

CHAPTER 5

Fruits and vegetables



ACCESS PRIOR KNOWLEDGE

- 1 Is a tomato a fruit or a vegetable? Justify your response.
- 2 For good health, you should 'eat a rainbow'. Outline what this means.
- 3 Explain the best way to prepare and cook vegetables to make the most of their nutrients.
- 4 Describe the physical, sensory and chemical properties of an apple.
- 5 Discuss the pros and cons of having seasonal fruits and vegetables available in supermarkets all year long.

5.1 Do you know your fruits from your vegetables?

Fruits and **vegetables** are the edible parts of plants.

Fruits contain the seeds of plants and are attached to the plant by a stem or stalk. Vegetables can be many different parts of the plant and grow in a large variety of ways.

fruits The edible parts of a plant that contain the seeds of the plant and are attached to the plant by a stem or stalk.

vegetables The edible parts of a plant. There are many different vegetables, and we eat different parts of the plant.

botanical Relating to plants and/or plant life.

Some vegetables are in fact **botanical** fruits, such as tomatoes, zucchini and eggplants. A significant difference between fruits and vegetables is that the carbohydrate in fruits is mainly sugar, whereas the carbohydrate in vegetables is mainly starch.

Fruits are generally sweet and served as desserts, while vegetables are treated as savoury foods.

Tasty Trivia

In some cultures, avocados are used in desserts. In Vietnam, Sinh To Bo is an avocado milkshake. A similar drink in Indonesia, an avocado shake with chocolate, is called Jus Alpukat.



Figure 5.1 Sinh To Bo

The ease with which fruits and vegetables can cross-breed has led to the development of many new fruits, and we will no doubt continue to see more developed in the future. The accidental **cross-pollination** of two apples produced the famous Australian Granny Smith apple.

cross-pollination The transfer of pollen from one plant to another.

5.1 LET'S COLLABORATE

Do you know what was produced by the crossing of a plum and an apricot? Which two fruits resulted in the nashi? Discuss other **hybrid** fruits with the person beside you. Can you think of any hybrid vegetables? Jump on Google and see whether you can add any more hybrids to your list.

hybrid An object that combines two different elements.



Figure 5.2 Do you recognise these hybrid fruits?

History of fruits and vegetables

The first forms of vegetables were wild plants eaten by hunter-gatherer tribes, who did not cultivate crops. They included edible roots, greens, nuts and berries. There is evidence of cultivation of fruit dating back over 8000 years. The first known fruits were apples and berries, such as strawberries and raspberries. References to food crops and the value of agriculture also occurred over 3000 years ago.

Hummingbird cupcakes



JAMAICA

Main tools and equipment

Knife, measuring spoons, measuring cups, fork, muffin tray, electric beaters

Production skills

Mashing, sifting, folding

Cooking process

Baking

Ingredients

					
⅔ cup self-raising flour	⅓ cup plain flour	½ teaspoon bicarbonate of soda	½ teaspoon ground cinnamon	½ cup brown sugar	⅓ cup desiccated coconut
					
10 g butter	1 small ripe banana, mashed	2 eggs	⅓ cup crushed pineapple	12 patty pan cases	


Icing

		
60 g cream cheese	1 teaspoon vanilla essence	1½ cups icing sugar

Method

- 1 Preheat oven to 160°C.
- 2 Line a muffin tray with 12 patty pan cases.
- 3 Sift flours, bicarbonate of soda and cinnamon into a large bowl.
- 4 Stir in sugar and coconut.
- 5 Add eggs, butter, banana and pineapple. Stir until just combined.

MAKES 12 CUPCAKES

 Preparation time: 20 minutes

 Baking time: 25 minutes

 Icing time: 15 minutes

 Total time: 60 minutes



- 6 Spoon into patty pan cases.
- 7 Bake for 25 minutes or until cakes spring back when gently touched.
- 8 Allow to cool on cake cooling rack.

Icing

- 1 Use electric beaters to beat cream cheese and vanilla until smooth.
- 2 Gradually add icing sugar until smooth.
- 3 Spread icing over cakes.

Evaluating

- 1 Evaluate the sensory properties of the dish.
- 2 Describe the role of the pineapple in these cakes.

- 3 Research the history of the hummingbird cake. What is the origin of its name?
- 4 Explain why these cakes are a 'sometimes' food, even though they contain fruit.
- 5 Analyse your effectiveness in the process of food preparation. Reflect on the production activity that you have just carried out. Complete the following sentences:
 - a 'My strength today was ...'
 - b 'What I can do to improve is ...'
 - c 'I encouraged and supported other students today by ...'
 - d 'I concentrated on the task today, particularly when I was ...'
 - e 'I learnt the following new skills ...'



Figure 5.3 Figs, quinces and pomegranates are mentioned in the Bible, the Talmud and the Qur'an.



Figure 5.4 Scurvy is caused by severe vitamin C deficiency.

The pyramids in Egypt have revealed evidence of onions, garlic, beans and radishes growing in that society. Vegetables were often the main source of food when meat was in short supply. As the ability to travel between countries increased, excesses of food crops were taken to other countries and this increased the variety of vegetables available.

The importance of fruit to maintain good health became evident when explorers started to travel on long sea voyages with a limited range of supplies on

board. The sailors suffered from a disease called scurvy, which is caused by a lack of vitamin C. Many people died because, even when they began to suspect it was due to a lack of fruit and vegetables, these could not be kept fresh for long periods on ships. Carrying lemon or lime juice as part of a sailor's rations helped solve the problem. Another solution was pickled cabbage (sauerkraut), especially when lime juice was used in the pickling process.

5.2 Traditional Aboriginal and Torres Strait Islander foods

For over 50 000 years, Aboriginal and Torres Strait Islander peoples have gathered many different types of native fruits and vegetables growing wild in Australia. There are plenty of native fruits and vegetables available, as long as you know when, where and how to find them. Depending on the season, some interesting finds include finger limes, bush bananas, wild watermelon, yams, wild grapes, pink beach apples, billygoat plums (complete with 50 times the amount of vitamin C of oranges), cockle berries, water lilies, wild beans and nuts.

Tasty Trivia

Many years ago, explorers used hollowed-out watermelons to carry water on long expeditions.

5.3 Structure of fruits: Physical properties

The classification of fruit is based on common characteristics between fruit. This may be structural – for example, apples and pears – or where they are grown, such as tropical fruit. How fruit is classified can vary, as some fruits may fit into more than one group or category.



Figure 5.6 Which of these tropical fruits do you like best?



Boab pod

Zamia palm seeds

Finger limes

Figure 5.5 These are examples of fruits native to Australia. Zamia palm seeds need to be treated before they are eaten, as they are poisonous when eaten raw.

DESIGN BRIEF: NATIVE AUSTRALIAN INGREDIENTS

You have been asked to prepare a recipe for a Western Australian travel company that uses an ingredient native to Australia. They plan to showcase your recipe and the food that you have made at a travel expo to be held at the weekend. Use the internet to locate a recipe that contains a native Australian fruit or vegetable and then research where and how you can purchase this fruit or vegetable.

Work with your teacher to purchase the ingredient and prepare the recipe. Evaluate and analyse the recipe in terms of:

- 1 ease of purchasing the ingredient
- 2 cost of the ingredient
- 3 length of time to actually get the ingredient delivered
- 4 sensory properties – appearance, aroma, taste/flavour and texture.

5.2 LET'S COLLABORATE

What do you know about fruit classification? The table below is about classification and is partly completed.

- 1 Working in groups, copy the table into your notebook or onto your computer and complete it. Where only one example is given, suggest at least two more.
- 2 Identify any fruits that do not fit into these groups.

Classification	Description of the common characteristics	Examples
Citrus	The part most commonly eaten is the soft and juicy segments. The fruit is covered in a thin, fragrant, shiny rind over a white pith. The rind is often used in food preparation. Some citrus fruits are sour and some are sweet.	Mandarins, tangelo
Pomes		Apples, pears
		Pineapples, bananas, mangoes
Stone or drupes	One stone in the centre of the fruit surrounded by soft, sweet flesh and a thin skin that can be eaten. Often eaten raw, but can also be cooked.	
Vines		Grapes
Melons		Rockmelon
	Small summer fruit, often deep red or purple in colour; the seed is often on the outside. They make tasty jams, but are also eaten raw.	
Tropical		

Figure 5.7 Classification of fruit

5.4 Primary production of fruit



Figure 5.8 The primary steps in processing fruit.

5.5 Sustainable practices for fruit

Fruits and vegetables are cheaper and at their best when purchased in season, and Australia is well known for its fresh and tasty fruit. But when you visit the supermarket you are always able to purchase fruits out of season because they are imported from other countries – for example, oranges from Spain, cherries from the United States, blueberries from New Zealand and coconuts from Samoa. Why do we have out-of-season non-local fruits in our supermarkets and should we buy these? If we purchase locally grown Australian fruits and vegetables, it creates jobs and boosts our economy. Australia has the resources to produce enough fresh food to feed everyone, so do we really need to import fruits and vegetables from other countries?

Many people choose not to buy foods out of season because of the effects on our local farmers and environment. Imported fruits and vegetables have a high carbon footprint, travelling a number of **food miles** before hitting our stores and tables. So how important is it to be able to eat cherries all year round? Only you can be the judge of that.

food miles The distance food products travel from where they are produced to where they are purchased and consumed.

5.6 Best-quality fruits: Sensory properties

When buying fruit, you need to look out for indications of quality (see Figure 5.9).

Fruits should be stored carefully to maintain their properties. Most fruits are best kept in the fridge below 5°C to ensure the longest shelf life possible once they have ripened. Remember to wash your fruit, but only immediately before you are about to eat it.



Bananas hate being stored in the fridge; they like to be kept at room temperature.

The cold temperature causes the discoloration of the flesh. Put one in the fridge at home for the next few days and check this for yourself!



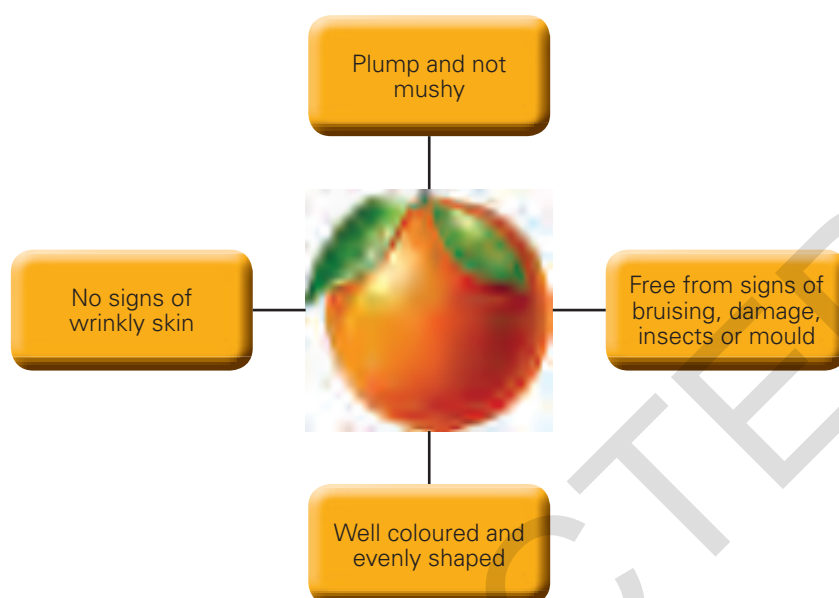


Figure 5.9 The characteristics of high-quality fruit.

5.3 ACTIVITY

Comparing fruit

- 1 Compare different fruits in a series of Venn diagrams. Use the example below to get started.
- 2 Complete a Venn diagram for two fruits – for example, pears and apricots.
- 3 Complete a Venn diagram for three fruits – for example, Granny Smith apples, cherries and strawberries.

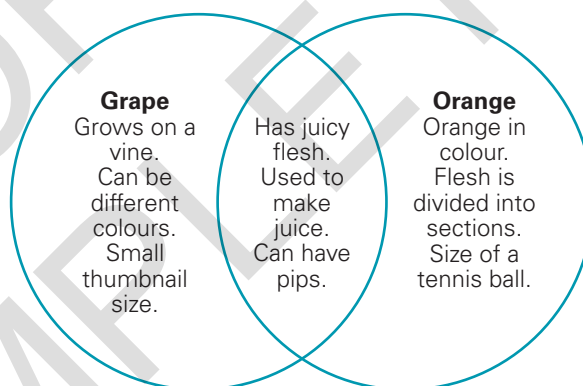


Figure 5.10 Comparing grapes and oranges

5.7 Nutritional value: Chemical properties

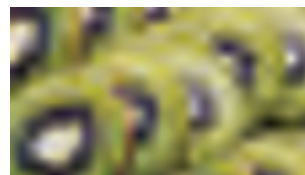
For most of us, fruits and vegetables are an everyday part of our diet – although probably not in the amounts that nutritionists recommend.

What fruits and vegetables should you eat? A simple suggestion is to consume the rainbow for the best mix of nutrients provided by fruit and vegetables. If you mix the colours, you will naturally be eating a mix of

essential vitamins and minerals. Mix as many colours as possible at every meal; the deeper the colour, the higher the nutritional value.



A kiwifruit contains twice as much vitamin C as an orange.



The value of eating plant foods is becoming more and more apparent. When people refer to fast food, they are usually referring to hamburgers or fish and chips, but what could be faster than an apple or celery stick? Let's look at a few natural 'fast foods'.

Bananas offer:

- a biodegradable package
- flexibility in how they can be processed
- flexibility in how they can be prepared
- many different ways of serving
- long-lasting energy.

Carrots offer lots of vitamins, minerals and dietary fibre.

The variety of fruits and vegetables available means it is easy for them to be part of our everyday diets.

Some interesting fruit and vegetable facts include:

- Fruits and vegetables provide many vitamins and minerals.
- They add carbohydrates to the diet in the form of dietary fibre, starch and sugar.
- They are a source of incomplete protein.
- Different colours of fruits and vegetables are broadly linked to the different nutrients.
- Combinations are essential to get all the benefits.
- Vitamin C is usually associated with green leafy vegetables, and with orange and red fruits and vegetables.
- Vitamin A is usually associated with yellow and green leafy vegetables as well as green and yellow fruit.
- White, cream and yellow vegetables are often high in carbohydrates such as starch, sugars and dietary fibre.
- Combinations are important because they help to absorb the good minerals such as potassium, iron, iodine and magnesium.
- The nutrient content changes as fruits and vegetables ripen.



Figure 5.11 Bananas and carrot sticks are perfect for eating on the run.

Tasty Trivia

Black or really ripe bananas used to be the favoured energy food for marathon runners and cyclists because they are an instant source of glucose or energy that the body can use without digestion. Today, athletes use manufactured sources of glucose.



5.4 INVESTIGATE IT

Have a look on the Nutrition Australia website for information about packing a lunchbox.

- 1 Analyse the contents of your lunchbox – does it contain enough fruits and vegetables?
- 2 Now think about what you had for dinner last night. How was this meal in terms of nutrition?
- 3 Set yourself an improved lunchbox challenge for one week, reflecting the needs identified from your analysis.

5.5 LET'S COLLABORATE

Working with a partner, name one fruit and one vegetable for each colour of the rainbow – red, orange, yellow, green, blue, indigo, violet. Select different fruits and vegetables from those in Figure 5.12.



Figure 5.12 Choose fruits according to the colours of the rainbow to ensure you eat a balanced variety.

5.6 LET'S COLLABORATE

- 1 Record all the fruits and vegetables that you consumed yesterday. Don't forget to include processed fruits or vegetables such as sultanas in muesli, potato crisps or fruit juice.
- 2 Create a class list.
- 3 As a class, categorise the fruit, creating a 'target for top foods'. Using the dartboard model (see Figure 5.13), place them into categories: fresh, partly processed, highly processed.
- 4 Reflect on the information provided in your target. Prepare a list of your top five recommendations for your class based on the information presented.
- 5 Write an article that could be used on your class or school blog, including your recommendations and the reasons behind these.

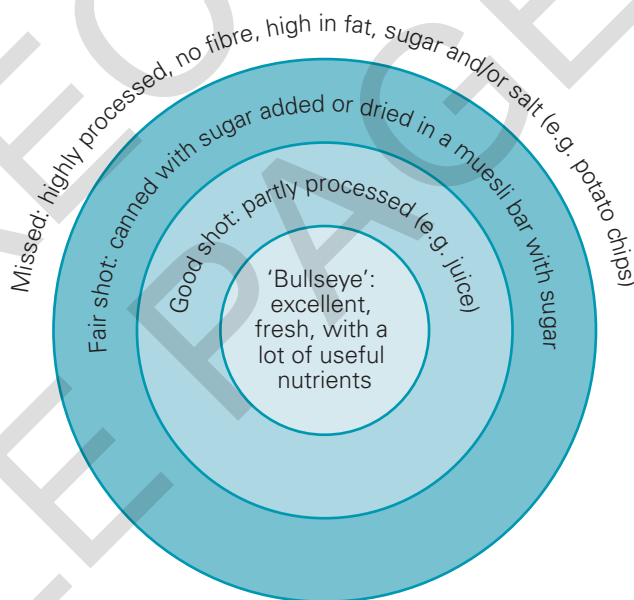


Figure 5.13 Target the bullseye for best value in fruit and vegetables.

Tasty Trivia

Are you getting enough?
Fewer than
4 per cent

of Australians eat enough vegetables every day. The average Aussie only eats half the recommended amount. What vegetables have you eaten today?

You had better get munching!



CREATE A SOLUTION

Are you getting enough of the right food each day? List the fruits and vegetables you have eaten in the last week.

Design a meal plan that will ensure you increase the amount of fruits and vegetables you are eating every day, swapping out the 'sometimes' foods for 'everyday' foods. See whether you can stick to your new meal plan.

Get the best from the rainbow

When preparing and cooking fruits and vegetables, it is important to prepare food in a way that optimises its nutritional value.

Unfortunately, the nutrients associated with fruit and vegetables can be lost in food preparation and processing. What were once excellent sources of taste, colour, texture and nutrients can be spoilt by inappropriate preparation and cooking techniques. Consider the following:

- Boiling results in the loss of some water-soluble vitamins, so steam where possible.
- Cook fruits and vegetables as whole as possible to preserve nutrients.
- Slice just before serving to preserve nutrients.
- Fruit and vegetable skins and the area just below the skin are nearly always packed with nutrients, so try to keep the skin on.
- Don't soak fruits or vegetables before serving or cooking.
- Try to eat fruits and vegetables as fresh as possible for maximum nutrients.
- Processing methods used for preservation do not always remove all nutrients. For example, frozen fruit and vegetables are picked fresh and frozen quickly.

REFLECT ON LEARNING

- 1 Outline why an avocado is a vegetable – a fruit vegetable, but classified as a vegetable.
- 2 It is important to eat the rainbow. Explain why this is so.
- 3 Describe one preparation technique that will result in the retention of nutrients when cooking.
- 4 Identify one cooking technique that will result in the loss of nutrients.
- 5 It is often said that 'fresh is best'. Do you agree with this statement? Justify your response.



5.7 ACTIVITY

A fruit quiz

Create an online quiz (like Kahoot) with facts about a fruit to test the fruit knowledge of other students in the class. The facts should go from the hardest to the easiest. Set up the quiz so that students score points according to how few facts they need before they guess the correct answer.

Here is an example:

- 1 Until the nineteenth century they were considered poisonous in Argentina.
- 2 About 9.4 kg are consumed each year in Australia (about 500 g per person).
- 3 The fruit is covered in tiny seeds, rather than the seeds being in the centre.
- 4 They are a member of the rose family.
- 5 Australia's most popular berry fruit.

5.8 Cooking with fruit

Fruits can be cooked whole or in large portions, referred to as a **compote**; stewed, baked, mashed up or in a **purée**; or left raw.

You will be familiar with fresh fruit in dishes such as fruit platters and fresh fruit salads, which require minimal preparation. Fruit is also available dried, canned and frozen. In Australia, fruit is most often associated with sweet dishes. However, in other cultures, such as Middle Eastern societies, many meat dishes, such as tagines, contain dried fruit – like dried apricots, prunes, dates or sultanas. In Asia, sweet and sour dishes require the addition of a fruit such as pineapple to provide the sweet element of the dish.

compote Fruit stewed or cooked in a syrup, usually served as a dessert.

purée To blend, process, sieve, mash and/or strain cooked food to the consistency of a soft paste or thick liquid.



Figure 5.14 Next time you make a savoury salad, add a fruit – you will be amazed at how well fruit can work in salad.



5.8 LET'S COLLABORATE

Can you think of other countries with traditional dishes that include fruit? In pairs, list as many as you can.

Check out apples

Apples are associated with many myths, legends and fairy tales. The apple is the most popular fruit in Australia. The best loved older varieties are Granny Smith and Red Delicious, and the most popular new varieties are Royal Gala and Australian Fuji. Many varieties are available to suit a range of tastes and food-preparation situations.

DESIGN BRIEF: NEW FRUIT HERO

- 1 Choose a fruit with which you have not worked before.
- 2 Design a product that will showcase this fruit as the 'hero', and thus encourage more people to try it.
- 3 Prepare a sensory analysis card that you can give to people who taste your final product. Include a tasty trivia fact about the piece of fruit with which you are working.



5.9 ACTIVITY

Test your tastebuds

There are many different varieties of apples – have you thought about the differences in taste, texture or appearance? Are all apples the same?

- 1 Select four different apples that are in season at the same time, one classified as a cooking apple, such as a Granny Smith, and the others classified as eating apples, such as Royal Gala, Pink Lady and Jonathan.
- 2 Brainstorm words that could be used to describe the taste, texture and appearance of apples – for example, sour, soft.
- 3 Give an opinion about each apple. Select the preferred apple. Justify your choice based on the properties of the apple.

The Apple and Pear Crumble on p.122 is a good dessert as it has a low **glycaemic index (GI)**, which means that not only is it tasty, but unlike most desserts, you feel full for some time after you have eaten because it breaks down slowly and takes some time to digest.

glycaemic index (GI) The ranking of carbohydrates according to their effect on our blood glucose levels.



Apples are able to float on water because they contain air.



Apple and pear crumble

Main tools and equipment

Knife, spoon, measuring spoons, measuring cup, zester, ramekins, bowl

Production skills

Coring, peeling, chopping, rubbing in

Cooking processes

Simmering, baking

Ingredients

Filling

					
1 Granny Smith apple	1 Packham pear (firm)	30 ml grape or apple concentrate (available in health food stores)	½ tablespoon water	½ cinnamon stick	2 cloves

Crumble

				
3 tablespoons wholemeal flour	3 tablespoons plain flour	¼ teaspoon cinnamon	¼ teaspoon mixed spice (or nutmeg/allspice/clove)	½ teaspoon baking powder
				
40 g butter	1 tablespoon rolled oats	1 tablespoon grape or apple concentrate or honey or brown sugar to bind		
				
¼ cup shredded coconut	1 tablespoon slivered almonds	1 small lemon (zest only)		

MAKES 12 PORTIONS



Preparation time: 30–40 minutes



Cooking time: 20–30 minutes



Serving and presentation time: 5 minutes



Total time: 55–75 minutes



- 1 To make the filling, peel, core and chop the apple and pear.
- 2 Place the apple and pear into a saucepan with the grape or apple concentrate, water and whole spices. Simmer on medium heat until apples are tender but not mushy. Take out spices.
- 3 Place the apple mix into individual ramekins.
- 4 For the crumble, mix together flours, spices and baking powder.

- 5 Rub in butter until mixture is crumbly.
- 6 Mix in rolled oats, juice concentrate (or honey or brown sugar), coconut, almonds and lemon zest until it clumps together a little.
- 7 Add a thick layer of crumble over the top of apple mix. Bake at 190°C for 20–30 minutes, until golden.
- 8 For a fuller flavour, drizzle a little olive oil over the top of the crumble before serving.

- 1 Write the classification of the following fruits: lychee, strawberry, lemon and blueberries.
- 2 Outline the benefits of eating two pieces of fruit every day.
- 3 Compare the characteristics of a citrus fruit and a pome fruit.
- 4 List two different methods of cooking fruit. Describe the impact this cooking method has on the properties of fruit.
- 5 Name a recipe where fruit is used in a savoury meal. Prepare this savoury meal and evaluate the sensory properties.



- It is said that an apple a day keeps the
- doctor away. Can you think of other
- myths, nursery rhymes or legends
- associated with apples?



Figure 5.15 Make sure to add different colours, shapes and textures when you prepare a fresh fruit dish.

5.10 LET'S COLLABORATE

Compare four apples before and after cooking for taste, texture, appearance and the impact of air, or **oxidation**.

- 1 Working in a group of four, select one apple of each variety.
- 2 Cut each apple in six pieces, leave the skin on.
- 3 Use one piece to test oxidation, four pieces for tasting, and reserve one piece to cook.
- 4 Oxidation: Leave one piece sitting on a plate for as long as you can (at least as long as it takes to complete the other steps). Observe what happens. When the tables for the other steps have been completed, set up a table like the one below and record your results.



Figure 5.16 Different apples have different tastes and textures.

oxidation The combining of a substance with oxygen.

Oxidation	Taste	Texture	Appearance
Apple 1			
Apple 2			
Apple 3			
Apple 4			

- 5 Uncooked pieces: Taste each apple. In your book set up a table like the one below and record your results.

Uncooked pieces	Taste	Texture	Appearance
Apple 1			
Apple 2			
Apple 3			
Apple 4			

- 6 Cooked pieces: Place the apple pieces in a small saucepan or microwave dish with 1 teaspoon water, microwave for one minute or simmer gently for two minutes. After cooking, set up a table like the one below and record your results.

Cooked pieces	Taste	Texture	Appearance
Apple 1			
Apple 2			
Apple 3			
Apple 4			

- 7 Compare and assess the results for each apple.
- 8 Select the preferred apple. Justify your choice based on the properties of the apple.

5.9 Structure of vegetables: Physical properties

The classification of vegetables is simpler than it is for fruit. Vegetable classification is based on the part of the plant that is eaten – for example, for leaf vegetables like lettuce and cabbage you eat the leaves of the plant.

Knowing the classification is useful, as often vegetables of the same classification can be prepared in similar ways. This means that you can often substitute a vegetable of a similar classification – for example, in a stir-fry, if the recipe asked for a Chinese green such as bok choy and you could not obtain it, you could substitute it with a similar green, leafy vegetable such as spinach.



5.11 ACTIVITY

Classifying vegetables

Using leaf vegetables as a guide, investigate four examples of vegetables for each of the following classifications:

- tuber
- bulb
- flowers
- fruit
- sprout
- root
- shoots
- stems
- seed
- fungus.

Use figure 5.17 to help you.

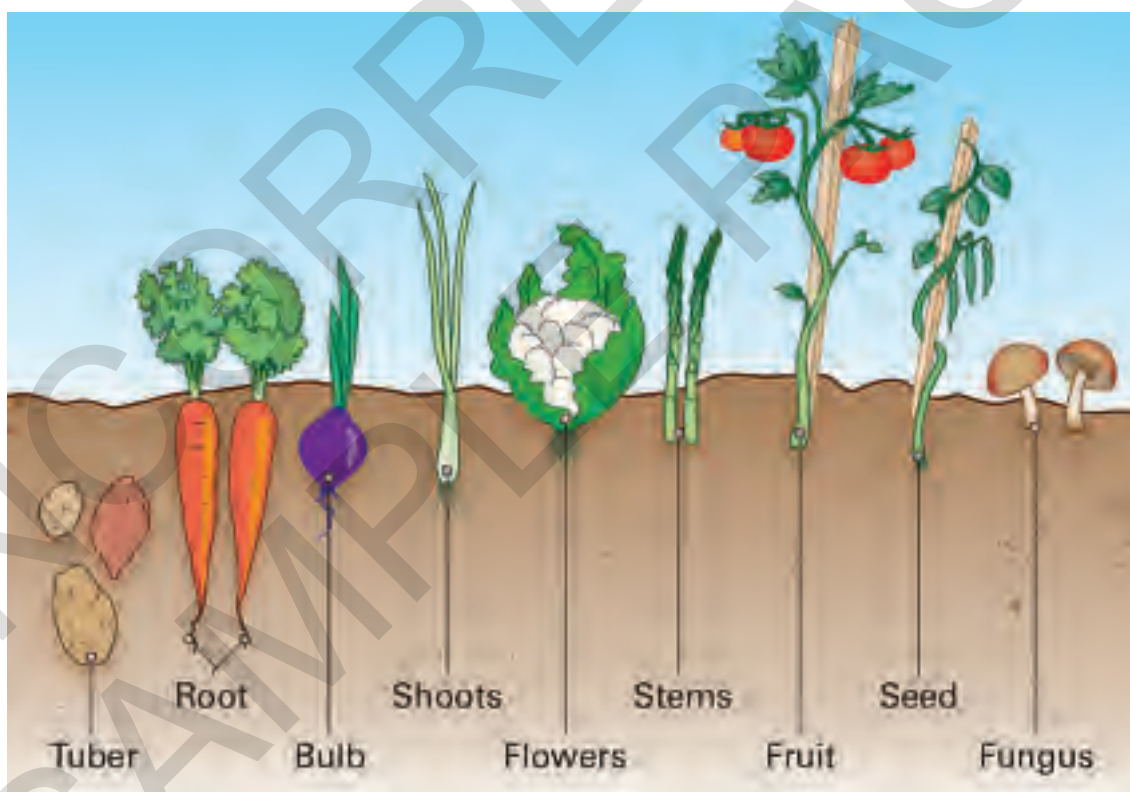


Figure 5.17 Classifications such as tuber, root and bulb vegetables can be difficult, as they all grow in the ground, but are different parts of the plant.

Rice paper rolls



VIETNAM













Main tools and equipment

Knife, bowl, grater, chopping board, measuring spoon

Production skills

Grating, slicing, chopping, rolling

Ingredients

					
30 g rice vermicelli	1 cup cooked chicken, sliced	¼ continental cucumber, julienned	¼ large carrot, grated	20 g bean sprouts	¼ red capsicum, thinly sliced
					
2 teaspoons sweet chilli sauce	6 rice paper sheets	1 teaspoon coriander, finely chopped	1 teaspoon mint, finely chopped	6 mint leaves	6 coriander leaves

Method

- 1 Soak vermicelli for 10 minutes in warm water and drain. Cut into 5 cm lengths.
- 2 Combine chicken, vermicelli, all vegetables, sweet chilli sauce and chopped herbs. Mix well. Divide into 6 portions.
- 3 Dip 1 sheet of rice paper in hot water for about 30 seconds or until it becomes soft. Spread on your bench.
- 4 Place vermicelli and vegetables in a bundle with the top edge of vegetables level with the edge of the rice paper.
- 5 Fold in edges so that sides are not open. When halfway through rolling, add a sprig of coriander and a mint leaf as the garnish. They should be encased in rice paper, but visible.
- 6 Repeat steps until you have 6 rice paper rolls.
- 7 Serve with Nuoc Cham dipping sauce, if desired.

MAKES 6



Preparation time: 30–40 minutes



Serving and presentation time: 10 minutes



Total time: 40–50 minutes





5.12 ACTIVITY

Vegetable passports

Randomly select a particular vegetable and design a 'passport' for the vegetable. This activity could also be completed for fruit. An example of a completed 'passport' follows:



Vegetable: Capsicum.

Name on birth certificate: Capsicum annum.

Family name: Fruit vegetable.

AKA (also known as): Pepper, sweet pepper.

Birthplace: South America.

Family relations: Paprika, pimiento and different chilli varieties.

Best friends: Onions, garlic, tomatoes, eggplant, olive oil, lamb, chicken.

Report card: Very high in vitamin C, especially red capsicum. Red capsicums are also rich in carotene, which is converted to vitamins in the body. All capsicums are a source of dietary fibre, folic acid and potassium.

Best address: Crisper in the refrigerator.

Best appearance: Firm, crisp flesh, no blemishes on the skin, bright colours.

Hates: The confusion caused when some people call it a capsicum and some people call it a pepper.

Loves: Being grilled until the skin is black and can easily be removed to leave soft, sweet flesh; being stuffed with rice and flavourings to create a terrific satisfying meal.

Best skills: Disguising itself: changes colour as it ripens and becomes sweeter; also comes in a range of colours – orange, purple, red and green.

Favourite holiday spots: Salads, stir-fries, casseroles, fried rice.

Undercover part-time occupation: Capsicum spray for police; chemical components used in modern medicine to treat toothache, arthritis and respiratory disorders.

DESIGN THINKING: DESIGN YOUR DIP!

The carrot, ham and lavash roll (recipe on p.128) is a tasty lunch treat. Included in the recipe is one tablespoon of dip, which provides colour, flavour and texture for this product. You need to design your own dip for inclusion in your lavash roll.

Investigating

- 1 Research different ingredients used in dips.
- 2 Investigate different dip recipes (check out some ideas in this book and *Recipes for Food Technology: Middle Secondary*)
- 3 Sample different dips if available to discover what flavours you enjoy.

Generating

- 1 Brainstorm a list of different dip options suitable for your lavash roll.

- 2 Decide on your final option and justify your choice.

Planning and managing

- 1 Identify the tools and equipment you will need to prepare your dip.
- 2 Prepare a work plan to ensure you are able to produce your dip and lavash roll in a timely manner.

Producing

Prepare your dip and then use in the lavash roll recipe.

Carrot and ham lavash rolls



Main tools and equipment

Bowl, knife, grater, metal spoon, measuring spoons, spatula, chopping board

Production skills

chopping, grating, rolling up

Ingredients

			
1 tablespoon designed dip	1/2 tomato, seeded and chopped finely	1/2 tablespoon chives, finely chopped	1/2 carrot, peeled and grated
			
1 tablespoon corn kernels	2 pieces lavash bread	2 slices leg ham, sliced	

Method

- 1 In a small bowl, mix tomato, chives, carrot and corn.
- 2 Spread lavash bread with dip. Top with ham.
- 3 Spread each piece of lavash bread evenly with tomato and carrot mix.
- 4 Roll up tight to enclose the filling and serve.

Evaluating

- 1 Reflect on the decisions that you made during the making of the lavash roll. List each decision you had to make. Explain the impact that each decision had on the outcome of the end product.
- 2 Generate a list of other ingredients that could be used in this lavash roll.
- 3 The lavash roll is an ideal lunchbox snack. Explain how you could ensure that the ingredients in the roll remain of optimal quality when you eat it at lunchtime.

MAKES 2 ROLLS



Preparation time: 20 minutes



Serving and presentation time: 5 minutes



Total time: 25 minutes



5.10 Primary production of vegetables

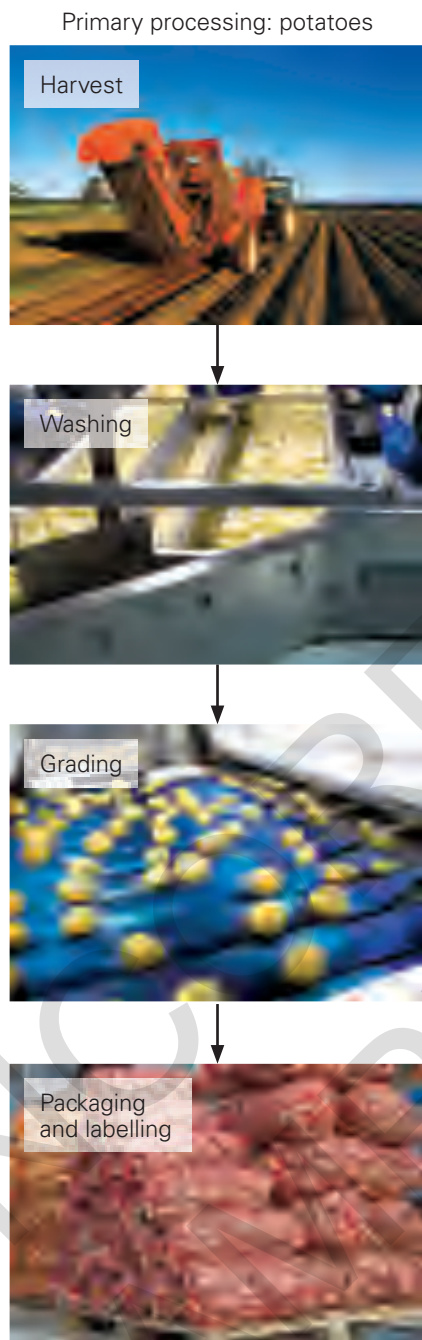


Figure 5.18 The primary steps involved in producing potatoes.



The green colour seen on old potatoes is caused by the toxin solanine, which can be poisonous if eaten.



5.11 Best-quality vegetables: Sensory properties

When buying vegetables, ensure that produce has the characteristics shown in Figure 5.19.

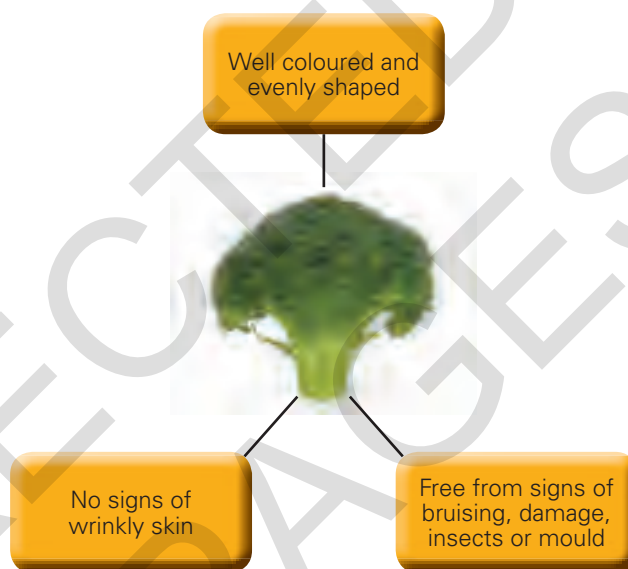


Figure 5.19 The characteristics of high-quality vegetables.

Vegetables should be stored carefully to maintain their properties. Most vegetables are best kept in the fridge below 5°C to ensure the longest possible shelf life; the exceptions are potatoes and onions, which should be stored in a cool, dark, dry place. Remember to wash your vegetables, especially your leafy greens, but never wash mushrooms – just give them a wipe down to remove any dirt as they will absorb water and go slimy when stored.

5.12 Cooking with vegetables

The versatility of vegetables means they can be prepared and cooked in many different ways and in many cases they can be eaten raw.

Do you eat five vegetables a day?

The recommendation is to eat five serves of vegetables every day. Soup in winter and salads in summer are a tasty, quick and effective way to consume five vegetables in one dish. Five vegetables in one soup could give you a

warming and filling lunch and help to solve the challenge for one day. Create your own soup or make the Vroom Veg Soup below.

You may use fresh herbs like parsley, thyme and bay leaf, or chicken, beef or vegetable stock cubes.

Produce your soup following the method in the recipe.

5.13 LET'S COLLABORATE

- 1 Identify the cutting techniques in Figure 5.20 from left to right. Provide a definition for each of the techniques illustrated.
- 2 In groups, discuss how you might use each of these carrot cuts.



Figure 5.20 Different cutting techniques allow us to use the carrot in different ways in different dishes.

DESIGN BRIEF: VROOM VEG SOUP

Vroom Veg Soup is an example of an ideal meal-in-one soup. Design a five-vegetable soup. Give it a name representing the goodness in the soup, like Vroom Veg Soup.

The recipe gives you some suggestions about flavourings and quantities. If you could design a five-vegetable soup, what would you put in it? You can also add a meat ingredient if you wish.

Investigating

- 1 Make a list of the vegetables that could be used in a soup.
- 2 Make four different possible combinations of vegetables that would be ideal for a soup. Think of colour, texture variations and taste variations.
- 3 Discuss what will happen during cooking; compare the impact on properties of cooking a potato, tomato, carrot and celery.
- 4 Soup usually has different flavourings. How can the soup be flavoured?

Generating

- 1 Select your preferred combination. What will be the best way to prepare the vegetables in the soup: dice, slice or purée?

Planning and managing

- 1 Using graphical representation, design how you will present your soup, including a garnish.
- 2 Determine the tools and equipment you will need to use, making sure you know how to use each item safely.
- 3 Prepare a production plan to ensure you are organised and ready for production.

Vroom veg soup

Main tools and equipment

Chopping board, knife, measuring spoon, measuring jug, measuring cups, grater, scale, wooden spoon, large saucepan






Production skills

Dicing, grating

Cooking processes

Saut  ing, simmering

Ingredients

				
1 small onion (approx. 60 g), finely diced	1 teaspoon olive oil	1/2 medium potato (approx. 50 g), diced	1/2 medium sweet potato (approx. 50 g), diced	1/2 medium carrot (approx. 60 g), grated
				
1/2 stick celery (approx. 30 g), diced	500 ml water	1 vegetable stock cube		
				
1/2 cup corn kernels (fresh, canned or frozen)	1/4 cup orange lentils	1 bay leaf		
				
pepper for flavouring	1 teaspoon fresh parsley, finely chopped (garnish)	1 teaspoon thickened cream (garnish)		

SERVES 2



Preparation time: 30 minutes



Cooking time: 25–30 minutes



Serving and presentation time: 5 minutes



Total time: 60–65 minutes

Vroom veg soup – continued

Method

- 1 Sauté the onion in the olive oil until it is soft and transparent. Be careful not to let it burn.
- 2 Add the potatoes, carrot and celery, and sauté for 3 minutes.
- 3 Add the water, stock cube, corn and lentils. Add the bay leaf. Bring to the boil.
- 4 Cover with a lid, turn the heat down and simmer for 15 minutes.
- 5 Check the flavouring and add pepper if needed.
- 6 Garnish with chopped parsley and cream. Can be served with bread.

Evaluating

- 1 Explain how the preparation process has created different textures.
- 2 Suggest two ways in which you would change the vegetables to give different flavours. Remember to describe how you would prepare the vegetables.
- 3 The lentils, potato and corn help to thicken the soup. Identify two other ingredients that could be used to thicken the soup.
- 4 This soup is not a rainbow. Suggest which vegetables could be added to make a rainbow.
- 5 Reflect on your work practices. Describe where you went well, providing evidence to support your discussion. Describe an area where you would like to focus on improving when next designing.

DESIGN BRIEF: A BURGER FOR VEGETARIANS

Your family is having a barbecue. One of the guests is a vegetarian and you do not want them to feel left out. Design and create a vegetarian burger. Vegetarian burgers can often be dry or not have much flavour, so the goal is to make a tasty vegetarian burger. What will make it work? It needs:

- 1 an ingredient to hold it together
- 2 to contain similar nutrients to meat (what are they?)
- 3 to have an interesting colour and texture to make it appealing
- 4 to be tasty.

Investigating

Start with a basic recipe such as the Sweet Potato and Chickpea Burger recipe on p.133 and offer variations on this.

Generating

- Generate a list of possible ingredient ideas to use in your burger.
- Decide on your final option.

Planning and managing

- Develop your production plan.
- Design how you will present your burger, and include annotations.

Sweet potato and chickpea burger

Main tools and equipment

Bowl, measuring spoons, peeler, zester, wooden spoon, frying pan, saucepan















Production skills

Peeling, chopping, mashing, shaping, zesting

Cooking processes

Frying, grilling

Ingredients

				
250 g sweet potato, peeled, cut into 2 cm pieces	1 can (125 g) chickpeas, drained and mashed	1 tablespoon wholegrain breadcrumbs	1 spring onion, finely sliced	½ teaspoon finely grated lemon rind (zest)
				
¼ teaspoon ground cumin	Salt and pepper	1 egg		
				
2 teaspoons oil	1 wholemeal or seeded roll, split	2 teaspoons chilli sauce or 2 teaspoons tomato relish		
				
½ tomato, sliced	2 teaspoons cucumber and yoghurt sauce (optional)	Shredded lettuce or baby rocket leaves		

SERVES 1



Preparation time: 40 minutes



Cooking time: 12–15 minutes



Serving and presentation time: 5 minutes



Total time: 57–60 minutes



Sweet potato and chickpea burger – continued

Method

- 1 Cook the sweet potato in a medium saucepan of water for 4 minutes or until tender, or microwave for 3 minutes. Drain.
- 2 Place in a bowl and mash coarsely. Add the chickpeas, breadcrumbs, spring onion, lemon rind (zest), cumin, pepper, salt and egg. Stir thoroughly to combine.
- 3 Shape into a patty. Place on a plate, cover with plastic wrap and refrigerate to chill.
- 4 Heat the oil in a small non-stick frying pan over a medium heat. Cook the patty for 4 minutes on each side. The patty should be heated through.
- 5 While the patty is cooking, grill the cut side of the roll until toasted.
- 6 Spread the chilli sauce or tomato relish onto the roll and add tomato slices. Place the burger on top, add the yoghurt sauce if desired and top with lettuce.
- 7 Serve.

Evaluating

Look at the requirements in the design brief. Did you create a solution by fulfilling all the requirements? Respond to each of these requirements.

- 1 'Vegetarian burgers can often be dry or not have much flavour.' How well does your burger fit this criterion from the brief? Evaluate the burger for taste and texture. Use the hedonic scale for your taste test. Justify the position on the scale using descriptive words.
- 2 Explain how well the burger held together. Suggest a change if it did not hold together.
- 3 Explain how the burger met the requirements of 'interesting colour and texture to make it appealing' and 'tasty'.
- 4 Discuss alterations you could make to the ingredients if you made it again.

Tasty Trivia

Fruits and vegetables feature in many nursery rhymes and jokes. How many can you think of? Here are two to start.
What vegetables do sailors hate? Leeks!
What is the fastest vegetable? A runner bean!

Check out potatoes

To raise awareness of the role the potato can play in defeating hunger and poverty in the world, the Food and Agriculture Organization (FAO) of the United Nations declared 2008 the International Year of the Potato. The Year of the Potato was also intended to highlight its considerable flexibility in food cooking and ease of growing in many different climates.

In the world fight against hunger and malnutrition, the potato can contribute a significant proportion of the recommended daily allowance of some minerals and vitamins – enough to be a lifesaver for many people.

An average potato with skin:

- contains 600 mg potassium – comparable to a banana

- has more iron and vitamin C than half a cup of spinach
- is an important source of vitamin B and natural fibres
- is high in carbohydrates.

The average intake of potatoes consumed by Australians is more than 60 kg per person each year, which is a lot of mash, chips and baked potatoes. In Australia, potatoes are by far the largest vegetable crop in terms of area and production, with 1.2 million tonnes grown annually.



Figure 5.21 Do you know your potatoes?



In the French language, 'potato' and 'apple' are the same word. The potato is *pomme de terre*, translated as 'apple of the earth', and the apple is called *pomme*.



5.14 ACTIVITY

Favourite veggies

- 1 Interview students or adults and ask them about their two most favourite vegetables. Try to interview 20 people – 10 males and 10 females. Greater comparisons in data could be achieved by different students interviewing children under five, primary school age, Years 7–9, Years 9–12, young adults and older adults. Compare the results for different ages and sexes. Can you see any similarities?
- 2 Using a computer, create a bar graph similar to the one displayed in Figure 5.22 to show your results. Compare the results on your graph with those in Figure 5.22.
- 3 Compare the types of vegetables consumed in your class with those produced in Australia as a whole. Suggest possible reasons for differences.
- 4 Explain how these results compare with your personal tastes in vegetables.

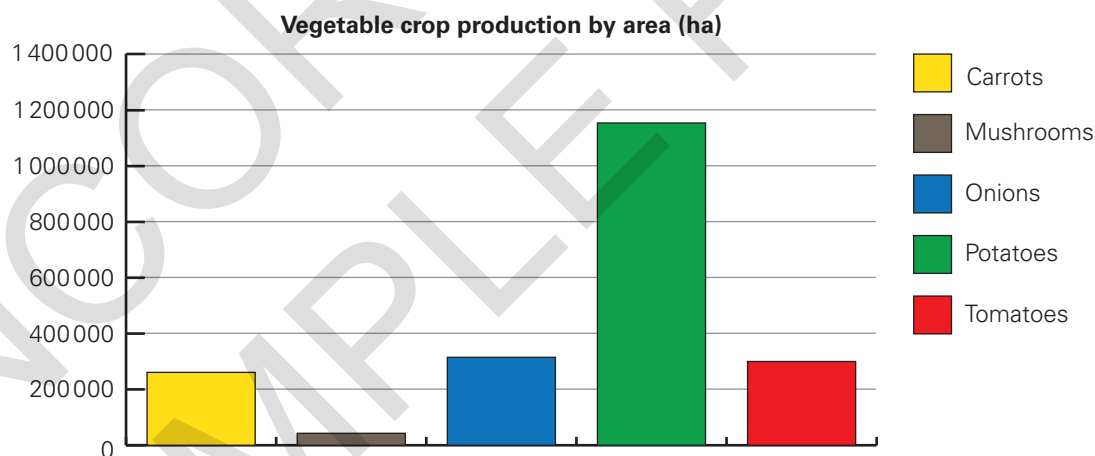
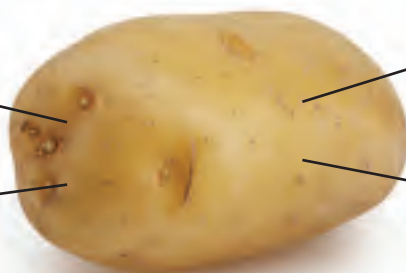


Figure 5.22 Vegetable crop production (tonnes) in 2014–15

A total of 11 acres of potato crop were recorded near Sydney in 1797, soon after the arrival of the early British settlers.

The potato is the world's fourth most popular food crop.



Some 5500 varieties have been cultivated over thousands of years.

Following their conquest of the Inca civilisation in 1532, the Spanish conquistadors took not only precious metals, but also the potato back to Spain. It has become an important part of traditional Spanish dishes.

Figure 5.23 Potato trivia



USA

Rosemary potato wedges

Main tools and equipment

Chopping board, measuring spoons, zester, knife, oven tray, saucepan or microwave bowl, fork

Production skills

Cutting, coating, zesting

Cooking processes

Parboiling, baking

SERVES 2



Preparation time: 40 minutes



Cooking time: 35 minutes



Serving and presentation time: 5 minutes



Total time: 80 minutes

Ingredients

			
4 medium brushed potatoes	1 tablespoon olive oil	1 tablespoon chopped fresh rosemary	¼ teaspoon dried oregano
			
pinch black pepper	pinch cayenne pepper	¼ teaspoon sea salt	2 lemons, finely grated lemon rind (zest)



Method

- 1 Preheat the oven to 220°C.
- 2 Prepare a baking tray by lightly greasing or lining with baking paper.
- 3 Wash the potatoes. Do not peel.
- 4 Prick the potatoes with a fork or metal skewer. Parboil the potatoes for 10 minutes or microwave for 5–8 minutes, or until they are partly soft.
- 5 Cut each potato lengthwise into 6–8 wedges, depending on their size.
- 6 In a bowl, combine the olive oil, rosemary, oregano, black pepper and cayenne pepper.
- 7 Place the potatoes in the bowl with the oil mixture and gently stir to evenly coat the potatoes.
- 8 Place wedges skin-side down in a baking dish.
- 9 Sprinkle with salt.
- 10 Bake in a very hot oven (220°C) until they are crisp and brown. They can also be placed under the griller to make them crisp.
- 11 Place the wedges on a serving dish and sprinkle with lemon rind.

1 Suggest different flavourings that could be used. Compare your choices with those of your partner.

- 2** Explain why these wedges are healthier than wedges bought from a supermarket.

Design a dipping sauce that can be served as an accompaniment to the Rosemary Potato Wedges.

REFLECT ON LEARNING

- 1 Describe how vegetables are classified.
- 2 Give one example each of a stem, flower and root vegetable.
- 3 Outline the best way to store onions for optimal shelf life.
- 4 Name the classification to which spinach, cabbage and lettuce belong.
- 5 Explain why it is necessary to consume the recommended amount of vegetables every day.



LOOKING BACK

- 1 There is evidence of cultivation of fruit dating back over 8000 years.
- 2 Fruits and vegetables are the edible parts of plants: fruits contain the seeds of plants, and vegetables can be many different parts of the plant.
- 3 Fruits and vegetables are often classified or grouped according to similar characteristics. Fruits and vegetables of similar classifications can often be prepared in a similar way. A large variety of fruits and vegetables is available to Australians.
- 4 Eating a rainbow of colours is the best way to get a good mix of nutrients from fruits and vegetables.
- 5 There is considerable flexibility in the ways fruits and vegetables can be served and eaten.
- 6 Different preparation and cooking techniques can reduce the nutrient content of fruits and vegetables.

TEST YOUR KNOWLEDGE

Multiple choice

- 1 The number of serves of vegetables people should eat per day for good health is:
 - a two
 - b three
 - c four
 - d five.
- 2 Which of the following are examples of fruit classifications?
 - a stone, tubers, vines, pomes
 - b citrus, seed, stone, berries
 - c pomes, vines, bulb, shoots
 - d citrus, stone, pomes, vines.

True/false

- 1 Fruits and vegetables are best served with the skin removed.
- 2 Apples, pears and oranges all grow on trees; therefore, they have the same classification.
- 3 Frozen vegetables are good substitutes for fresh vegetables.

Short answer

- 1 Explain how fruits and vegetables are classified.
- 2 Outline the nutritional benefits of consuming fruits and vegetables.
- 3 Briefly describe each colour from the 'rainbow' of fruits and vegetables.

Extended response

Your team has been employed by a selected fruit or vegetable company to create a brochure to advertise the versatility of the identified ingredient. The brochure will be titled '10 ways with ...'. The brochure is to target beginner cooks or people who are becoming more independent. Work in small groups to investigate using one fruit or vegetable in 10 different ways. Present the information in a brochure to promote the use of the selected fruit or vegetable.

Within the brochure, include the following:

- varieties of the particular fruit or vegetable available
- when the particular fruit or vegetable is in season
- its use in a breakfast, light lunch or snack item
- its use as a part of a main dish – sweet or savoury
- its use in a traditional dish.

The 10 different ways need to be economical, and reasonably quick and easy to prepare. Each recipe

should include a short two-line discussion about the recipe and why it would be a good choice for a beginner cook.

- 1 As a group, discuss and write down four statements that you all should follow to make sure the group will work well together to achieve the best outcomes. At the end of the activity, you will comment on your effectiveness in working to the four statements.
- 2 Work as a group to divide up the different sections of the task.
- 3 Start the investigation by coming up with spontaneous ideas within the group. Try to do this without extensive research into recipe books.
- 4 Collect the required information and present it as a leaflet. This may include photographs.
- 5 On completion, evaluate the effectiveness of the group according to the statements.
- 6 Discuss and write down any other statements that you now think should have been included.

