Unit 3.1.6

Reasons for Differences in Dietary Requirements

Key Knowledge and Key Skills

Key Knowledge 3.1.5

Reasons for differences in dietary requirements, considering factors including age, sex, pregnancy and lactation and activity levels.

Key Skill 3.1.5

Discuss the nutritional rationale of the Australian Guide to Healthy Eating.

Key Skill 3.1.6

Evalaute the nutritional quality of foods and meals.

Key Skill 3.1.8

Apply the healthy eating recommendations of the Australian Dietary Guidelines and Australian Guide to Healthy Eating to the planning of daily food intake and, through practical activities, create nutritious meals to cater for a diverse range of needs.

Key Terms and Definitions

Basal metabolic rate or BMR is the amount of energy people use while resting. A high metabolic rate means that you use more energy and a low metabolic rate means that you use less energy.

Dietary requirements refer to the nutritional needs of an individual or a group of individuals.

Food with a high kilojoule content in relation to its weight is referred to as being **energy-dense**.

Lactating is the process where new mothers produce breast milk, more commonly referred to as breastfeeding.

A person's life can be divided into several groups based on age. These groups are referred to as **lifespan stages.**

Age, Sex and Activity Levels

Our dietary requirements change as we move through different lifespan stages. However, age is not the only factor that influences our dietary requirements. A person's sex (gender) and activity level also play a significant role in determining the amount and type of food people should eat to meet their nutritional needs.

Sex

A person's sex is a major reason for the differences in dietary requirements between males and females. There are minimal differences in nutritional needs for boys and girls from birth through to late childhood. However, from adolescence through to old age, men and women continue to have different dietary needs. Men generally need more energy (kilojoules) and more macronutrients compared to women. On average, they have a larger body (both in height and weight), higher basal metabolic rate (BMR), and greater muscle mass than women. Women need less energy (kilojoules) and less macronutrients than men because on average they tend to be smaller than men, have a lower basal metabolic rate, and less muscle mass. A larger body mass requires more maintenance and therefore has a higher BMR.

Activity Levels

The amount and intensity of a person's activities can influence their energy needs. When people are active, they require more energy. Most people tend to undertake incidental exercise throughout the day. Incidental activity includes walking to and from classes, walking to a friend's house or doing household chores. People also participate in intentional exercise, which generally involves purposeful engagement in activities to be active. Intentional activities can include light, moderate or high-intensity activities such as yoga, running, and basketball.

It is important that people consume a nourishing diet that meets their dietary requirements at each lifespan stage and that they balance their energy input with their energy output. People who consume more energy than they are use are likely to gain weight. Conversely, people who do not consume enough energy for their daily needs may lose weight.

The *Eat for Health* website provides various resources that people can use to calculate their changing dietary requirements.

Click here to access the nutrition calculator on the *Eat for Health* website.

Age: The Lifespan Stages

A person's life can be divided into several groups based on age. These groups are referred to as lifespan stages. People nutritional needs change according to their lifespan stage.

The images below show people from different lifespan stages.

Babies – Birth to 6 Months

Babies usually double their length and triple their weight between birth and 1 year. Initially, babies will sleep a lot, but they become more and more active and sleep less as they grow.

Up to 6 months, babies are usually fed breastmilk or formula exclusively. Baby formula provides a range of nutrients; however, it is important to note that the properties of breastmilk cannot be replicated. Breastmilk contains all the nutrients an infant needs for proper growth and development, such as carbohydrates, minerals, protein,

trace elements, unsaturated fats, vitamins, and water. Breastmilk adapts to the baby's needs and gives them the exact nutrition required from birth through to 6 months.

Breastmilk also contains antibodies and other vital substances. The antibodies play a significant role in fighting infection. They are present in large amounts in the first milk from the mother's breasts just after birth. Antibodies continue to be produced, in smaller quantities, as long as breastfeeding continues.

Infancy – 6 Months to 2 Years

A baby's dietary requirements change as they near 6 months. Solid foods are usually introduced at this time to meet toddlers increasing growth and developmental needs. Introducing foods that contain iron and zinc is particularly important around this age. Babies are usually born with enough iron and zinc to meet their dietary needs for the first 6 months of life. However, after this time, babies must obtain these nutrients from their diet.

Other important nutrients include protein for growth, calcium for bone development, carbohydrates for energy, and unsaturated fats for both energy and brain development.

As per Australian Dietary Guideline 3, water should be encouraged as a drink, as infants become more active and to avoid dehydration.

During this time, an infant's activity levels increase, which results in them needing more food. Infants have often been described as 'grazers,' preferring to consume smaller snacks throughout the day rather than sitting down to eat larger meals. They have small stomachs that fill up quickly and often lack the attention span to sit at the dinner table for long periods. Therefore, eating small nutritious snacks throughout the day is a great way to meet their nutritional needs.

Infancy is also when lifelong habits begin to be established; consuming nutritious foods is essential for establishing positive eating behaviours. Carers should avoid giving snacks from the discretionary section of the *Australian Guide to Healthy Eating* at this age. Foods like fresh fruit and yoghurt, steamed carrot sticks, and cheese are excellent snacks for this age group to consume.

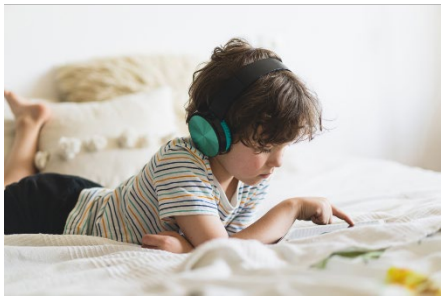
The image below represents babies aged 6 months to 2 years eating a range of foods.



Children – 2 to 11 Years

A child continues to grow and develop between the ages of 2 and 11; however, they do not develop as quickly as they did in infancy. As they become taller and larger, their nutritional needs change. They begin to need more protein for bone and muscle development and calcium for bone growth. Their energy needs are dependent on the amount of activity they undertake.

On average, children who participate in more sedentary activities like playing computer games or watching television have lower energy needs than consistently active children.



Carbohydrates are the best energy source for this age group. Any additional energy needs should be sourced as additional serves from the five food groups, rather than always consuming extra serves from the discretionary choices. Encouraging children to drink water rather than fruit juices and flavoured milk is recommended. Exposing children to a range of foods at this age, preparing the same food in different ways, acting as a positive role model, and making nutritious foods readily available may help children develop long-term healthy eating behaviours.

The table below lists the serving sizes that males and females aged 2–11 require according to the *Australian Guide to Healthy Eating*. This table indicates that the more active a child is, the more additional servings of foods from the five food groups or discretionary choices they can consume.

Recommended daily serves from the five food groups							
The five food groups		**Vegetables/ legumes & beans**	**Fruit**	**Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties**	**Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans**	**Milk, yoghurt, cheese and/or alternatives, mostly reduced fat**	**The approximate number of additional serves from the five food groups or unsaturated fats and oils or discretionary choices**
Years of age	**Sex**						
2–3	Males & females	2½	1	4	1	1½	0–1
4–8	Males & females	4½	1½	4	1½	2	0–2½
9–11	Males	5	2	5	2½	2½	0–3
	Females	5	2	4	2½	3	0–3

Source: Based on material provided by the National Health and Medical Research Council.

Adolescence – 12 to 18 Years

Eating a nutritious diet during the teenage years is essential for optimal growth and development and promoting healthy eating and lifestyle behaviours.

Adolescence is a time of rapid growth. Protein is required at this time to support growth and muscle development. Carbohydrates are needed for energy and calcium is needed to support bone development. Other essential nutrients such as vitamin B6 and zinc are necessary for hormone production, mood balance, and skin health.

Males tend to have higher dietary requirements compared to females during this time because on average, males have a larger stature and faster metabolism than females. However, females require more iron than males because they menstruate. When females menstruate, they experience blood loss. The blood they lose contains iron. Therefore, girls who menstruate require a higher iron intake than males to replenish the iron they lose each time they menstruate.

Food also tends to fulfil a social role for adolescents. They may consume a specific food to 'fit-in' with a particular group of friends and seek to be independent by buying their own food. Adolescents may also attend more celebrational events where discretionary foods are shared. Eating meals with their family allows family members to catch up with each other in what can be a hectic time in their lives.

Watch this video to learn about why teens need to make healthy food choices: https://youtu.be/pLxABMFowIY

The images below highlight how increasing independence and socialisation during adolescence can influence food choices.

The table below lists the serving sizes that adolescents require according to the *Australian Guide to Health Eating*.

Recommended daily serves from the five food groups							
The five food groups		**Vegetables/ legumes & beans**	**Fruit**	**Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties**	**Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans**	**Milk, yoghurt, cheese and/or alternatives, mostly reduced fat**	**The approximate number of additional serves from the five food groups or unsaturated fats and oils or discretionary choices**
Years	**Sex**						
12–13	Males	5½	2	6	2½	3½	0–3
	Females	5	2	5	2½	3½	0–2½
14–18	Males	5½	2	7	2½	3½	0–2½
	Females	5	2	7	2½	3½	0–2½

Source: Based on material provided by the National Health and Medical Research Council.

Early adulthood (19–50 years)

Adulthood begins around the age of 19 and continues until a person dies. This lifespan stage can be divided into several stages. A person experiences significant changes during each stage of adulthood. This, in turn, impacts their dietary requirements.

As young adults leave school and join the workforce, some find themselves in sedentary work, resulting in them being less active. In addition to this, young adults sometimes begin drinking more alcohol, which can contribute to weight gain. They may also stop playing competitive sports due to work and social commitments. People are often prone to gaining weight in early adulthood for these reasons.

Middle adulthood (51–70 years)

Middle-aged adults often lead busy lives, meeting their family commitments and trying to excel at work. This usually leaves them with little time to devote to their health and wellbeing. Maintaining a work-life balance at this stage of life is important. Adults should be encouraged to find time to exercise and prepare nutritious meals.

Energy needs at this time usually decrease due to having a lower basal metabolic rate. Adults experiencing this need to be mindful of their portion sizes and ensure they eat nutrient-dense foods that do not contain excessive amounts of energy.

At this lifespan stage, women need more calcium than they have previously required. Women stop menstruating around the age of 50. Once they stop menstruating, the body produces less oestrogen, which results in less calcium absorption. This makes women more susceptible than men to weakened bones and osteoporosis. For this reason, women who no longer menstruate require more calcium. These women are often referred to as being menopausal.

Late adulthood (70 plus years)

In general, dietary requirements during late adulthood decrease.

A gradual decrease in appetite often occurs during this lifespan stage. Older people experience lower metabolic rates, diminishing taste buds and lower activity levels. This reduced appetite can lead to a reduced food and nutrient intake.

As middle-aged people's bodies are no longer growing, they do not need as much protein for growth. However, some protein is still essential for maintaining and repairing soft and hard tissue.

Energy needs during this time are much lower than any other lifespan stage. People in this age group tend to become less active than they were previously, and their basal metabolic rate tends to be lower than it has ever been before. This results in less energy needed from the diet.

The table below shows the serving sizes that adults aged 19–70 plus years require according to the Australian Guide to Healthy Eating.

Recommended daily serves from the five food groups							
The five food groups		**Vegetables/ legumes & beans**	**Fruit**	**Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties**	**Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans**	**Milk, yoghurt, cheese and/or alternatives, mostly reduced fat**	**The approximate number of additional serves from the five food groups or unsaturated fats and oils or discretionary choices**
Years	**Sex**						
19–50	Males	6	2	6	3	2½	0–3
	Females	5	2	6	2½	2½	0–2½
51–71	Males	5½	2	6	2½	2½	0–2½
	Females	5	2	4	2	4	0–2½
70+	Males	5	2	4½	2½	2½	0–2½
	Females	5	2	3	2	4	0–2

Source: Based on material provided by the National Health and Medical Research Council.

Pregnancy

Good nutrition during pregnancy is important as it helps keep the mother healthy and helps the unborn baby develop normally. Pregnant women need more serves of some food groups; however, there is no need to eat double servings.

Pregnant women require more protein as it is needed for the proper growth of an unborn baby's tissues and organs, including the brain.

A woman's folate, iodine, and iron requirements increase when pregnant. Eating a variety of foods from the five food groups should provide a pregnant woman with the vitamins and minerals she needs.

During pregnancy, a woman's requirement for iron increases. By the end of her pregnancy, her body's total amount of blood increases by around 25 per cent. As discussed earlier, iron is a major constituent of blood. When more blood is needed, more iron is also required. Pregnant women also need more iron for their developing baby, particularly in the last 3 months of pregnancy. During this time, the baby takes enough iron from their mother's supplies to last them the first 6 months of their life. For this reason, pregnant women require more iron.

Maintaining high iron stores is especially important for pregnant women who are vegan or vegetarian. Iron from plant sources is not absorbed as easily as iron from animal sources. Iron absorption improves when combinations of plant foods containing iron are consumed with vitamin C.

Folate is a B-group vitamin found in various foods. Folic acid helps protect against neural tube defects occurring in an unborn baby, including spina bifida. Spina bifida is a condition where a baby's spinal cord fails to develop or close properly in the womb. Children born with spina bifida can experience paralysis of the lower limbs and sometimes learning difficulties. Pregnant women need to ensure they receive enough of this critical vitamin. In September 2009, mandates were introduced in Australia that made it compulsory for folate and iodine to be added to all commercial bread. Since the introduction of this mandate, there has been a reduction in neural tube defects in Australia.

Regulations relating to the inclusion of iodine in bread were introduced due to the low levels of iodine present in Australian soils and therefore lacking in our plant food sources. Iodine is an essential mineral needed for thyroid hormone production. A baby's risk of mental impairment and congenital hypothyroidism increases if its mother lacks iodine. Foods that are good sources of iodine include eggs, dairy products, meat, seafood and seaweed (including nori and kelp).

Before 2006, the *Australian Dietary Guidelines* recommended that women have additional calcium when breastfeeding and pregnant. However, medical research has confirmed that a woman's body changes to absorb more calcium during pregnancy. Despite the baby developing and strengthening its bones in the third trimester, there is no need for a woman to increase her calcium needs.

Lactation

Breastfeeding women need to consume a wide variety of nutrient-dense foods containing calcium, iron, protein, and vitamins, and energy. It takes a lot of energy to produce milk for a growing baby; consuming carbohydrates from cereals and unsaturated fats will help meet a lactating woman's energy needs.

Calcium is a significant component of breastmilk. If a woman's diet does not contain the calcium needed to produce milk, calcium will be extracted from the bones and used to meet these increased needs. Weakened bones may result, which increases the woman's risk of osteoporosis later in life.

When breastfeeding, women also need to ensure they consume enough iron to replenish the supply in their bodies that may have been depleted during pregnancy. Iron-rich foods such as cereals, chicken, dried fruit, fish, leafy green vegetables, legumes, nuts, red meat, and wholegrain bread are recommended.

Women who breastfeed are also required to consume more water, as water is a significant constituent of breastmilk.

Watch this video to learn more about nutrition while breastfeeding: https://youtu.be/Tgae3-vHIY8

The table below shows the serving sizes that pregnant and lactating women require according to the Australian Guide to Healthy Eating.

Recommended daily serves from the five food groups						
The five food groups	**Vegetables/ legumes & beans**	**Fruit**	**Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties**	**Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans**	**Milk, yoghurt, cheese and/or alternatives, mostly reduced fat**	**The approximate number of additional serves from the five food groups or unsaturated fats and oils or discretionary choices**
Pregnant	5	2	8½	3½	2½	0–2½
Lactating	7½	2	9	2½	2½	0–2½

Source: Based on material provided by the National Health and Medical Research Council.

Written Activity One

Case Study Analysis: Jane and Ben

Jane and her husband, Ben, have a two-year-old child. They now live in the south-eastern suburbs of Melbourne. When they first met, they lived in a small apartment in the city. After a few years, they decided they wanted to have a family. They quickly realised the major problem they faced was the surging housing prices in the area they wanted to live. They could not afford a two-bedroom apartment in the city. After in-depth discussions with Jane's parents, they all decided it would be best if they all lived together.

This type of living arrangement has been called multigenerational living. Multigenerational living allows for multiple generations of a family to live in a home together. There can be a mix of grandparents, parents, and children all living together in one family home.

Person	**Identify** the nutritional needs of each person described below.	**Explain** why each person's nutritional needs differ.
30-year-old Jane, who is lactating		
34-year-old Ben, who is a bricklayer		
2-year-old Tyson, who attends child care three days per week		
60-year-old Brenda works part-time as a medical receptionist and cares for her Grandson two days per week		
70-year-old Eric has retired, enjoys playing lawn bowls, and cares for his Grandson two days per week.		

Written Activity Two

Reasons for Differences in Dietary Requirements

You might like to work in small groups to complete this task.

1. Develop a person to base this activity on by selecting the following:

   Select one of the following:

   ☐ Female ☐ Male

   Select one of these activity levels:

   ☐ High Activity ☐ Moderate Activity ☐ Light Activity

   Select one of these age groups:

   ☐ Adolescence ☐ Middle Adulthood ☐ Pregnant
   ☐ Young Adulthood ☐ Late Adulthood ☐ Lactating

2. **Research** the person you have chosen dietary requirements.

   a. **Describe** what is happening to this person at this lifespan stage.

   b. Outline their dietary needs at this stage in their lifespan.

   c. In the table below, identify the food groups important for this person to consume and explain why.

Food Groups	Why is this food group important?

3. **Plan** a week's menu for the person you have chosen. An example has been provided.

   Consider the Australian Dietary Guidelines and the Guide to Healthy Eating rationale when developing the week's menu.

   You do not need to use recipe books for this task. It is best to keep your meal plan as simple as possible for the next activity.

Day	Breakfast	Snack	Lunch	Snack	Dinner	Dessert/ Snack
Example	Cornflakes Full cream milk Wholemeal toast x 2 Butter Avocado Fried egg Black Coffee	Orange Juice Drink Finger bun	Ham and cheese wholemeal sandwich with butter	Natural Greek Yoghurt Almond milk latte Almonds and pumpkin seeds	Fettuccine Carbonara (cream, white fettuccine, bacon & garlic, butter, eggs, parmesan cheese, and salt)	Ice cream with apricots in syrup
Monday						
Tuesday						
Wednesday						

Thursday						
Friday						
Saturday						
Sunday						

4. **Download** the blank template of the Australian Guide to Healthy Eating at this link:

   https://www.eatforhealth.gov.au/file/australian-guide-healthy-eating-poster-blank-template

   Plot the ingredients in your weekly meal plan in the Australian Guide to Healthy Eating image.

5. **Analyse** your weekly meal plan by completing the SWOT analysis below.

   SWOT Analysis

Strengths	**Weaknesses**
What was good about the menu? How did it meet the guide? How did the food on the menu meet your individual's nutritional requirements?	What was not good about the menu? How did it not meet the guide? How did the food on the menu not meet your individual's nutritional requirements?
Opportunities	**Threats**
What could be changed? What dishes are on trend that might appeal to this individual and improve their diet?	What factors might prevent this person in this lifespan stage from following the AGTHE and ADG? What factors might prevent them from meeting their nutritional needs?

6. **Explain** how you meet the Australian Guide to Healthy Eating rationale.

Eat a wide variety of	**How did you meet this component of the Australian Guide to Healthy Eating in the meal plan?**
Vegetables/ legumes & beans	
Fruit	
Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties	
Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans	
Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	
The approximate number of additional serves from the five food groups, unsaturated fats and oils, or discretionary choices.	
Drink more water.	

Practical Activity One

Modifying Recipes

For this task, you will modify a recipe to align better with The Australian Dietary Guidelines and The Australian Guide to Healthy Eating.

In doing so, you will need to consider:

- adding additional ingredients;
- changing the cooking methods used;
- decreasing the serving sizes;
- increasing the serving sizes;
- swapping ingredients; and
- removing ingredients.

Cordon Bleu is a recipe consisting of a thin slice of boneless meat filled with ham or cheese, then coated in flour, egg, and breadcrumbs. It is cooked by shallow or deep frying in oil.

Your task is to modify the ingredients and method in this recipe so that it meets the:

- needs of a family of different activity levels, ages, and sex; and
- recommendations of the Australian Guide to Healthy Eating and The Australian Dietary Guidelines.

Make notes about the changes you will make or **re-write** the recipe.

Cordon Bleu

Serves 1

Ingredients:

1 slice ham
1 slice Swiss cheese
½ egg
2 slices of sizzle meat
2 tablespoons flour, seasoned with salt & pepper
1 tablespoon milk
¼ cup dry or fresh breadcrumbs
1 tablespoon oil
20 grams butter

Method:

1. **Collect** and **measure** ingredients.
2. **Combine** the milk and egg, **set aside.**
3. **Top** one of the steak slices with a slice of ham and cheese.
4. **Place** the remaining steak on top of the cheese (cut to fit) and **press** firmly to seal.
   Secure with toothpicks if needed.
5. **Dust** the sizzle steak lightly with flour, and brush **off** excess.
6. **Place** the steak in the egg mixture and turn **over gently.**
7. **Coat** the steak in breadcrumbs, and **press** the crumbs on firmly.
8. **Transfer** to a plate and **chill** for about 10-20 minutes.
9. **Heat** butter and oil together in a frypan on medium heat.
10. **Add** the steak. **Cook** on each side until golden and cooked through (about 3-5 minutes on each side).
11. **Serve.**

1. In the table below, record as many changes as you can that would make this meal align with The Australian Dietary Guidelines and The Australian Guide to Healthy Eating.

What ingredients could you **add**?	What ingredients could you **swap?**
What ingredients could you **remove**?	What cooking methods could you **change**?
What serving sizes could be **increased**?	What serving sizes could be **decreased**?

1. **Complete** the evaluation questions below:

   a. How do you think this recipe suits people of different activity levels, ages, and genders?

How was this recipe suitable?	How was this recipe unsuitable?

   b. What other recipes would be good to serve families to ensure people of different activity levels, ages and genders met their nutritional needs? Why would these recipes be suitable?

Practical Activity Two

Brochure: Nutritional Needs

1. **Select** one of the design briefs below and create the brochure.
2. You will make the salad in class.
3. **Submit** the food order for your salad by the due date (see the following page)
4. **Photograph** the salad you make in class and **include** it in the fact sheet.

Design Brief

You have just finished your studies as a dietician. You have begun working at a small health care centre in rural Victoria. The midwife at the centre has asked you to create a fact sheet to give to women who are pregnant. The fact sheet you make must advise women on the foods they should consume when pregnant and lactating. It must also explain why they need these foods.

Include a recipe for a 'salad for one' on the fact sheet that meets their nutritional needs.

Design Brief

You have just finished your Bachelor of Nutrition Science. You are working in a gym, advising people about how they can meet their nutritional needs. You have noticed a lot of young people are choosing to be vegetarian or vegan. You have been asked to create a fact sheet for these young people. The fact sheet you make must advise young people on the foods they should consume to meet their needs according to their activity levels, age, and gender. It must also explain why they need these foods.

Include a recipe for a 'salad for one' on the fact sheet that meets their nutritional needs.

Design Brief

A popular snack food company employs you to develop new food products. They are planning to run a health and wellness campaign to promote a range of their products. They have asked you to design a brochure for women around 50. The brochure you create must advise women around 50 about their nutritional needs and explain why they need these nutrients.

Include a recipe for a 'salad for one' on the fact sheet that meets their dietary needs.

Food Order

Name			
Recipe	*A printed copy or website link of your recipe must be submitted with the food order.*		
Preparation Time:		**Cooking Time:**	

Quantity	**Refrigerated Items (only one meat)**	**Quantity**	**Pantry Items**

Quantity	**Fruit and Vegetables**	Quantity	Frozen Items

Additional Equipment:
Equipment not located at your workbench must be listed here

Summary Activity

What is the main idea about the key knowledge & key skills?							
List the serving sizes of the ages and gender in the table below.							
Age	**Vegetables/ legumes & beans**	**Fruit**	**Grain (cereal) foods, mostly wholegrain varieties and/ or high fibre cereal varieties**	**Lean meats, poultry, fish, eggs, tofu, nuts & seeds, legumes/ beans**	**Milk, yoghurt, cheese, and/or alternatives, mostly reduced fat**	**Water**	**Provide reasons for these serving sizes.**
6 months to 2 years							
2 to 11 years							

Female Adolescents							
Male Adolescents							
Female Adult							
Pregnant Adult - female							
Lactating Adult - female							

Female Adult							
Female 70+ years							
Male 70+ years							
Briefly outline differences in nutritional needs for people of different sex and activity levels.							**Provide a reason/s for these differences.**
Activity level							
Sex							

Exam Preparation

Section A - Multiple Choice Questions (5 marks)

Question 1

Which of the following statements is true during adulthood?

a. Men's energy needs increase as they age.
b. Men's energy needs decrease as they age.
c. Men's energy needs stay the same throughout adulthood.
d. Men's energy needs are equal to that of women.

Question 2

Reasons for differences in dietary requirements between young and older adults include:

a. Activity levels, age, and sex
b. Lifestyle changes and diet.
c. Sedentary and heavy activity expenditure.
d. Pregnancy and lactation.

Question 3

An increased amount of this food group is required during pregnancy.

a. Eat sometimes and only in small amounts.
b. Grain (cereal) foods.
c. Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/beans.
d. Milk, yoghurt, cheese and/or alternatives.

Question 4

Select the breakfast that best meets the nutritional needs of an older woman who has experienced menopause.

a. Poached eggs on toast.
b. Fruit and wholegrain toast with avocado.
c. Rolled oats with low-fat milk and berries.
d. Sweet pastry with black coffee.

Question 5

Identify the snack food a sedentary teenage male will most likely benefit from.

a. Broccoli, carrot, and celery sticks with a low-fat yoghurt dip.
b. Zucchini, bacon, and cheese slice.
c. Cherry tomatoes, carrots, and red capsicum sticks.
d. Corn and bacon pastries.

Section B – Short Answer Responses (15 marks)

Question 1 (6 marks)

The Australian Dietary Guidelines provide recommendations for the number of serves of each food group that is consumed daily. The following table shows the minimum number of serves per day for pregnant and lactating women.

The Five Food Groups	Pregnant Women	Lactating Women
Vegetables and legumes/ beans	5	5.5
Fruits	2	2
Grain (cereal) foods, mostly wholegrain varieties, and/or high fibre cereal varieties	8	9
Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans	3.5	2.5
Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	2.5	2.5

Identify two differences in serving sizes and provide a reason for these differences in dietary requirements.

Reason One

Reason Two

Question 2 (3 marks)

14-year-old Peter plays soccer every Saturday, trains twice a week, and plays every lunchtime at school. His 9-year-old neighbour, Ali, often practices with Peter after-school but does not participate in other recreational activities. Peter and Ali have different energy requirements.

Explain one reason for the difference in energy requirements between Peter and Ali.

Question 3 (2 marks)

The actual amount of energy people require differs for a range of reasons.

Explain why a person's sex can impact their energy needs.

Question 4 (4 marks)

Women approximately 60 years of age have specific dietary requirements.

Evaluate the suitability of the meal below in meeting the dietary requirements of a 60-year-old female.

- Baked chicken
- Steamed broccoli, corn, and carrots
- Oven-baked sweet potato and parsnip chips

Section C – Extended Responses (10 marks)

Question 1 (10 marks)

A 17-year-old VCE student recently posted this on a VCE forum page:

> Hello 😊
>
> What do you guys eat for breakfast? I have a feeling I need to eat healthier foods so I can achieve my best in my VCE and in sport. I run each morning and surf on the weekends. What is something that will give me what I need and fill me up? At the moment, I am having cornflakes for breakfast with milk and an orange juice. Is this okay? Thanks!

Answer the student's questions.

Your response should include a discussion with reference to:

- consideration of the student's dietary requirements
- the type of foods that contribute to satiety
- the role of gut microbiota and the relationship between gut microbiota and physical and mental health
- evaluation of the nutritional quality of student's breakfast in relationship to the Australian Guide to Healthy Eating

Exam Preparation

Section A - Multiple Choice Questions (5 marks)

Question 1

Which of the following statements is true during adulthood?

a. Men's energy needs increase as they age.
b. Men's energy needs decrease as they age.
c. Men's energy needs stay the same throughout adulthood.
d. Men's energy needs are equal to that of women.

The answer is not A. A man's basal metabolic rate (BMI) does not increase.

The answer is B. Men's BMI slows as they age, so they require less energy from their diet.

The answer is not C. Men's energy needs change/decrease in adulthood. As they get older, they require less energy.

The answer is not D. Women require less energy than men.

Note: It is important to note that energy needs are calculated on average.

Question 2

Reasons for differences in dietary requirements between young and older adults include:

a. Activity levels, age, and sex
b. Lifestyle changes and diet.
c. Sedentary and heavy activity expenditure.
d. Pregnancy and lactation.

All of the options are adequate reasons for the difference in dietary requirements. Selecting the option that uses the Food Studies Study Design terminology is advised in this instance.

A and D use the terminology from the Study Design.

The answer is not D because the question asks about the difference between young and older adults. It does not explicitly mention women and older adults are unlikely to become pregnant.

The answer is A. All the terms in the answer are found in the Study Design and are reasons for a difference in dietary requirements.

Question 3

An increased amount of this food group is required during pregnancy.

a. Eat sometimes and only in small amounts.
b. Grain (cereal) foods.
c. Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/beans.
d. Milk, yoghurt, cheese and/or alternatives.

The answer is not A. The 'eat sometimes and only in small amounts' group contains foods high in salt, saturated fat, and sugar. While these foods do provide some energy, they rarely contain other nutrients. They, therefore, should only be eaten sometimes or in small amounts.

The answer is not B. A pregnant female does not require additional amounts of energy from the grain group during pregnancy. The extra energy from the grain group is necessary during lactation.

The answer is C. Pregnant women require an additional serving of protein. Pregnant women require more protein as it is needed for the proper growth of an unborn baby's tissues and organs, including the brain.

The answer is not D. Additional calcium from dairy foods is not required during pregnancy as women can absorb more calcium at this time.

Question 4

Select the breakfast that best meets the nutritional needs of an older woman who has experienced menopause.

a. Poached eggs on toast.
b. Fruit and wholegrain toast with avocado.
c. Rolled oats with low-fat milk and berries.
d. Sweet pastry with black coffee.

The answer is not A, B, or D. These breakfasts do not contain foods with high amounts of calcium. Women who have experienced menopause require more calcium in their diet because their body produces less oestrogen, which results in less calcium absorption.

The answer is C. This breakfast contains milk which is a good source of calcium.

Question 5

Identify the snack food a sedentary teenage male will most likely benefit from.

a. Broccoli, carrot, and celery sticks with a low-fat yoghurt dip.
b. Zucchini, bacon, and cheese slice.
c. Cherry tomatoes, carrots, and red capsicum sticks.
d. Corn and bacon pastries.

The answer is A. A range of coloured and types of vegetables provide a sedentary teen male with various nutrients. The low-fat yoghurt provides protein for growth, maintenance, and repair of cells and satiety. A sedentary teen does not require high intakes of energy and, therefore, can consume low-fat dairy foods. In addition, low-fat dairy is advised for children over the age of two.

The answer is not B. This option contains regular cheese, not low-fat. Bacon is also found in the 'eat sometimes and in small amounts' section of the AGTHE.

The answer is not C. These vegetables are similar colours, meaning they provide similar types of nutrients.

The answer is not D. Pastries contain significant amounts of fat and would be unsuitable for a person who leads a sedentary lifestyle.

Section B – Short Answer Responses (15 marks)

Question 1 (6 marks)

The Australian Dietary Guidelines provide recommendations for the number of serves of each food group that is consumed daily. The following table shows the minimum number of serves per day for pregnant and lactating women.

The Five Food Groups	Pregnant Women	Lactating Women
Vegetables and legumes/ beans	5	5.5
Fruits	2	2
Grain (cereal) foods, mostly wholegrain varieties and/or high fibre cereal varieties	8	9
Lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans	3.5	2.5
Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	2.5	2.5

Identify two differences in serving sizes and provide a reason for these differences in dietary requirements.

Reason One

Possible responses are provided below: Note: Try to use terms like 'compared to" or "whereas" when a question asks about the difference between two things.	
1 mark was awarded for identifying the difference. The student must refer to and use the data in their response; otherwise, no mark was awarded.	2 marks were awarded for providing a reason for the difference in dietary requirements.
Pregnant women require 8 servings of grain (cereal) foods, and lactating women require 1 additional serve (9 in total).	A mother has increased energy needs when lactating as she is producing milk for the baby, and carbohydrates provide this nutrient.
	A mother has increased energy needs when lactating as she is producing milk for the baby; this energy should come from the body's preferred energy source, carbohydrates.
Pregnant women require 3.5 servings of the lean meat group and 2.5 servings when lactating (1 serve less).	The 1 serve extra protein required during pregnancy is required for new tissue and organ growth in the unborn baby.
	Protein foods like meat and poultry contain iron. The baby takes the iron it needs to survive the first 6 months of life in the last trimester (or 3 months) of pregnancy. The lean meat group provides pregnant women with the iron they need, which is why pregnant women have one additional serving of this group compared to lactating women.
Pregnant women required half a serving more of vegetables and legumes/beans.	A pregnant woman needs vegetables to ensure she gets the antioxidants, nutrients, and fibre. These all contribute to the healthy development of the baby.
	The fibre found in vegetables can prevent constipation which can occur during pregnancy.

Reason Two

As above.

Question 2 (3 marks)

14-year-old Peter plays soccer every Saturday, trains twice a week, and plays every lunchtime at school. His 9-year-old neighbour, Ali, often practices with Peter after-school but does not participate in other recreational activities. Peter and Ali have different energy requirements.

Explain one reason for the difference in energy requirements between Peter and Ali.

To be awarded full marks, the student must have used the terminology of the key knowledge and key skills (for example, activity levels or age).

To be awarded full marks, the student must have referred to the stimulus, and their answer must relate to energy requirements.

1 mark was awarded for identifying one reason for the differences in energy requirements between Peter and Ali.

Either of the following responses was accepted.

Peter is 5 years older than Ali; they have different energy needs due to their age.

or

Peter seems more active than Ali. He plays soccer every Saturday, trains twice weekly, and plays every lunchtime. Besides kicking goals with Peter after-school, Ali does not participate in recreational activities. They are likely to have different energy needs due to their activity levels.

2 marks were awarded for explaining why age or activity levels impact energy requirements.

The amount and intensity of a person's activities increases their energy needs. Peter is more active and therefore requires more energy.

or

Peter has higher energy needs than Ali because he is a teen undergoing a rapid growth period. Energy is required for this growth to occur.

Question 3 (2 marks)

The actual amount of energy people require differs for a range of reasons.

Explain why a person's sex can impact their energy needs.

2 marks were awarded for explaining why sex impacts energy requirements.

On average, males have a higher basal metabolic rate than women and use energy more quickly. Males, therefore, have higher energy needs than women.

or

On average, males have a larger body mass and more muscles than women, resulting in a higher basal metabolic rate and a greater need for energy.

Question 4 (4 marks)

Women approximately 60 years of age have specific dietary requirements.

Evaluate the suitability of the meal below in meeting the dietary requirements of a 60-year-old female.

- Baked chicken
- Steamed broccoli, corn, and carrots
- Oven-baked sweet potato and parsnip chips

A question like this may be assessed using a rubric. Refer to the rubric below.

Women who have experienced menopause require more calcium in their diet because their body produces less oestrogen, which results in less calcium absorption. This results in them needing more calcium from their diet.

The meal does not include any dairy foods that are a good source of calcium which means the female may not get the calcium she needs. Adding a feta or ricotta cheese topping to the poached chicken may increase the amount of calcium in the meal.

Around this age, women also find that their basal metabolic rate (BMR) may start to slow down. This results in them needing less energy.

The meal uses baking and poaching, which is a method of cookery where small amounts of (if any) oil is required. This is important as females around this age have lower energy needs.

The meal incorporates vegetables that are low in energy but contain fibre that helps to satisfy individuals. This is important as females around this age have lower energy needs.

1 mark	2 marks	3 marks	4 marks
The response: – Demonstrates very limited understanding of the nutritional needs of women aged approximately 60 years of age. – Does not refer to the foods included in the meal. – Does not look at the positive or negative aspects of the meal.	The response: – Demonstrates limited understanding of the nutritional needs of women aged approximately 60 years of age. – Barely refers to the foods included in the meal. – Does not look at the positive or negative aspects of the meal. – Little relationship to the nutritional needs of the female is made.	The response: – Demonstrates a good understanding of the nutritional needs of women aged approximately 60 years of age. – Refers to some of the foods included in the meal. – Provides a detailed analysis of the positive or negative aspects of the meal and relates these to the nutritional needs of the female.	The response: – Demonstrates a thorough understanding of the nutritional needs of women aged approximately 60 years of age. – Refers to the foods included in the meal. – Provides a thorough analysis of the positive and negative aspects of the meal and relates these to the nutritional needs of the female.

Note: the question did not ask students to refer to the AGtHE. Therefore, no discussion about the guide was required. The question related to the dietary requirements and must have related to this aspect of the study design.

Section C – Extended Responses (10 marks)

Question 1 (10 marks)

A 17-year-old VCE student recently posted this on a VCE forum page:

> Hello 😊
>
> What do you guys eat for breakfast? I have a feeling I need to eat healthier foods so I can achieve my best in my VCE and in sport. I run each morning and surf on the weekends. What is something that will give me what I need and fill me up? At the moment, I am having cornflakes for breakfast with milk and an orange juice. Is this okay? Thanks!

Answer the student's questions.

Your response should include a discussion with reference to:

- consideration of the student's dietary requirements
- the type of foods that contribute to satiety
- the role of gut microbiota and the relationship between gut microbiota and physical and mental health
- evaluation of the nutritional quality of student's breakfast in relationship to the Australian Guide to Healthy Eating

The 17-year-old VCE student has asked people to suggest some healthy breakfast options that will fill them up and help them achieve their best in VCE and sports. The student's activity levels are high by running each morning and surfing on the weekends. The student's dietary requirements will depend on their age, activity level, and sex.

Age is one factor that contributes to an individual's dietary requirements. A 17-year-old teenager is at the end of experiencing a rapid period of growth. Protein is required at this time to support growth and muscle development. Calcium is also needed to support bone development at this age.

A person's activity level is another factor that contributes to their energy needs. This 17-year-old runs each morning and surfs on the weekends. These activities are considered high intensity. Therefore, the student needs to consume a higher amount of energy. It is preferred that this additional energy comes from the cereal grain group of the Australian Guide to Health Eating (AGtHE).

Thirdly, a person's sex also contributes to their dietary requirements. Males and females need protein to grow, maintain and repair cells. Females also need iron from this food group as they menstruate each month and consequently lose some of the iron stores.

In terms of healthier foods, this VCE student needs to be consuming various foods from the AGtHE, so they get the energy and nutritional needs to cater to their age, sex, and activity levels.

Currently, the VCE student consumes cornflakes, milk, and orange juice for breakfast. The cornflakes are not wholegrain, and the milk is not low fat, as suggested in the AGtHE. Due to its high sugar content, orange juice is an 'eat sometimes and only in small amounts' or discretionary food in the AGtHE. A healthier breakfast could be a poached egg on wholegrain toast, with avocado instead of butter, fresh baby spinach, and tomatoes. This could be served with yoghurt and a fresh, whole orange. This breakfast includes food from the vegetable, fruit, and cereal (preferably wholegrain) groups of the AgtHE. It also includes eggs from the meat and meat alternative group, and yoghurt, as suggested in the AGtHE. The AGtHE also recommends that individuals consume various types and coloured vegetables. The vegetables in this suggested breakfast contain different colours and types.

The egg would provide the teen with a high-value source of protein that contains all the amino acids they need for growth. The wholegrain bread would provide the carbohydrate the teen needs for energy, and the yoghurt would provide the protein and calcium the teen needs to grow and develop strong bones.

The benefits of this meal are that it is likely to fill up the student and contribute to satiety. Satiety refers to the feeling of fullness a person has after eating, enabling them to get long-lasting energy from their foods. Whole grains, protein, and less processed food contribute to satiety. The suggested breakfast includes wholegrain toast, protein, and yoghurt, which all contribute to satiety.

This type of breakfast contains wholegrains, oranges, and yoghurt, which all contain prebiotics that nourish the good bacteria in the VCE student's gut, specifically the large intestine. These good bacteria are referred to as probiotics. Consuming probiotics and prebiotics help with protecting against disease and inflammation, control blood sugar levels and digestion, and synthesising and absorbing vitamins. The gut microbiota makes chemicals such as serotonin and dopamine in much larger quantities than the brain can make. The chemicals or hormones are called the 'feel good' hormones as they help make people feel good and contribute to their positive mental health.

As a teen studying VCE and leading an active lifestyle, this individual should consume a breakfast that contains a wide variety of foods from each food group in the AGTHE. These foods are likely to fill them up and contribute to satiety, meet their nutritional requirements, and contribute to their mental wellbeing.

Marking Scheme

Mark	Level	Description
10 9 8	Comprehensive/ thorough	Accurate definitions and relevant use of key terms and terminology in context. Clearly addresses all components of the question in detail and with accuracy. – Clearly discusses the students dietary requirements in relationship to their age, activity levels and sex (note: the sex of the forum poster was not identified). – Identifies all types of foods that contribute to satiety and explains why these foods contribute to satiety. – Clearly explains the role of the gut microbiota and the relationship betwee gut microbiota and physical and mental health. – Thoroughly evaluates the students breakfast with the nutritional rationale of the AGTHE. Refers to the stimulus well. All responses are relative to the scenario. The question the forum poster has asked in their post have been thoroughly addressed. The response is concise and well-structured.
7 6 5	Adequate/ average	Accurate definitions and use of key terms in context. Accurate and relevant use of correct terminology. Adequately addresses all components of the question and with accuracy. – Adequately discusses the students dietary requirements in relationship to their age, activity levels and sex (note: the sex of the forum poster was not identified). – Identifies an adequate range of foods that contribute to satiety and explains why these foods contribute to satiety. – Explains the role of the gut microbiota and the relationship betwee gut microbiota and physical and mental health. – Adequately evaluates the students breakfast with the nutritional rationale of the AGTHE. Refers to the stimulus. Responses are relative to the scenario. The question the forum poster has asked in their post has been addressed. The response lacks structure.
4 3 2	Below Average	Some definitions and use of key terms in context. Some use of correct terminology. Some components of the question are addressed: – Discusses the students dietary requirements in relationship to their age or activity levels or sex (note: the sex of the forum poster was not identified). – Identifies some foods that contribute to satiety and explains why these foods contribute to satiety. – Explains the role of the gut microbiota and the relationship betwee gut microbiota and physical and mental health. – Evaluates the students breakfast with the nutritional rationale of the AGTHE. The response is poorly structured.
1		Very limited response that shows a lack of understanding of the question.
0		Does not address the question.