revenues of the Big 100,000+ however, the

210 PART 4 ADDITIONAL CASES

Case Study

Earnings per share

	Continued	
	2008	2005
	Cent	Cent
Net basic earnings per share		
Profit from continuing operations attributable to the ordinary equity holders of the Company	76.8	61.0
(a) Diluted earnings per share		
Profit from continuing operations attributable to the ordinary equity holders of the Company	75.5	60.0
(b) Reconciliation of earnings used in calculating earnings per share		
Basic earnings per share		
Profit from continuing operations	145,869	125,232
Loss from continuing operations attributable to minority interests	(29)	
Profit from continuing operations attributable to the ordinary equity holders of the Company used in calculating diluted earnings per share	145,893	125,232
Diluted earnings per share		
Profit from continuing operations attributable to the ordinary equity holders of the Company used in calculating diluted earnings per share	145,893	125,232
(c) Weighted average number of shares used in the denominator		
Weighted average number of ordinary shares used in the denominator in calculating basic earnings per share	256,968,631	205,271,283
Adjustments to calculation of diluted earnings per share:		
Treasury shares	(895,629)	(242,861)
Options	77,613	230,049
Weighted average number of ordinary shares and potential ordinary shares used in the denominator in calculating diluted earnings per share	256,958,215	205,248,465

Source: Billabong Annual Report 2008

EXHIBIT 7

Billabong comparison to sector and market

Peer comparison

Company	Cost	Leid price	EBITDA	PE ratio	EV/EBITDA	EV/EBIT	EV/EBITDA	EV/EBITDA	EV/EBITDA
Billabong International	886	\$16.88	\$1,640.88	21.4818	36.4176	13.5401	14.3808	2.6379	3.1175
Pacific Brands	PKC	\$1.21	\$1,632.08	15.8555	14.5716	-0.4114	9.4975	4.1229	4.8944
Costco	COST	\$2.38	\$1,618	18.9227	n/a	-0.8364	n/a	8.9608	n/a
Club Inc.	CLB	\$1.35	\$1,608	224.4718	n/a	-86.8178	n/a	8.0600	n/a
GLD Corp.	GLE	\$1.04	\$798	6.3679	n/a	-1.3814	n/a	7.8443	n/a

210 PART 4 ADDITIONAL CASES

Case Study

Share price ratios

	12 months (%)	6 months (%)	12 months (%)
BBG	1.8015	4.0549	8.8406
S&P	6.2067	10.0567	20.8997
Market	7.2251	10.2943	20.1228

EXHIBIT 8

Percentage growth in sales for Billabong, Quiksilver and industry peer group

Company	2008	2007	2006	2005
Billabong	18.1%	15.1%	12.1%	10.1%
Quiksilver	16.1%	14.1%	11.1%	9.1%
Industry peer group	17.1%	15.1%	12.1%	10.1%

Source: Company financial statements; Billabong, Quiksilver, Nike, Adidas, Puma, VF Corp., Newmarket and Fish, Whelan and Pacific Summit

Peer comparison

Company	EV/EBITDA	EV/EBIT	EV/EBITDA	EV/EBITDA
PEW	25.1	29.3	23.7	
FIN	23.0	24.1	18.0	
Yield (%)	2.3	4.5	7.7	
EV/EBITDA	2.7	2.9	3.2	
EV/EBITDA	19.4	16.2	15.5	
EV/EBITDA	19.8	15.1	11.2	
EV/EBITDA	18.5	12.5	11.8	
EV/EBITDA	15.8	12.8	9.3	

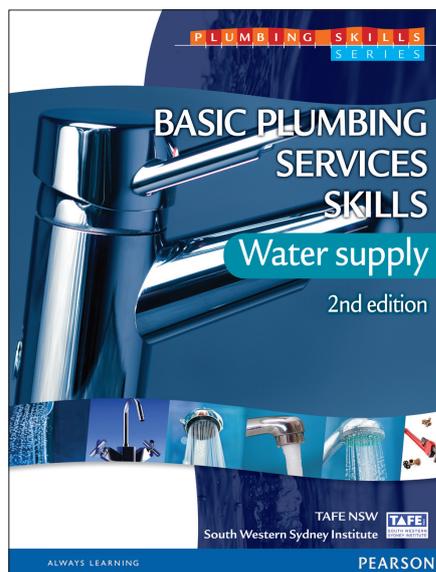
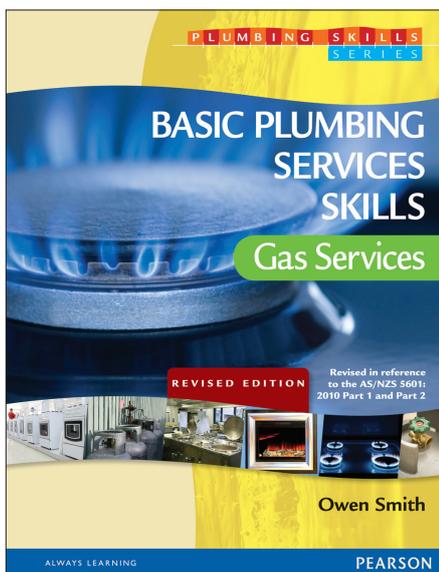
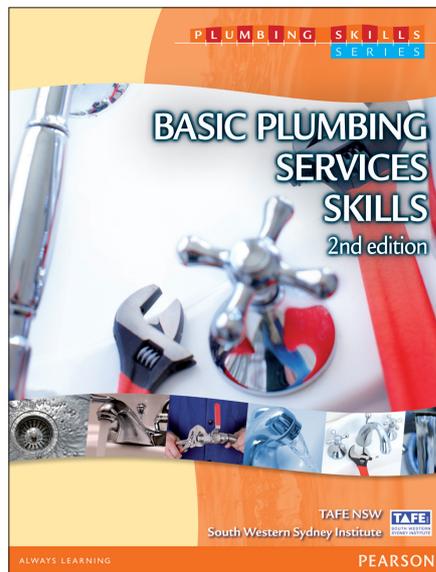
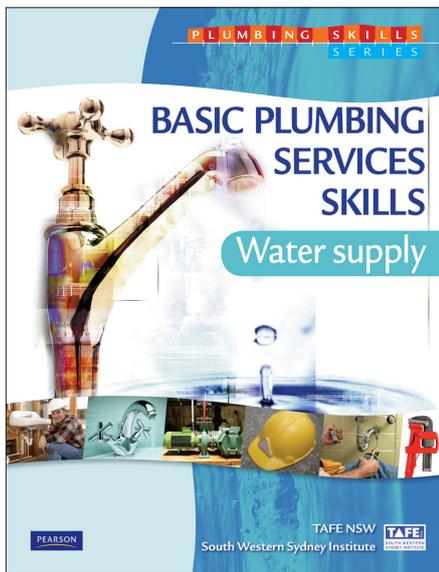
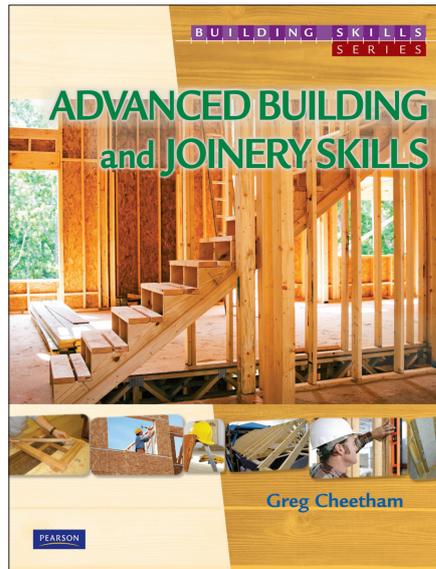
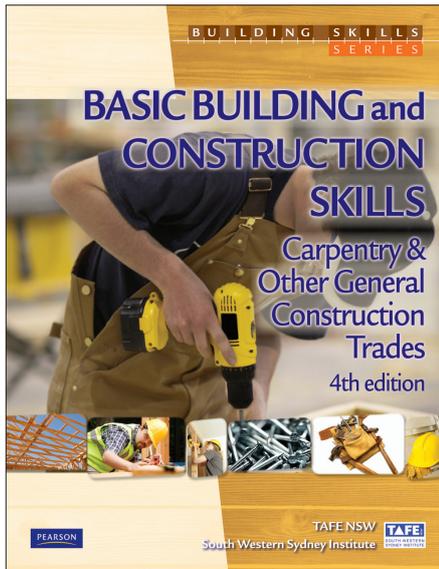
Source: Investment website

EXHIBIT 9

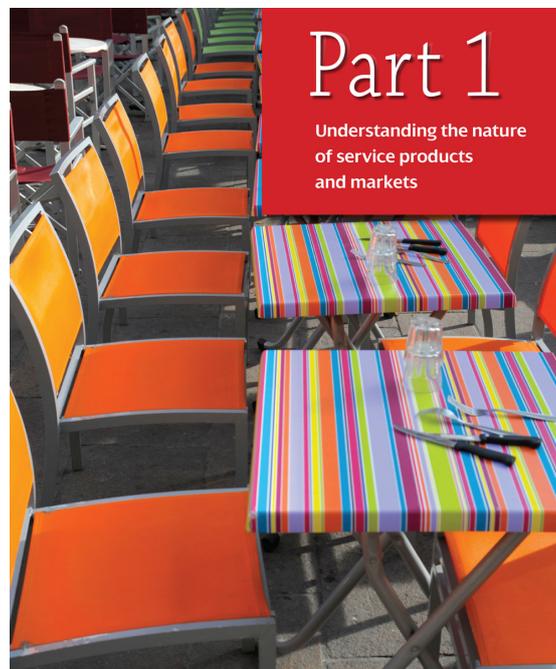
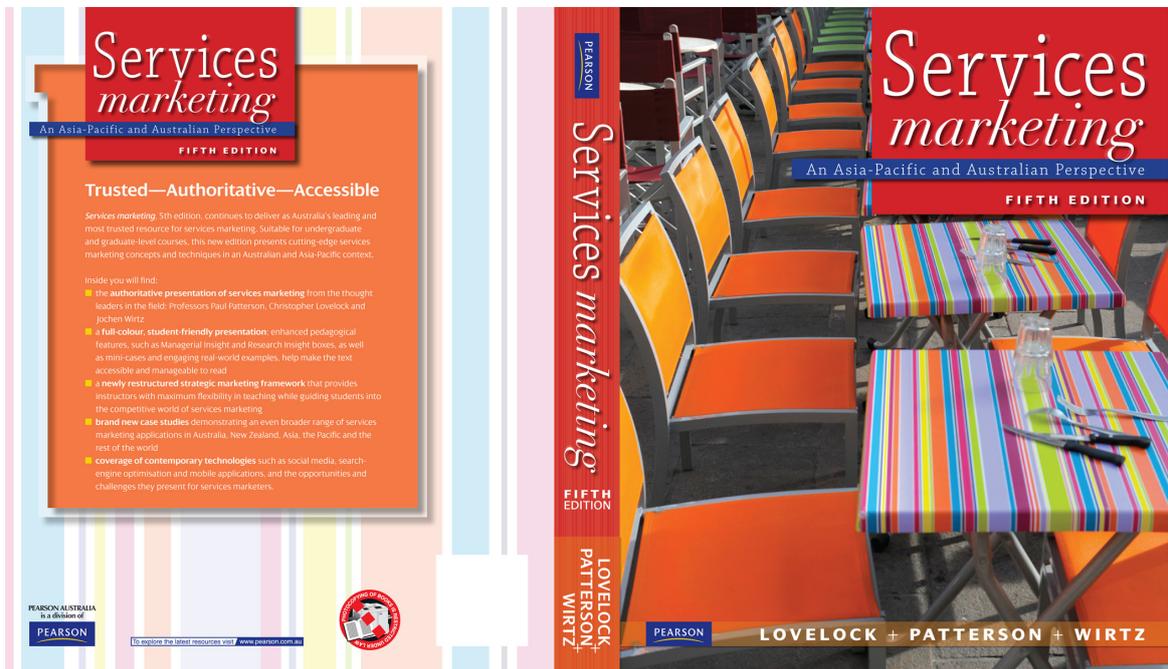
Operating profit margins for Billabong, Quiksilver and industry peer group

Company	2008	2007	2006	2005
Billabong	18.1%	15.1%	12.1%	10.1%
Quiksilver	16.1%	14.1%	11.1%	9.1%
Industry peer group	17.1%	15.1%	12.1%	10.1%

Source: Company financial statements; Billabong, Quiksilver, Nike, Adidas, Puma, VF Corp., Newmarket and Fish, Whelan and Pacific Summit



Various covers from the Building Skills and Plumbing Skills series [Pearson Australia, Sydney] — *Basic Plumbing Services Skills: Gas Services*, TAFE and Vocational Education Single Title Category Winner, 2011 APA Excellence in Educational Publishing Awards



Cover design and part title page of *Services Marketing 5e* [Pearson Australia, Sydney]

Chapter 2

Customer behaviour, culture and service encounters

Human beings draw close to one another by their common nature, but habits and customs keep them apart.

Confucius (c.500 BC)

Learning objectives

- After reading this chapter you should be able to:
 - Explain the three-stage model of service consumption.
 - Explain the effect of culture upon consumer behaviour in service settings.
 - Explain the relevance of perceived risk and information search at the pre-purchase stage of the buying process.
 - Explain why it is necessary to understand and accommodate customers' intrinsic needs and values.
 - Describe why mood states, role and script theory and control theory are central to understanding customer behaviour in service settings.

Western Union promotes its service to ethnic communities in Australia

In a multicultural country like Australia, where the population continues to become more diverse, marketers are aware of the increasing opportunity from serving these different demographic groups. At the same time, they realise the challenge in understanding different subcultures, and therefore create more relevant and cultural-sensitive marketing practices to target the ethnic segments.

For Western Union, a global financial services company specialised in money transfer, this is a huge potential market. Many migrants in Australia want to send money back home to support their family. However, due to several reasons, including lack of an efficient banking system in their home countries, cash transfer appears to be more convenient for them. In 2002 Western Union aimed to promote its services to the Arab, Indian, Indonesian, Filipino, Vietnamese and Chinese communities with its campaign 'Take it home'. This theme appealed to the target markets who wished to share the financial burden with their loved ones at home. The promise of being 'fast, safe and reliable' also helped minimise the risks of sending cash overseas in customers' perception. While the campaign involved sponsorship for local community events and a competition, the mainstream advertising was presented in community languages and promoted on ethnic media. Western Union wanted to reach ethnic groups more effectively and show their understanding of local cultures.

Multicultural marketing seems to be a natural fit for the business of Western Union. They continue to promote money transfer services to other groups of migrants. One recent example is Western Union's cooperation with Australia Post in reaching out to the Thai community during Songkran, Thai New Year, with a tradition of throwing water.

Carilyn Boyd 2007, 'The new face of Sydney', *BE Magazine* 2 November online. Available at: <http://www.be-mag.com.au/news/14/05/1114.asp>.



An Australia Post advert distributed during Thai New Year. Source: <http://www.aspost.com.au>.

As shown in Figure 2.2b, the typical Asian diffusion of the new products curve features a larger proportion of 'early majority' (corresponding to the growth phase of the typical product life cycle) than in the West. This implies that once a new concept (e.g. a new entertainment venue, restaurant or hair style) is generally accepted by the 'early majority' then acceptance is quick as other consumers do what is seen as 'legitimate'. It reflects the fact that referral from ingroup members is a highly powerful way of reducing uncertainty and rapidly expanding product trial and acceptance. Thus the most effective way of reducing uncertainty and gaining speedy product diffusion lies in tapping into the Asian consumers' referral network and using word-of-mouth communication.

Power distance
This refers to the extent to which the less privileged and less powerful members of a society expect and indeed accept that power is distributed unequally in their society. It also reflects a rigid hierarchical structure in a society. Most Asian societies are high on this dimension. By contrast most Western countries are more egalitarian (low power distance). This has several implications for service managers. In Asia, for example, it is important in service encounters to understand the status of the person you are dealing with. Job status, age, wealth, nobility and power command respect. This is partly reflected in importance of the family unit where multiple generations often live together. In Indonesia, for example, this practice is common among urban and non-urban Javanese and Chinese families. Elders are more revered than in Western societies. In China, around 20% of households comprise more than two generations. 'Power distance is perhaps best reflected in the hierarchical structure of many Asian societies (Korea, Thailand, Indonesia)—where both a fast driver and a wealthy, influential business person, for example, know exactly where they stand in the social hierarchy. Power and influence is centralised at the top, and this is generally accepted by society at large. From a services perspective, this means that social bonds between client and provider, hence diminishing the opportunity to forge client loyalty based on social bonding.'¹¹

Masculinity/femininity
This is the degree to which variables of quality of life, maintenance of warm personal relationships and personal service prevail over values of assertiveness, performance, success and competition.¹² A fifth cultural value later introduced by Geert Hofstede is long-term versus short-term orientation. This refers to the extent to which a culture exhibits a pragmatic, future-oriented perspective versus a short-term point of view. Cultures stressing a longer-term orientation reflect values of thrift, perseverance, building longer-term relationships, respect for tradition, fulfilling social obligations and a focus on gaining (as opposed to losing) 'face'. Most South-East Asian cultures tend to value a long-term orientation.

It might therefore be expected that these core cultural values would, prima facie, impact on customer-service provider relationships, especially in service settings where social interaction is often essential for the service to be 'produced'. Form the basis for longer-term relational exchanges between buyer and seller and be key determinants of service quality and loyalty.¹³ Hence to engage in successful service encounters when dealing across cultures requires careful consideration of cultural differences.

With some understanding of how a customer's cultural orientation might impact their perceptions and behaviour in a service context, we turn our attention to the three-stage model of service consumption. A fifth cultural value later introduced by Geert Hofstede is long-term versus short-term orientation. This refers to the extent to which a culture exhibits a pragmatic, future-oriented perspective versus a short-term point of view. Cultures stressing a longer-term orientation reflect values of thrift, perseverance, and building longer-term relationships.

MANAGERIAL INSIGHT 2.1

Disney in Australia

Disneyland recently came to Hong Kong and you'd not be alone in expecting that it would be as welcomed and as successful there as it has been in other parts of the world where the Magic Kingdom has been established, yet early patronage has languished. The reason it would appear that locals don't understand the park or how to enjoy it.

Consequently, the theme park's managing director has acknowledged that the company still has a lot to learn about Chinese culture. More particularly, the company now recognises that it needs to do more by way of educating local residents and explaining to them how to enjoy Disneyland and make the most of a visit there. The company is therefore facing an old

challenge: how to bridge the gap born of the cultural divide between Western and Asian cultures. There should also be a policy that allows frontline staff to provide limited compensation to customers if necessary.

This brief insight reflects well some of the difficulties that can be faced by any service provider in understanding and responding to the characteristics, needs and expectations of particular customer-characteristics, needs and requirements that, in this scenario, are distinguished by cultural differences.

Source: Based on Geoffrey A. Fowler and Wensu Han (2006), 'The real test', *Journal of Services Marketing* 20(1), p. 61.



The opening ceremony for Hong Kong Disneyland.

RESEARCH INSIGHT 2.1

Cross-cultural expectations with service failure

Service firms understand that one key element for their success is customer satisfaction. However, it is almost impossible to keep service delivery flawless. Therefore, service recovery is now considered as an important component in a firm's service quality and satisfaction strategies. It involves complaint handling and actions taken to respond appropriately to customers' negative experiences. Once firms can influence customer perceptions of their service recovery efforts, it is possible to turn the situation around and still make that customer happy. Understanding that customers expect in the recovery process could help firms work out what and how it should be done.

Attribution expectations

When unexpected and negative events happen during service encounters, customers spontaneously infer or attribute blame. In their study, researchers Anna Mattila and Paul Patterson looked at the attributional processes to explain customer reactions to service recovery efforts in a cross-cultural context. The authors argued that the differential sensitivity of East Asians and Americans to situational constraints influence consumers' attributions for service failures. When a justification for service failure was offered or unprovided, and simultaneously considered other external factors as the cause of failure. Therefore, staff should be trained to provide a genuine and sincerely offered explanation. There should also be a policy that allows frontline staff to provide limited compensation to customers if necessary. Though providing an explanation had a positive effect on perceived employee effort, it worked better in the Western context. The research found that East Asian customers paid relatively stable attention to both internal and external attributions. Therefore, when dealing with Asian customers, frontline staff should offer them alternative remedies, such as a speedy resolution to the problem and a genuine apology

from a manager (rather than a frontline respondent) in order to regain 'face' in the eyes of their family and friends. In addition, they preferred having a sense of control, so clarifying any ambiguity and keeping them informed of exactly what is being done can rectify the problem.

Fairness expectations
To extend their interest in the influence of culture, Mattila and Patterson also examined customers' post-recovery satisfaction judgment and fairness perception in a cross-cultural context. Based on justice theory, they looked at customers' evaluation of fairness in the service recovery process under three perspectives: distributive justice, procedural justice and interactional justice. The research found that East Asian customers paid relatively stable attention to both internal and external attributions.

Distributive (outcome) justice
The study suggested that offering compensation (e.g. discount or apology) is particularly effective in restoring a sense of fairness among American customers. In fact, they are more confident and more used to asking for redress than consumers in Asia. They value the firm's effort in ensuring outcome fairness. On the other hand, Eastern customers are concerned more about social interdependency in relationship with others. They avoid conflict and confrontation and evaluate life in reference to collective needs. Therefore offering compensation at individual level is less valued among Eastern customers. There is a tendency to focus on avoidance of losses rather than on individual gains. The research found that East Asian customers paid relatively stable attention to both internal and external attributions. It involves complaint handling and actions taken to respond appropriately to customers' negative experiences. Once firms can influence customer perceptions of their service recovery efforts, it is possible to turn the situation around and still make that customer happy. There should also be a policy that allows frontline staff to provide compensation.

RESEARCH INSIGHT 2.1 (continued)

Interactional justice

Interactional justice concerns how customers perceive the firm's behaviour during the resolution process. In general, East Asian customers had higher perceptions of interactional fairness than their US counterparts, both before and after receiving a causal justification. While offering an explanation might elicit the Western customers' focus on external factor as a cause of the failure, Eastern customers are more likely to be aware of situational constraints. Maintenance of social harmony is important to them, therefore recovery behaviours are more significant than outright compensation. They highly regard courteous, formal and empathetic manner in the recovery process.

Procedural justice

Procedural justice concerns the policies and rules that comprise the recovery process. In the USA, customers demanded hassle-free and fast recovery procedures. Firms can implement effective compensation procedures by providing staff with clear policy guidelines and certain authority. Staff's attitude and effort improve when they are empowered to make a decision on a spot. On the contrary, Eastern customers

prefer a genuine response from a manager rather than a frontline staff member. Making them feel that everything is in control by constant information of the process is also essential. There should also be a policy that allows frontline staff to provide limited compensation to customers if necessary.

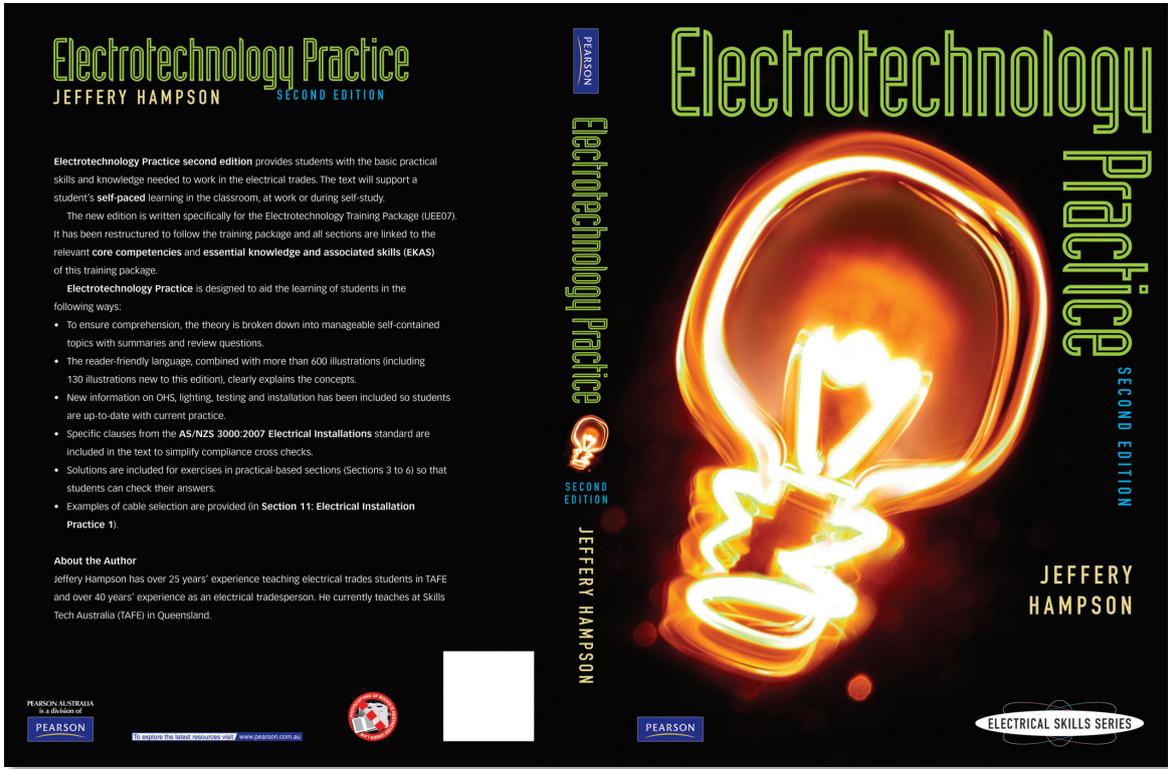
While the importance of level of justification or explanation varies between cultures, it is still an effective tool to handle complaints. The research found that East Asian customers paid relatively stable attention to both internal and external attributions. Throughout the whole recovery process, it is important for management to ensure that explanation does not turn into an excuse. Training staff on communication skills could be a good start.

Source: Service recovery and fairness perceptions in interactions and individualism context, *Journal of Service Research* 6(4), 442-2004, pp. 336-46 with A. Mattila and S. Patterson and G. Patterson (2006), 'The impact of culture on consumers' perception of service recovery efforts', *Journal of Business Ethics* 65(1-2), pp. 196-206.

The three-stage model of service consumption

As noted earlier, understanding customer behaviour lies at the heart of marketing. We determine how people make decisions about buying and using a service, and what determines their perceptions of value and thus satisfaction after consumption. Without this understanding, no organisation can hope to create and deliver services that will result in satisfied customers. Service consumption can be divided into three principal stages: the pre-purchase, service encounter and post-encounter stage. Figure 2.1 shows that each stage consists of two or more steps. During the pre-purchase stage, the four steps are need recognition, information search and evaluation of alternatives and making a purchase decision. During the service encounter stage, the customer initiates and experiences and consumes the service. Consumer evaluations of these encounters are contingent upon their psychological needs, mood states, an understanding of their 'role' in the encounter and communication styles. During the post-encounter stage, evaluation of the service performance occurs, and this determines future intentions such as wanting to buy again from the same firm and recommending it to friends. When things go wrong and a customer is dissatisfied then an understanding of attribution theory is useful.

The rest of the chapter is organised around the three stages and their key concepts. Figure 2.1 shows that each stage consists of two or more steps. During the pre-purchase stage, the four steps are need recognition, information search and evaluation of alternatives and making a purchase decision.



Electrotechnology Practice

JEFFERY HAMPSON SECOND EDITION

Electrotechnology Practice second edition provides students with the basic practical skills and knowledge needed to work in the electrical trades. The text will support a student's **self-paced** learning in the classroom, at work or during self-study.

The new edition is written specifically for the Electrotechnology Training Package (UEE07). It has been restructured to follow the training package and all sections are linked to the relevant **core competencies** and **essential knowledge and associated skills (EKAS)** of this training package.

Electrotechnology Practice is designed to aid the learning of students in the following ways:

- To ensure comprehension, the theory is broken down into manageable self-contained topics with summaries and review questions.
- The reader-friendly language, combined with more than 600 illustrations (including 130 illustrations new to this edition), clearly explains the concepts.
- New information on OHS, lighting, testing and installation has been included so students are up-to-date with current practice.
- Specific clauses from the **AS/NZS 3000:2007 Electrical Installations** standard are included in the text to simplify compliance cross checks.
- Solutions are included for exercises in practical-based sections (Sections 3 to 6) so that students can check their answers.
- Examples of cable selection are provided (in **Section 11: Electrical Installation Practice 1**).

About the Author

Jeffery Hampson has over 25 years' experience teaching electrical trades students in TAFE and over 40 years' experience as an electrical tradesperson. He currently teaches at Skills Tech Australia (TAFE) in Queensland.

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ELECTRICAL SKILLS SERIES

Cover design of *Electrotechnology Practice 2e* [Pearson Australia, Sydney]

ELECTRICAL INSTALLATION PRACTICE 1

Section 11

This section provides electrotechnology workers with knowledge and skills about earthing, switchboards, fire detection and security systems.

SECTION OBJECTIVES

Earthing

- Define the terms 'earthed', 'earthed situation' and 'equipotential bonding'
- Explain how insulation faults of equipotential bonding conductors may occur
- Describe the fundamentals of the MEN system of earthing
- Draw a typical MEN earthing system
- State the importance of the main earthing conductor
- Explain why protective earthing conductors are necessary
- Explain the need for functional earthing Core balance earth leakage (CBEL)
- Describe the principle of operation of an RCD device
- Recognise the four different types of RCDs
- Test RCDs in service

Switchboards

- Demonstrate knowledge of requirements for switchboards

Fire detection systems

- Name the three types of fire detection systems
- Describe different types of heat detectors

- Explain the fundamentals of the two basic types of smoke detectors
- Explain the requirements for installing and positioning smoke alarms
- Describe how a flame detector operates
- Name various types of heat and fire resistant cables
- Explain the term 'fire integrity'

Security systems

- Describe the purpose of a security system
- Name the different intruder detection systems
- Name several access control systems

Main earth conductor

The main earthing conductor as illustrated in Figure 11.10 is a conductor connecting the main earthing terminal/connection or bar to the earth electrode (see Clause 3.4.6.5).

Figure 11.10 Circuit diagram of a MEN earth system

The size of the main earthing conductor (see Clause 5.3.3.2) is determined from AS/NZS 3000:2007 Wiring Rules Table 5.1. This table relates the main earth to the CSA of the largest active conductor of the consumer's mains (see Figure 11.11). However there are exceptions to this; where double insulation is maintained between the point of supply and the load terminals of the protective devices and where the CSA of the consumer's mains is larger than that required to carry the maximum demand of the installation.

Figure 11.11 Consumer's mains

The cross-sectional area of a copper main earthing conductor cannot be less than 4 mm² and the smallest aluminium conductor that can be used as a main earthing conductor is 4 mm².

Main earth resistance

The resistance of the main earthing conductor (see Clause 5.3.4.1) is measured between the main earthing terminal/connection and bar and the earth electrode, including the connection to the earth electrode. The measured resistance between these two points must not be greater than 0.5 Ω.

Earth electrodes

The purpose of the earth electrode is to connect the neutral of the electrical installation to the general mass of earth (see Clause 5.5.1.2). The principle of earthing is to regard the general mass of earth as a reference (zero) potential. Therefore all wiring systems connected directly to it will be at zero potential or above it; the voltage drop across a protective earth carrying fault current. The type of earth electrode shall consist of one of the types described in Clause 5.3.6.2 and Table 5.2 of AS/NZS 3000:2007. A copper clad rod type electrode is illustrated in Figure 11.12.

Figure 11.12 Copper clad rod type electrode

Copper clad earth rods are manufactured using steel to AS3773 and hard drawn copper tube manufactured to AS5572 with a diameter of 12 mm nominal. All manufactured earth rods are extendible, by using complex and are pre-painted. Rod type electrodes must be driven to a depth (see Clause 5.3.6.3) of 1.2 m (Australia) and 1.8 m (New Zealand). Strip electrodes have other requirements.

Some additional examples of earth electrodes are:

- An approved earth stake driven to a depth of at least 1.2 m into the ground.
- A copper strip of at least 25 mm x 1.5 mm x 3 m buried at a depth of at least 0.5 m in a horizontal trench.
- The earthing conductor and its connection to the earth electrode must be located (see Clause 5.3.6.4, 5.3.1.2, 5.5.1.1, 5.5.1.2 and 5.5.3.3) in wet soil with protection from mechanical damage and galvanic corrosion must be prevented.
- Earth electrodes as illustrated in Figure 11.13 are for an existing residential installation, prior to fit out and a construction site electrode.

The size of the main earthing conductor (see Clause 5.3.3.2) is determined from AS/NZS 3000:2007 Wiring Rules Table 5.1. This table relates the main earth to the CSA of the largest active conductor.

EXAMPLE 1

Calculate the luminance on a work plane if $2 \times 18W$ fluorescent CFL compact fluorescent tubes are at a height of 2400 mm which falls uniformly on an area of 10 m^2 .

$$E = \frac{2 \times 1800}{2400^2} \times 297 \text{ lux}$$

Note the lack of mechanical protection in the first and third illustration (from left to right) and the required use of a cold galvanising coating on the main earth termination. When undertaking electrical installation work, the requirement for testing of the installation in AS/NZS 3000:2007 Wiring Rules, Clause 5.5.4. Continuity allows for any earth electrodes that are faulty to be identified, especially at the earth clamp connection. A visual check at the earth electrode will also allow for the identification of severe corrosion. Repairs will need to be undertaken and the relevant certificate of electrical safety issued.

The PVC pipe surrounding the earth electrode in the following Figure 11.14 allows for water to enter the electrode area when surrounded by a concrete slab, to prevent the lack of mechanical protection.

EXAMPLE 2

What is the luminous efficacy of a 100 x 175 mm fluorescent tube?

$$\eta = \frac{1750}{100} = 17.5 \text{ LMW}$$

Labelling of the earthing connection

The main earth connection shall have a permanent label (see Clause 5.3.1.3) attached at the connection to the earth electrode with legible warning against disconnection in the following form as shown in Figure 11.15.

Note: the warning label material must not be affected by mechanical impact and environmental conditions and is required to last the life of the installation. In addition, the location of the earth electrode must be identified at the main switchboard (see Clause 5.3.4.6.4).

Earthing resistance of an electrode

The earthing resistance of an electrode is made up of:

- Resistance of the electrode
- Contact resistance between the electrode and the soil
- Resistivity of the soil

Soil resistivity is the key element that determines what the resistance of an earth electrode will be, and to what depth with some installations it must be driven to obtain low ground resistance. The resistivity of the general mass of earth surrounding an electrode can be enhanced by using an earthing compound as illustrated in Figure 11.16. The compound is mixed with clean water until possible slurry is achieved. The slurry is then poured into the area where the electrode will be installed. Note that the earthing compound will reduce the resistivity of the soil only when dissolved in the soil. Using the compound dry does not serve any purpose at all.

Protective earthing conductor (PEC) to hand

A PEC (see Clause 5.5.2) is any earthing conductor that is not a main earthing conductor, a bonding conductor connecting the earthing system to the electrical installation or the earth conductor of any electrical equipment required to be earthed. All PEC's must be directly connected to the main earthing bar via various methods to the main earthing conductor. The following symbol in Figure 11.17 signifies the protective earthing conductor terminal. It is placed at the equipment earthing point.

The PEC can take many forms (see Clause 5.5.2.2) such as:

- a separate conductor which must be earthed
- an earth conductor included in a sheathed cable with other conductors
- metallic shafts, armours and screens of cables as shown in Figure 11.18

WARNING

MAIN ELECTRICAL EARTHING CONDUCTOR

DO NOT DISCONNECT

Figure 11.15 Main earth conductor warning label

Figure 11.16 Earthing compound

Core balance earth leakage (CBEL)

This mechanism is also called a residual current detector (RCD) or a safety switch and was created to detect very small earth leakage currents (10 mA). Its purpose is to prevent possible appliances in earthed situations. Because of its ability it is the only protective device that affords protection to persons as well. Note that RCDs do not protect against active to neutral faults. This type of fault is cleared by a fuse or circuit breaker. Basically the RCD device operates on the principle that the magnetic flux in a differential transformer is balanced under normal conditions. The transformer uses the effects of magnetism to detect any out of balance current in the system. If the current in the return conductor, the neutral, does not equal the current entering the active due to an earth fault then the system is out of balance. A magnetic field is created which induces a voltage in the secondary 'L' winding of the transformer. A semi-conductor circuit that provides sufficient energy to trip the circuit breaker amplifies this voltage. These devices are mandatory in all new domestic wiring installations in Australia.

The 10 mA sensitive RCD with 10 A rated outlets is used in extremely hazardous areas, including hospitals. For fixed installations with 10 A rated outlets a 30 mA RCD is recommended. The RCD is a double pole and switches both active and neutral. A core balance earth leakage protection device is illustrated in Figure 11.22.

The test button on an RCD should be activated every month. Results of tests performed on a 300 mA RCD are shown in Table 11.1.

Load	Col	Col	Col	Col	Col
LABOURER	2	10%	3	100%	10%
WOMAN	10%	20%	2	100%	10%
CHILD	10%	20%	2	100%	10%

Table 11.1 Results of tests performed on a 300 mA RCD

Security systems

In many buildings some form of security system is required. The increase of crime in the community has led to the need for security systems. Security systems and systems within buildings must be adequately protected during both day and night.

Core balance earth leakage (CBEL)

Security system design is a specialist area and is being constantly updated, and hence requires specialist knowledge of the latest equipment and systems. Whatever the system to be installed they all have some specific requirements in common. Cabling is normally extra low voltage and must be correctly segregated from 230 V circuits and service mains. The extra low voltage cabling is a 'weak link' in a security system and so must be properly protected against mechanical damage. Cabling offers extensive and runs throughout the building hence adequate room must be allocated to the cable runs. To prevent unauthorised access to conductors security wiring should be contained in conduits or trunking.

A security system will provide an environment where people, buildings and objects will be safe and secure. However, security systems cannot offer complete and all-inclusive protection. Security systems are defined by the technical features they offer. There are metallic type, electromagnetic, photoelectric and motion detecting systems, passive infrared systems and acoustic systems. There are systems with security cameras and those that communicate and operate via microprocessors, telephones or wireless.

Intruder detection systems

Intruder detection systems rely on a network of metallic type, electromagnetic detectors, infrared detectors, microwave detectors, ultrasonic detectors and acoustic detectors. The detectors are installed in specific locations throughout a building. The detection devices are all interlinked via multicore wiring to a central panel. The control panel is usually able to be programmed for various types of arming arrangements. Usually parts of the detection system are disarmed during the day and re-armed at night or when the building is unoccupied. Activation of any of detector will cause alarms to sound, because both alarm and phone calls made to security firms.

Metallic tape

Some security systems in use today use metallic tape or foil on window glass and doors. The tape forms part of the electrical conductor. If the metallic tape becomes open-circuited it trips an alarm.

Electromagnetic

Electromagnetic systems are often used on doors and windows to secure one area from another. The device used consists of a magnet in a sealed container and a magnetically operated metal switch in another sealed container. When the magnetic circuit is removed by the opening of a door or window an audible siren sounds. Some doors also have an electromagnetic lock for electric system security.

Figure 11.21

Earth fault loop impedance path in a MEN system

Figure 11.22

Socket outlet

Figure 11.23

Lighting point and transformer

FUNDAMENTALS OF CORPORATE FINANCE

I really like the breaking down of the solution into steps of 'plan, execute and evaluate' ... it will help students to develop appropriate problem-solving skills.
■ **Shelley Du RMIT**

I think it is great that relevant and good Australian examples are used ... the authors should be commended for a clear writing style.
■ **Terry Boulter, Deakin**

I am particularly attracted to its succinct presentation of materials and detailed problem-solving approaches. These are very much missing in my current textbook.
■ **Tajji Watanabe, USQ**

To be successful in your business studies, you need to master core finance concepts and learn to identify and solve problems facing today's practitioners. Adapted from the hugely successful US text of the same name, this first Australian edition helps you to do exactly that. The authors recognise that finance is often seen as one of the more challenging areas of study, so the text is specifically designed to make it accessible and engaging. The fundamentals of business finance are presented using the Valuation Principle as a clear, unifying framework, which provides you with an understanding of why you are learning these concepts and equips you with the tools to make good decisions to increase company value. The authors provide examples involving familiar Australian companies such as JB Hi-Fi and Myer, make consistent use of real-world data and demonstrate personal finance applications of core concepts.

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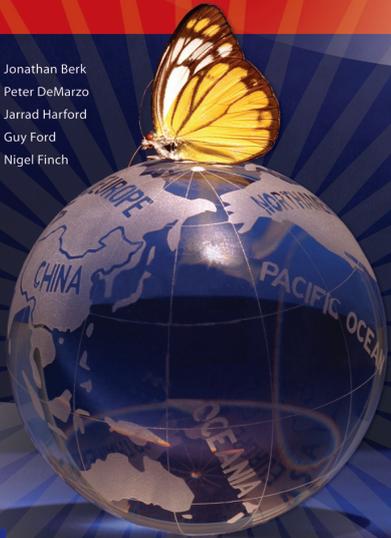
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FUNDAMENTALS OF CORPORATE FINANCE

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FUNDAMENTALS OF CORPORATE FINANCE

Jonathan Berk
 Peter DeMarzo
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events and tourism essentials



Events and Tourism Essentials has been written for students undertaking Certificate III in Events and Certificate III in Tourism qualifications and allows for completion of a dual qualification. The content relates directly to the competency units. Industry examples provide real-world application of the theory.

This resource is accompanied by a *Teacher Resource Kit* containing multiple-choice and short-answer questions, worksheets, extension activities, assessment tasks, solutions, chapter-review answers and mind-map summaries.

Key features include:

- coverage of the essential core and elective units for Certificate III in Events and in Tourism
- chapter openings which detail required skills and knowledge
- key terms in the margin which highlight common industry terms
- contemporary case studies which show the application of theory
- revision questions at the end of each chapter which reinforce understanding
- accompanying *Teacher Resource Kit* which contains photocopiable material including worksheets, assessment tasks, practice exam questions and textbook answers

Author
 Lynn Van der Wagen is Head Teacher, Tourism and Hospitality, at Northern Beaches College, Northern Sydney Institute of TAFE. She is the author of many highly acclaimed books on tourism and hospitality, among them *Hospitality Management* and *Event Management*. In 2006 she was named National Training Legend by Tourism Training Australia for her services to education in tourism and hospitality and more recently in 2007 was awarded the ATHEA Fellowship for her proposed research into indigenous festivals.

Her hospitality background prior to moving into education and the events industry was as Director of Human Resources for a five-star hotel with over 1000 employees. Lynn played a key role in the team that designed and delivered training to the 110 000 staff members of the Sydney 2000 Olympic Games. Since then she has been involved in many major events including the Beijing Olympic Games as well as many smaller Australian music and community events.

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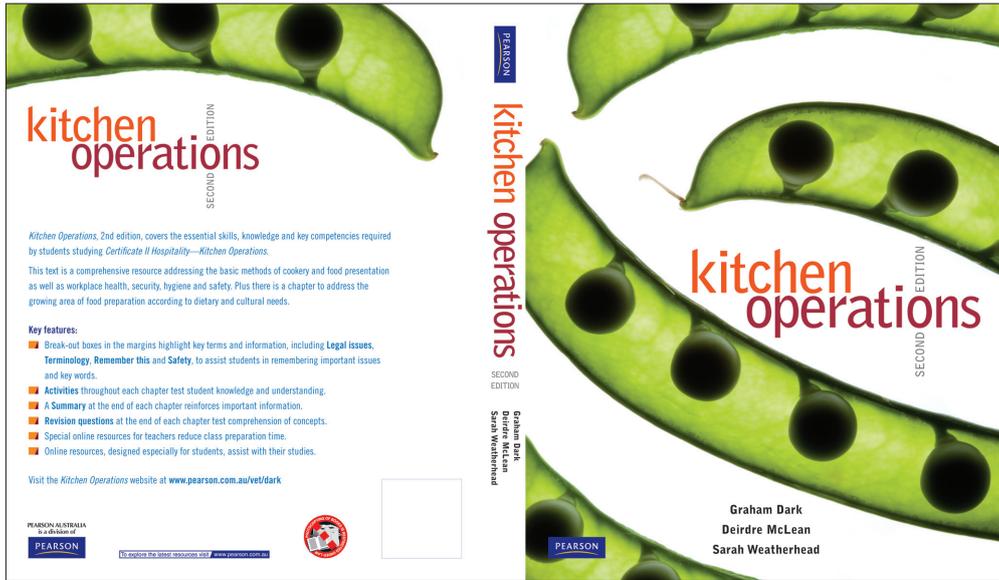
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Cover designs of *Fundamentals of Corporate Finance* and *Events and Tourism Essentials* [Pearson Education, Sydney]



kitchen operations

SECOND EDITION

Kitchen Operations, 2nd edition, covers the essential skills, knowledge and key competencies required by students studying *Certificate II Hospitality—Kitchen Operations*.

This text is a comprehensive resource addressing the basic methods of cookery and food presentation as well as workplace health, security, hygiene and safety. Plus there is a chapter to address the growing area of food preparation according to dietary and cultural needs.

Key features:

- Break-out boxes in the margins highlight key terms and information, including **Legal Issues**, **Terminology**, **Remember this and Safety**, to assist students in remembering important issues and key words.
- Activities throughout each chapter test student knowledge and understanding.
- A **Summary** at the end of each chapter reinforces important information.
- **Revision questions** at the end of each chapter test comprehension of concepts.
- Special online resources for teachers reduce class preparation time.
- Online resources, designed especially for students, assist with their studies.

Visit the *Kitchen Operations* website at www.pearson.com.au/ve/dark



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Guy Grossi
Guy Grossi is head chef at *Il Moro* Florence—one of Melbourne's most famous and enduring restaurants—and a member of the family whose name has become synonymous with the *Bacon* dining in Melbourne.

Guy perfected his craft at some of the city's finest eating places, including *Salerno*, *Messari* *Stromboli* and *Two Faces*. He worked at *Il Moro*, *Il Moro* and *Il Moro* before being one of the winners in 1999. In 1998 the president of Italy recognised Guy's service to Italian cuisine abroad. Guy's previous book, *Secrets of the Kitchen*, won the Australian Food Media Book of the Year Award in 2004.

Guy's recipe is from *My Italian Heart*, ISBN: 9781320189305.

SCAMPI ALLA PIASTRA CON CETRIOLO

Grilled scampi with cucumber salad

Ingredients

- 12 large scampi
- 1 large cucumber, sliced
- 1 large cucumber, sliced
- 2 tablespoons freshly chopped flat-leaf parsley
- juice of 1 lemon
- 1/2 cup extra-virgin olive oil
- Cucumber salad
- 1 large cucumber, sliced
- 200 g sheep's milk yoghurt
- 1 teaspoon freshly chopped mint
- sea salt
- freshly ground black pepper

Method

- 1 Cut each scampi in half lengthwise by firmly holding it belly-side down on a board, then, using a large, sharp knife, cutting into the head and down through the tail. Transfer to a deep tray, cut side up. Season with salt and pepper, then scatter over the shallots and parsley. Add the lemon juice and olive oil. Set aside to marinate for 15 minutes.
- 2 To make the cucumber salad, combine the cucumber, yoghurt and mint in a bowl and season with a little salt and pepper. Set aside.
- 3 Preheat the grill or a char-grill pan to hot. Cook the scampi, flesh-side down, for 1–2 minutes, then turn and grill the shell side for 2–3 minutes. Transfer to a platter and dress with the cucumber salad. Serve immediately. Serves 6.



Chapter 16

Prepare, cook and serve food for food service

Putting it into action

In order to be good at something, it is necessary to fully understand it.

Good cooks are not good by accident. Granted, some have a natural talent, but this alone will not be sufficient to cope with the rigours of a commercial kitchen. When the heat is on and there is a constant demand for consistently high quality, there is no substitute for genuine understanding.

A thorough appreciation of the methods of cookery, and of the principles that apply to each, is essential for commercial cooks. Equipped with this knowledge you can make informed decisions about which methods are suitable for which commodities, and how they should be finished. This, when combined with an organised approach to the preparation process, will ensure that consistently good results are achieved in an efficient manner. The development of sound techniques should be drilled for, in order to complete the package.

The purpose of cooking food is to change its texture and make it more palatable. The key to good cooking is the temperature control. The heat applied to food and the cooking time is integral parts for all cooking methods. If they are to be mastered, both of these points must be controlled. When they are, a quality product is assured. If they are not, an inferior product will always result.

Methods of cookery may be divided into two categories: 'wet' and 'dry'. 'Wet' cookery methods include boiling, simmering and poaching. They are referred to as being 'wet' because water or some other liquid is present, which helps to conduct heat to the foodstuffs. The heat used in wet cookery is gentler than the severe heat used for the dry methods. Grilled, fried and baked items need to be monitored closely to prevent charring or burning.

On completion of this chapter you should be able to:

1. Follow hygiene procedures at work and identify hygiene hazards by knowing and practising hygiene food preparation procedures at all times and by contributing to the production of safe food in the whole enterprise by working with colleagues and supervisors to identify and reduce all food safety hazards
2. Responsibly reporting any personal health issues that may be a risk to food safety.
3. Prevent contamination of food and other items by practicing good personal hygiene at all times and knowing how to reduce the risk of cross contamination in the work place
4. Prevent cross contamination by knowing when and how to wash hands correctly.

Some assessments for this unit may require knowledge of nutrition and specific dietary needs. This information is detailed in Chapter 8. Matching food preparation to customer needs.

LEGAL ISSUES

Duty of care is the legal responsibility that a person has to act in a way that will not compromise the safety and wellbeing of another.

Boiling and simmering

What does the law say?

Food safety and workplace safety laws are laws of legal liability, which means that everybody have a legal responsibility to work in a way that does not cause any harm to others. This is known as *duty of care* and applies to every level of work.

These laws focus on two main areas of responsibility:

- 1 the duty of care of the employer
- 2 the duty of care of the employees.

The employer (the food business or enterprise) has a duty of care to ensure that the staff employed are trained and that the premises they work in are suitable for food preparation. This includes the responsibility for providing the facilities and equipment needed to prepare safe food as well as the training, instruction and supervision of the staff as necessary.

The employee (in this case a cook) has a duty of care to have and to use the skills and knowledge expected of a cook to prepare and serve safe food.

This chapter will focus on the food safety requirements.

THE FOOD STANDARDS CODE

All states and territories have laws that require food businesses to prepare and serve food that is safe to eat. These State and Territory Food Laws refer to the Food Standards Code, drawn up by FSANZ as the mandatory Code of Practice for safe food production and sale.

In Australia, the actual enforcement agency for these food laws will be the local council for the area where the food business is established.

The Food Standards Code has been designed to improve the safety of food produced in Australia and New Zealand from 'field to fork' or 'farm to table', so the different chapters of the code relate to the various stages in food growing, producing, transport, packaging, processing, marketing and sales.

- **Chapter 1: General foods**, deals with standards that apply to all foods and covers such topics as labelling, food additives, contaminants and residues, and processing requirements.
- **Chapter 2: Food product standards**, deals with production and ingredient standards for commercially processed foods (eg. cereals, breads, meat products, dairy foods, beverages, baby foods and ice-cream).

LEGAL ISSUES

Food Standards Australia New Zealand (FSANZ) is a joint government authority that has the responsibility for setting the recommendations and guidelines for safe food production in the 2 countries.

ACTIVITY 2.1

There are 2 websites that can be used to find up to date information about the Food Laws in Australia or the states and territories: www.food.gov.au and www.foodstandards.gov.au as well as the FSANZ website, www.foodstandards.gov.au for the national guidelines on safe food production.

Check with your state government for the latest information on food safety and laws. 'Search' the state government websites using the keywords, food safety, food laws or food act.

Refer to the websites and links listed below.

ACT
<http://www.health.act.gov.au/> type in keywords: 'food safety' into search box for links to the food laws and fact sheets

New South Wales
<http://www.nsw.gov.au/topics/food> type in keywords: 'food safety' in the search box for links to dozens of fact sheets and legal information, both state and federal

Northern Territory
<http://www.dhs.nt.gov.au/> type in keywords: 'food safety' in the search box for links to the food laws and fact sheets

Queensland
<http://www.dhs.qld.gov.au/> type in keywords: 'Food Act' in the search box, for fact sheets and food safety legislation

South Australia
<http://www.dh.sa.gov.au/> click on 'quick link' to 'Food Regulation and Safety' for fact sheets and information on legislation in South Australia

Tasmania
<http://www.dhs.tas.gov.au/> type in keywords: 'food safety' in the search box, for links to the food laws and legislation

Victoria
<http://www.health.vic.gov.au/food-safety/> for information on food laws and fact sheets

Western Australia
<http://www.dhs.wa.gov.au/> type in keywords: 'food safety' in the search box, for links to food laws and food safety legislation

TERMINOLOGY

Food Safety Plan is a written document in which a food business, having identified all possible risks to food safety in their area of operation, details how they will control and reduce these risks.

Cover design [top] and spreads from *Kitchen Operations 2e* [Pearson Education, Sydney]

TOXIC CHEMICALS IN FOOD

Toxic chemicals either occur naturally in foods, or can be introduced accidentally.

- Naturally occurring chemicals:** There are a number of 'foods' in every part of the world that are known to the people of that area as poisons and that are to be avoided, for example:
 - the liver of the parrot fish contains toxic levels of Vitamin A
 - the amanita phalloides fungus, known as the 'death cap mushroom', looks like a field mushroom but can be fatal if eaten
- Solanine,** a chemical that develops in potatoes when they go green, can cause sickness in some people. Reduce the risk of this type of food poisoning by making sure that the food supplies are only purchased from a reputable business and that they are stored correctly.
- Accidental chemical contamination of food:** This happens more often than people realise. Pesticides, herbicides and cleaning chemicals can get into food anywhere in the food chain from 'field to fork' if food handlers are not careful. Always purchase foods from a reputable supplier, and wash fruit, vegetables and herbs thoroughly before using them. Make sure that food supplies and chemicals are stored separately and in properly labelled containers.

TERMINOLOGY

Anaphylaxis is a severe, abnormal reaction by the body's immune system.

Food Allergy is a true allergy, a reaction by the body's immune system when antibodies are produced to fight the invading allergen (the allergy causing food protein).

Food intolerance is usually caused by an enzyme missing from the digestive system, which results in an inability to digest and absorb some of the food eaten.

Food Sensitivity is a reaction by any one individual to a specific chemical in food either natural or added.

REMEMBER THIS

As soon as you take anything out of a container be it glass, plastic, metal, paper, cardboard or polystyrene, then you need to get into the habit of checking the label to see what else is in it, apart from the main ingredients.

ALLERGIES, SENSITIVITIES AND INTOLERANCES

About 10 per cent of the population will suffer from a food allergy, sensitivity or intolerance and for them some foods can be toxic. In some situations, such as nut allergies, even a trace of the food could produce a severe anaphylactic reaction which may be fatal.

There is a wide range of basic foods, and additives, in foods that can cause a problem for some people. For example, a customer may have an allergy to eggs or an intolerance to milk, or a sensitivity to a red colouring added to a food.

Most customers with such problems will tell the service staff, usually saying that 'they have an allergy to a food'. We need to be able to give them correct information about the ingredients that we have used so that they can make an informed decision on their choice of a dish from our menu. If you serve and use mostly fresh foods, this will be relatively easy but if it is an ingredient from a container it is not so easy.

MICRO-ORGANISMS

The major cause of food poisoning in Australia is the presence of pathogenic microorganisms in the food that we eat.

- Some important, general, facts about micro-organisms**
- Micro-organisms are very small single-celled living organisms that can only be seen under a microscope.
 - The micro-organisms that most affect our foods are the yeasts, moulds and bacteria.
 - Like most living things they need suitable food, moisture, the right environment and time to grow.

ACTIVITY 2.3

- Use the FSANZ website, www.foodstandards.gov.au/foodallergies/foods/eggs/ to find out which are the main food allergens that cause problems for people / customers in Australia.
 - Look at the list of ingredients on the packaged foods in the storage areas in your kitchen.
 - Which packaged food ingredients contain a common allergen?
 - What recipe are they used in?
 - Make sure you are familiar with the dishes on your menu that may not be suitable for people with allergies and share this information with the other kitchen staff and the service staff.
- Micro-organisms 'grow' by multiplying in number when the single-celled organism either splits in two (baked yeast) or produces a single bud that splits away as a separate cell when ready. This process takes about 20 minutes for each cell and then each of these new cells divide again, and so on.



Figure 2.2 One bacterium divides into two, then these two divide into four, and so on

SPORES

When micro-organisms are growing they are said to be active. A few species of micro-organism are able to slow down and become dormant or inactive when growing conditions are not right. These micro-organisms react to an unfavourable growing environment by developing a protective outer coating (shell) and staying dormant inside this shell until the good growing conditions return and they can become active again. This is a spore. The micro-organism can remain dormant for months or years as a spore, with the shell protecting it from heat, cold and chemicals, making it difficult to kill.

The micro-organisms that affect our food can be classified as spore, spoilage or pathogenic.

Useful micro-organisms

- Useful micro-organisms help produce a range of distinctive foods, for example:
- yeast for bread, batters and wines
 - mould for various cheeses like blue, blue cheese and washed rind cheese
 - bacteria for yoghurt and sour cream.

Spoilage micro-organisms

- Spoilage micro-organisms are all part of the system of decomposition of all living cells that are 'spoil' their use-by date'. When referring to food, we tend to say that it has 'gone off'. Examples are:
- mould on cakes or bread
 - wild yeasts that make fresh fruit salad bitter and bubbly
 - bacteria that make meat go green and slimy.

ACTIVITY 2.7

- Read through Food Standard 3.2.2, Regulation 14, 'Wash of Food Handlers'. This sets out the responsibilities of a food handler with respect to their health whilst at work. Make sure you know your legal responsibilities in this area.
- Read the relevant section of the Food Standards Code that outlines the responsibility of food handlers with respect to reducing the risk of contaminating food by their action. Standard 3.2.2, Regulation 15, 'Hygiene of food handlers' make sure you know your legal responsibilities in this area.
- Regulation 16, 'Wash of persons who handle food' - duties of food businesses' outlines the responsibility of a food business (employer) under the Law, with respect to the people employed in the food enterprise.
- Check with your chef or supervisor what procedures are in place for reporting and follow up on any illness or workplace activity that increases the risk of food contamination during preparation and service.

Table 2.2 Major food poisoning bacteria

Name of bacterium	Key facts important in a commercial kitchen
Salmonella	<ul style="list-style-type: none"> The live bacteria in the food eaten can cause food poisoning infection in people Salmonella are killed by temperatures above 70°C Healthy people can be 'carriers' Major sources: raw poultry (especially chickens) and people and/or pets that are 'carriers'
Staphylococcus aureus (Golden Staph)	<ul style="list-style-type: none"> This bacterium produces a toxin that can cause toxic food poisoning The bacteria can be killed by cooking, but the toxin can remain active About 50% of the population are 'carriers' It grows well on quite salty meats, such as ham Major sources: the skin, hands, nose and mouth of people who are 'carriers' and infected spots, pimples and cuts on food handlers
Clostridium perfringens	<ul style="list-style-type: none"> This bacterium is an anaerobic spore former Food and dirt on produce and the surface of raw meat can be a major source of the spores Specific high-risk foods: large, boned, rolled meats and big pots of soup, stew, stock and sauces that have a large anaerobic volume and are allowed to cool down (or heat up) too slowly
Escherichia coli	<ul style="list-style-type: none"> This bacterium is a spore former The spores hatch and grow best in starchy foods Specific high-risk foods are cooked rice, pasta and made up 'custard powder' sauce, if left in the danger zone

Name of bacterium	Key facts important in a commercial kitchen
Campylobacter	<ul style="list-style-type: none"> The live bacterium in food causes effective food poisoning It is killed by temperatures above 70°C Major source: the surface of raw meat and food handlers who are 'carriers' Known as the 'SBU' bacteria Specific high-risk food: undercooked, thick hamburgers and sausages
Listeria monocytogenes	<ul style="list-style-type: none"> This causes a 'flu'-like type of food poisoning It can cause miscarriage in pregnant women This bacterium can grow between 0°C and 4°C It can survive pasteurisation Specific high-risk foods: chilled dairy and 'convenience' foods such as dips, deli meats, pizzas, pre-made cereals and soft-serve ice-cream if not handled safely

ACTIVITY 2.9

Read through the key facts on each of the food poisoning bacteria in the table above. Then, taking each bacterium in turn, review the foods and dishes that you prepare at work and try to identify any high-risk situations in your kitchen for that particular bacterium. If you find such a situation, think about what could be done to prevent that bacterium from possibly causing food poisoning. Talk to your chef or supervisor about any changes that could be made to reduce the risk.

For example, fresh chicken breasts are delivered to be used for Chicken Wax, and they are put on a board and the skins are removed. The board is not properly washed and sanitised afterwards. It is just rinsed off and then used for slicing sandwiches for sandwiches. There is a high risk of Salmonella bacteria being transferred to those tomatoes and then to the sandwiches. There will be no further cooking and the salmonella will not be killed. What should be done to reduce this risk?

Time and temperature control of foods

Leaving high-risk foods in the danger zone gives any pathogenic bacteria on those foods a chance to grow to large numbers.

Remember the basic rule: **Keep hot food hot - above 60°C, and cold food cold - below 5°C**

However, there will be a number of occasions when food could be in the danger zone, and cooks need to take care to reduce the time that high-risk foods stay between 5°C and 60°C.

Cooling hot foods

- Cool hot foods as quickly as possible.
- Transfer them to smaller, shallow containers to reduce the volume needing to be cooled.
 - Stir the food frequently to allow steam and heat to escape.
 - Stand containers in cold water or ice, stirring frequently.

BÉCHAMEL SAUCE 1 litre

Ingredients

- 70 g butter
- 70 g flour
- 1 l milk
- 1 shredded onion

Method

- Place the cut surface of the onion in a hot fry pan until it develops a deep golden brown colour. Do not add any fat, as it should not be frying.
- In a bowl, mix the egg white, minced beef and 200 ml of cold stock together.
- In a suitable sized pot, heat 1.5 litres of brown veal stock to just below simmering.
- Add the onion and egg white mixture and whisk to thoroughly distribute through the stock. Add the carrot, celery, onion, peppercorns and herbs.
- Continue to simmer, stirring occasionally to prevent the mince from settling on the bottom of the pot.
- As the consommé comes to a simmer the mince will rise to the surface forming the 'raft'. Do not stir when the raft has formed.
- Allow to simmer gently, undisturbed for 2 hours.
- In strain the consommé, set up a container with a chinois lined with filter paper or muslin cloth.
- Using a ladle carefully take the consommé from the pot without disturbing the raft and pour through the filter.
- Remove any surface fat and reheat the consommé, taste for seasoning.
- Serve hot with appropriate garnish.
- Suitable garnishes for a beef consommé includes blanched julienne vegetables, small dumplings or wontons, sliced cooked meat, sautéed mushroom slices, poached quail egg.

BEEF CONSOMMÉ 1 litre

Ingredients

- 1 onion, peeled and cut in half
- 2 egg whites
- 200 g beef, minced
- 200 ml brown veal stock, cold
- 50 g carrot, roughly chopped
- 50 g celery, roughly chopped
- 10 peppercorns
- 1 bay leaf
- 1 sprig thyme
- 5 carrot sticks
- 1.5 l brown veal stock

Method

- Place the cut surface of the onion in a hot fry pan until it develops a deep golden brown colour. Do not add any fat, as it should not be frying.
- In a bowl, mix the egg white, minced beef and 200 ml of cold stock together.
- In a suitable sized pot, heat 1.5 litres of brown veal stock to just below simmering.
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Note: To make a different flavoured consommé change the flavour of the stock and the type of mince used and make as above. The colour of a consommé looks better with a brown stock, rather than a white stock.

BEEF STOCK 2 litres

Ingredients

- 1kg beef bones
- 200g mirepoix (equal parts of carrot, onion and celery, roughly chopped)
- 2 tbs fat
- 1 bouquet garni
- 2 l water

Method

- Preheat oven to 200°C.
- Remove excess fat from the bones and place in an oven dish.
- Roast the bones in the oven for about 20-30 minutes until they are brown.
- Meanwhile, in the stock pot sauté mirepoix in the fat until lightly browned, do not allow the vegetables to burn.
- After draining excess fat from bones place them in the stockpot with mirepoix, bouquet garni and water.
- Bring to the boil, adjust to a simmer and skin.
- Simmer for 6-8 hours, skimming frequently and add extra water when necessary.
- Strain the stock, cool, cover, label and store in the fridge.

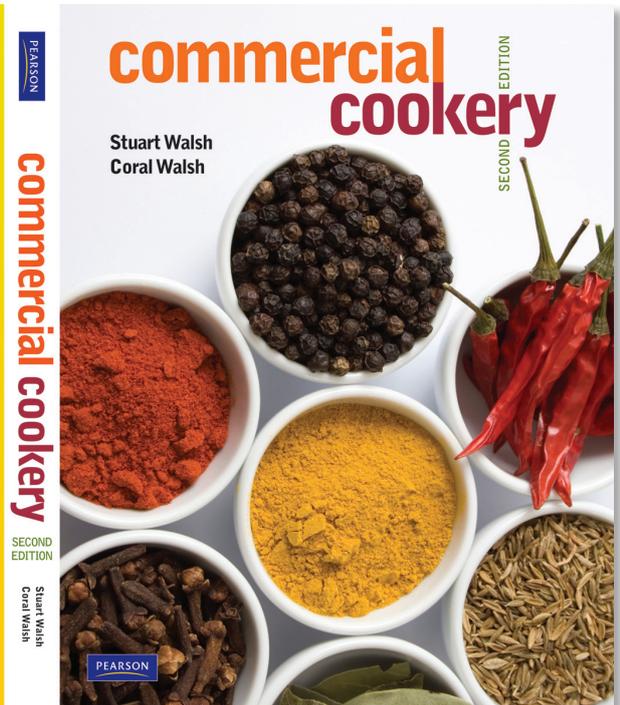
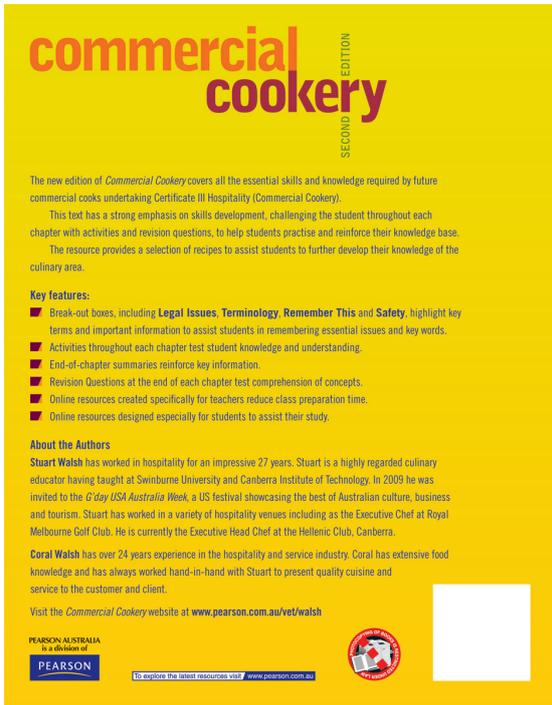
BEER BATTER

Ingredients

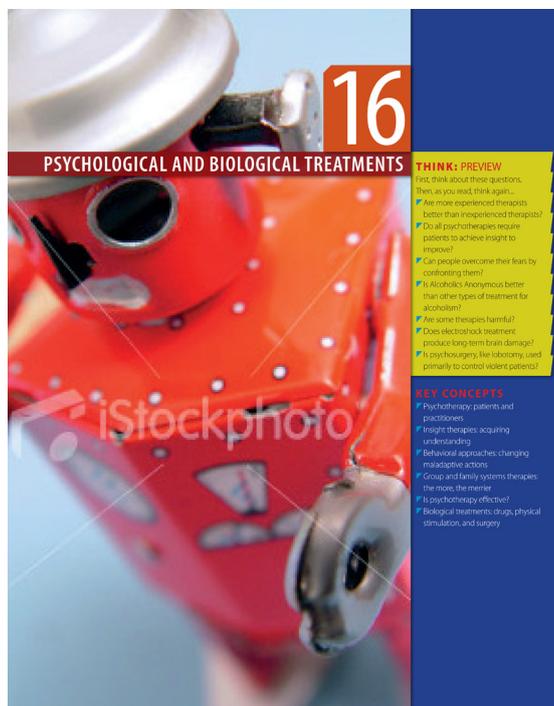
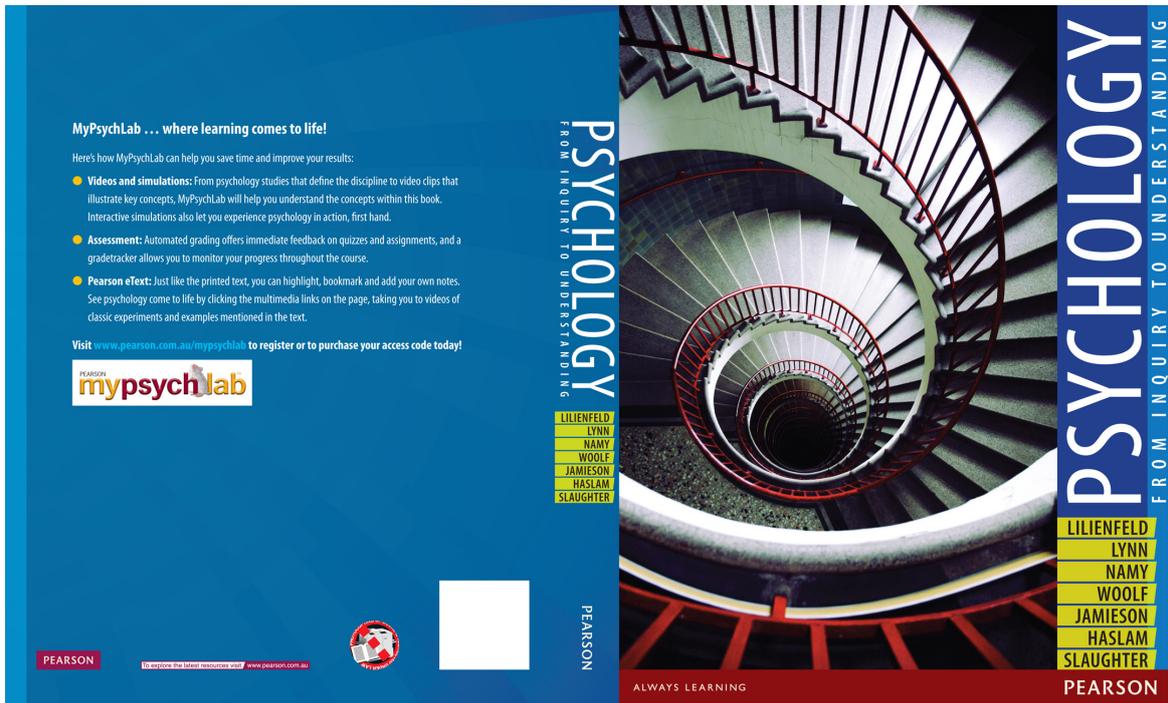
- 170 g flour, self raising
- 170 g flour, plain
- 170 g cornflour
- 2 g salt
- 750 ml beer
- 300 ml soda water
- 50 ml oil

Method

- Blend all dry ingredients.
- Blend all liquids.
- Combine all dry and wet ingredients to for a smooth batter.
- Rest for 30 minutes before using.



Cover design of *Commercial Cookery 2e* and *Event Management 4e* [Pearson Education, Sydney]



Cover design, title page from *Psychology: From Inquiry to Understanding* [Pearson Education, Sydney]

