



Differentiated Homeworks

for WJEC GCSE Food and Nutrition

zigzageducation.co.uk

**POD
8907**

Follow us on Twitter **@ZigZagFood**

Publish your own work... Write to a brief...
Register at **publishmenow.co.uk**

Contents

Thank You for Choosing ZigZag Education	ii
Teacher Feedback Opportunity	iii
Terms and Conditions of Use	iv
Teacher's Introduction.....	1
Specification cross-reference table	2
Activities.....	3
1. Macronutrients: Proteins, fats and carbohydrates	3
Lower Ability	3
Higher Ability.....	8
2. Micronutrients: Vitamins and minerals	13
Lower Ability	13
Higher Ability.....	18
3. Nutrients: Water and dietary fibre	22
Lower Ability	22
Higher Ability.....	25
4. Energy requirements	28
Lower Ability	28
Higher Ability.....	31
5. Planning balanced diets: Guidelines for a healthy diet, nutritional needs in different life stages	33
Lower Ability	33
Higher Ability.....	37
6. Planning balanced diets: Nutritional needs of individuals with specific dietary needs or nutritional deficiencies	40
Lower Ability	40
Higher Ability.....	43
7. Planning balanced diets: Nutritional needs of individuals with specific lifestyle, religious or moral beliefs	46
Lower Ability	46
Higher Ability.....	50
8. The effect of cooking on food: Why food is cooked, how heat is transferred, how cooking methods affect food	52
Lower Ability	52
Higher Ability.....	57
9. The effect of cooking on food: carbohydrates, fats, protein, fruit and vegetables	60
Lower Ability	60
Higher Ability.....	65
10. The effect of cooking on food: The positive use of microorganisms	69
Lower Ability	69
Higher Ability.....	72
11. Food spoilage: The growth conditions for microorganisms and the signs of food spoilage	74
Lower Ability	74
Higher Ability.....	77
12. Food spoilage: Buying and storing food (how to store foods correctly, the importance of date marks)	78
Lower Ability	78
Higher Ability.....	83
13. Food spoilage: Preparing and cooking food (the types of bacterial cross-contamination, preservation methods, signs and symptoms of food poisoning)	86
Lower Ability	86
Higher Ability.....	91
14. Food provenance: Food origins	94
Lower Ability	94
Higher Ability.....	97
15. Food provenance: The impact of food production on the environment	100
Lower Ability	100
Higher Ability.....	103
16. Food manufacturing: British and international cuisines	106
Lower Ability	106
Higher Ability.....	109
17. Food manufacturing: Primary and secondary processing of food	111
Lower Ability	111
Higher Ability.....	114
18. Food manufacturing: Technological developments that claim to support better health and food production	116
Lower Ability	116
Higher Ability.....	119
19. Factors affecting food choice: Sensory testing	122
Lower Ability	122
Higher Ability.....	125
20. Factors affecting food choice: The range of factors that influence food choices	128
Lower Ability	128
Higher Ability.....	132
21. Factors affecting food choice: Food labelling and marketing	135
Lower Ability	135
Higher Ability.....	138
Answers	141

Teacher's Information

Principles of Nutrition Activities 1–3

Diet and Good Health Activities 4–7

The Science of Food Activities 8–13

Where Food Comes From Activities 14–18

Cooking and Food Preparation Activities 19–21

Answers

Teacher's Introduction

This resource contains a complete set of 21 homeworks which cover the theory content of the new WJEC GCSE (9–1) Food and Nutrition specification. Each homework contains a variety of questions and activities presented in specification order and enables students to learn all of the content in preparation for their exam.

The resource is fully differentiated, with homeworks available at two levels:

Lower ability: ●

Higher ability: ■

This resource aims to consolidate and reinforce the learning of theory content taught to students in class and provide an opportunity to learn, revise and practise key content. Activities provide opportunity for application of content to real examples in the food industry, while the inclusion of extension tasks enables students to be stretched and challenged and to delve deeper into the topics of the specification. Extension tasks are designed to be differentiated by outcome, where all students undertake the same task, but variety in results is expected.

The teacher is able to decide which homework (lower or higher ability) is most appropriate for each student on a given topic. This will allow students to cover the same content but with lower-ability students receiving more support and guidance through the carefully structured activities.

In order to save time for the teachers when marking, answers have been provided. Where the students are required to provide their own examples or a range of possible answers are appropriate, guidance is offered for marking.

Remember!

Always check the exam board website for new information, including changes to the specification and sample assessment material.

September 2018

Free Updates!

Register your email address to receive any future free updates* made to this resource or other Food and Nutrition resources your school has purchased, and details of any promotions for your subject.

* resulting from minor specification changes, suggestions from teachers and peer reviews, or occasional errors reported by customers

Go to [zzed.uk/freeupdates](https://www.zzed.uk/freeupdates)

Specification cross-reference

INSPECTION COPY

Activity	Activity Title
1. Principles of nutrition	
1.	Macronutrients: Proteins, fats and carbohydrates
2.	Micronutrients: Vitamins and minerals
3.	Nutrients: Water and dietary fibre
2. Diet and good health	
4.	Energy requirement
5.	Planning balanced diets: Guidelines for a healthy diet, nutritional
6.	Planning balanced diets: Nutritional needs of individuals with special nutritional deficiencies
7.	Planning balanced diets: Nutritional needs of individuals with special moral beliefs
3. The science of food	
8.	The effect of cooking on food: Why food is cooked, how heat is transferred and how it affects food
9.	The effect of cooking on food: carbohydrates, fats, protein, fruit
10.	The effect of cooking on food: The positive use of microorganisms
11.	Food spoilage: The growth conditions for microorganisms and the factors affecting food spoilage
12.	Food spoilage: Buying and storing food (how to store foods correctly, use of date marks)
13.	Food spoilage: Preparing and cooking food (the types of bacteria, preservation methods, signs and symptoms of food poisoning)
4. Where food comes from	
14.	Food provenance: Food origins
15.	Food provenance: The impact of food production on the environment
16.	Food manufacturing: British and international cuisines
17.	Food manufacturing: Primary and secondary processing of food
18.	Food manufacturing: Technological developments that claim to improve food production
5. Cooking and food preparation	
19.	Factors affecting food choice: Sensory testing
20.	Factors affecting food choice: The range of factors that influence food choice
21.	Factors affecting food choice: Food labelling and marketing

Note to teacher:

- Area 1: Food commodities, Area 3: Calculate energy and nutritional values of recipes, Area 4: Food preparation and cooking techniques and Area 6: Developing recipes and meals are included as extension tasks where appropriate for students to practise these skills at home. However, not all skills are covered.
- Some spec points have been covered in other areas where it was deemed more appropriate:
 - Food choice (portion sizes and cost) is covered in Homework 5 alongside planning a healthy diet
 - Food choice (food choices dependent on religious beliefs) is covered in Homework 14
 - Food poverty in Wales is covered in Homework 15 alongside sustainability of food production

**COPYRIGHT
PROTECTED**



1. Macronutrients: Proteins, fats and carbohydrates

- 1) Fill in the gaps in the text below using the keywords to help.

Words to use:

bowel plant starch unsaturated carbohydrates

Macronutrients include proteins, fats and _____.

become essential because we require them in _____ quantities.

found in both animal and _____ derived foods. Fats


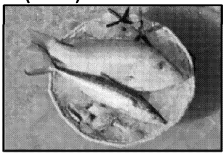


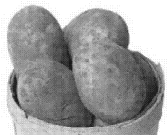

groups – ones that have single only bonds in the fatty acid chains are called

and those which contain double or triple bonds are called _____.

consist of _____, _____ and _____.

proper functioning of the _____.

- 2) Identify whether the following foods given below are a main source of fat

Cheese 	Bread rolls 	Butter 
Grapes 	Pork chops 	Pasta 
Tuna (fish) 	Hazelnuts 	Cottage cheese 
Carrots 	Potatoes 	Oranges 

INSPECTION COPY

COPYRIGHT
PROTECTED



3) Match up the functions below to each of the different macronutrients (for

Proteins



Fats

Carbohydrates

Help build hormones and

Provide protection of the

Provide the main source of

Dietary fibre supports bow

Help develop antibodies
and keep us healthy

Increase satiety

Building material of body

Help dissolve and absor

Provide insulation from the

4) i) Using the keywords (provided), explain the difference between low biological value proteins



Amino acids

Quantity

Quality

.....

.....

.....

.....

.....

.....

ii) Describe what is meant by 'protein complementation' and give an ex



.....

.....

.....

.....

.....

**COPYRIGHT
PROTECTED**



iii) Some individuals cannot, or do not, eat protein from meat sources. List two alternatives.

1.
2.

5) i) Mark sources of saturated (S) and unsaturated (U) fats by marking with a tick (✓) or cross (✗).

Avocado	Salmon	Chocolate
Oil	Butter	Nuts

ii) What is the difference between monounsaturated fats and polyunsaturated fats?

.....

.....

.....

.....

.....

6) Complete the table to explain the differences between the different types of carbohydrate.

Type of carbohydrate	Description
Starch	Polysaccharides
Sugars	Monosaccharides Group of carbohydrates built from one molecule of sugar only
	Disaccharides
Dietary fibre	

**COPYRIGHT
PROTECTED**



- 7) Complete the table below to explain the effects of deficiency and excess and identify the dietary reference values for healthy adults.

	Proteins	Fats
Effects of deficiency		<ul style="list-style-type: none"> Loss of body mass Vitamin deficiency Hormonal disorders
Effects of excess		
Dietary reference value in % or grams for an average diet of 2000 kcal	10–15% (50–75 g)	

- 8) Describe the difference between essential amino acids and non-essential amino acids.

.....

.....

Exam-style Question

Essential fatty acids are an important part of a healthy, balanced diet. Name the two main sources of essential fatty acids.



Extension Task

Design and/or modify a recipe that meets the following criteria:

- is suitable for a vegetarian
- has reduced fat content
- has high fibre content

When creating your recipe, try to apply various skills. For example:

- Knife skills – to cut meat, fish or protein alternative products
- Use of various cooking and preparation methods
- Use of starch to set a mixture

Use the Extension Task sheet to complete this task.



**COPYRIGHT
PROTECTED**



INSPECTION COPY



Ingredients of my dish and why I chose them:

[illegible]

**COPYRIGHT
PROTECTED**



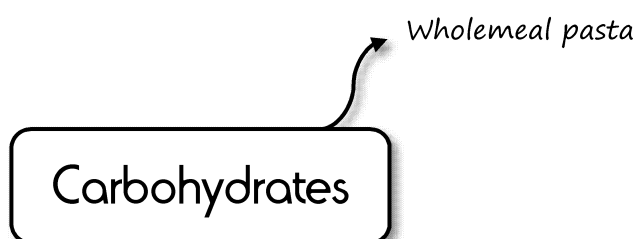
INSPECTION COPY

- Words to use:

bowel	plant	starch
carbohydrates	large	saturated



- 2) On each of the spider diagrams below, identify as many foods as you can that are high in protein or carbohydrate.



Proteins

**COPYRIGHT
PROTECTED**



3) Identify the functions of each macronutrient (*fats, carbohydrates and proteins*)

Fats	Proteins

4) i) Explain the difference between low biological value proteins and high biological value proteins.

.....

.....

.....

.....

.....

.....

.....

ii) Describe what is meant by 'protein complementation' and give an example.

.....

.....

.....

.....

.....

.....

.....

iii) Some individuals cannot or do not eat protein from meat sources. Identify two alternative sources of protein.

.....

3.

4.

**COPYRIGHT
PROTECTED**



- 5) There are two types of fats that can be consumed in the diet. Describe the two types of fats found in the diet and give examples in your answers.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- 6) Complete the table to explain the differences between the different types of carbohydrates.

Type of carbohydrate		Description
Sugars	Starch	
	Monosaccharides	
	Disaccharides	
Dietary fibre		

**COPYRIGHT
PROTECTED**



- 7) Macronutrients should be consumed in relative proportions as too much of each has health consequences. Provide the Dietary Reference Values for an average person and the health consequences of a deficiency and excess of each macronutrient.

Proteins:

.....

.....

.....

.....

.....

Fats:

.....

.....

.....

.....

.....

Carbohydrates:

.....

.....

.....

.....

.....

- 8) Describe the difference between essential amino acids and non-essential amino acids.

.....

.....

Exam-style Question

Describe a lunchbox for a teenager that would provide the macronutrients needed to give them energy throughout their school day. Justify your answer.



**COPYRIGHT
PROTECTED**



Extension Task

Your task is to design and make a three-course meal for a group of people who are on a specific diet. Some of the individuals are vegetarian, so remember to take account of this when making your meal, see if you can identify any of the following processes or use the following skills.

Process:

- How acids denature/coagulate proteins

Skills:

- Knife skills – to cut fat sources
- Use of different methods of cooking fat sources – grilling/baking
- Use of a thermometer to set a mixture



INSPECTION COPY



INSPECTION COPY

INSPECTION COPY

**COPYRIGHT
PROTECTED**



2. Micronutrients: Vitamins and minerals

- 1) i) Colour code the fat-soluble vitamins given below with four different colours (you may use more than one colour). Give each vitamin its *functions*, *sources*, *effects of deficiency* and *effects of excess* given in the table below (some may require more than one colour).

Vitamin A	Vitamin D	Vitamin E
Functions		
Ensures proper growth of sperm cells	Lowers the risk of type 2 diabetes and cancer	Maintains healthy nails and hair
Crucial for good eyesight	Prevents haemorrhages	Necessary for proper bone and teeth and development
Necessary for proper blood clotting	Antioxidant	
Effects of deficiency		
Tiredness	Dry and flaky skin	Depression
Osteoporosis	Wrinkled, thin skin	Brittle hair and nails
Excessive bleeding	Muscle degeneration	Decreased immunity
Effects of excess		
Headaches	Jaundice	Degradation of blood cells
Stomach problems	Feeling weak	Itchiness
Swelling of the liver and spleen	Diarrhoea	Hair loss
Sources		
Fish and fish oil	Broccoli	Carrots
Cheese	Liver	Kale
Sunflower oil	Blueberries	Egg yolk

Note: Vitamins E and K are not required by your specification, but have included them for your knowledge on the four fat-soluble vitamins.

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- ii) Complete the table below to identify the different types of water-soluble and sources of micronutrients in the human body, effects of excess and deficiency

Name	Function	Effects of deficiency
Vitamin B1 (thiamine)		
Vitamin B2 (riboflavin)	Important part of enzymes, takes part in creating haemoglobin	
Vitamin B3 (niacin)		4D syndrome – dermatitis (inflammation of skin), diarrhoea, dementia (loss of memory), death Low concentration (inability to focus), irritability Increased sensitivity of the skin to sunlight
Folate / folic acid (Vitamin B9)	Important in the process of DNA synthesis, takes part in creating red blood cells, reduces the risk of spinal cord diseases in newborns	
Vitamin B12 (cobalamin)		
Vitamin C (ascorbic acid)	Takes part in collagen synthesis, helps with ingestion of iron, increases immunity, strengthens blood vessels	

INSPECTION COPY

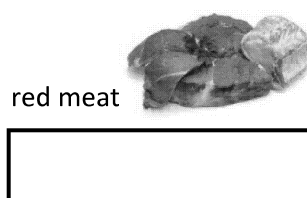
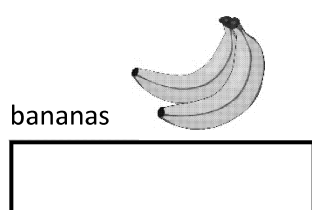
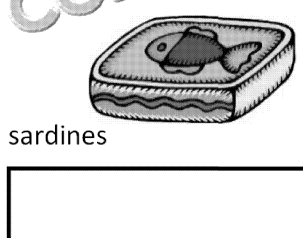
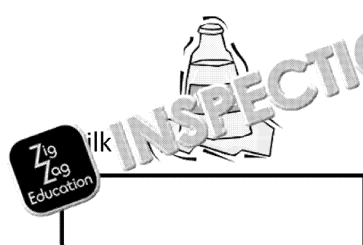
COPYRIGHT
PROTECTED



- 2) i) Put a symbol next to the functions, effects of deficiency, effects of excess of each of the given minerals: calcium (Ca), iron (Fe), potassium, magnesium (Mg). Some of them may be used more than once.

Functions	Effects of excess	Effects of deficiency
Helps build red blood cells	Demineralisation of bones	Muscle cramps, poor memory
Balances fluids in the body, keeps the blood pressure stable	Nausea, diarrhoea, abdominal cramps	Nausea, diarrhoea, goitre
Helps build strong bones and teeth	Constipation, feeling sick, stomach pain	Rickets and osteoporosis
Builds the thyroid gland hormones and coordinates metabolic rate	Chest pain, palpitations	Arrhythmia, hypertension
Builds tooth enamel, prevents tooth decay	Brittle tooth enamel, staining of teeth	Soft enamel, tooth decay, improper growth of teeth
Necessary to build DNA, controls muscle functions	Brain immaturity in foetus, can lead to weight gain	Tiredness, pale complexion, anaemia

- ii) Identify which main mineral is provided by the sources below.



- 3) Some nutrients work together to ensure the proper functioning of the human body. Which nutrients complement each other's actions in the body. Note that each nutrient is used once or not at all.

vitamin C
iron
vitamin D
magnesium
folic acid

**COPYRIGHT
PROTECTED**



Exam-style Question

Many people follow a vegan diet.

a) Name **one** B vitamin which does not naturally occur in plant foods and may

b) Plants are rich in non-haem iron. Name **one** vitamin which improves iron a



Extension Task

Excessive sodium consumption can cause hypertension (abnormally high blood pressure). Doctors recommend to limit sodium intake to less than 6 g a day.

- 1) List herbs and spices that could replace salt in recipes.
- 2) Research the Reference Nutrient Intake for all of the fat-soluble and water-soluble vitamins for teenagers. Use the British Nutrition Foundation website as a source. Can you see how the values for girls and boys differ?

Use E



**COPYRIGHT
PROTECTED**



Extension Task worksheet

Herbs which could substitute salt:

.....

.....

Spices which could substitute salt:

.....

.....

Reference Nutrition Intake for vitamins (highlight the higher values in red for each)

	Teenage boys (14–16-year-olds)	Teenage girls (14–16-year-olds)
Vitamin A		
Vitamin D		
Vitamin E		
Vitamin K		
Thiamine		
Riboflavin		
Niacin		
Folic acid		
Vitamin B ₁₂		
Vitamin C		

Why do the RNI values for boys and girls differ?

.....

.....

.....

.....

.....

.....

.....

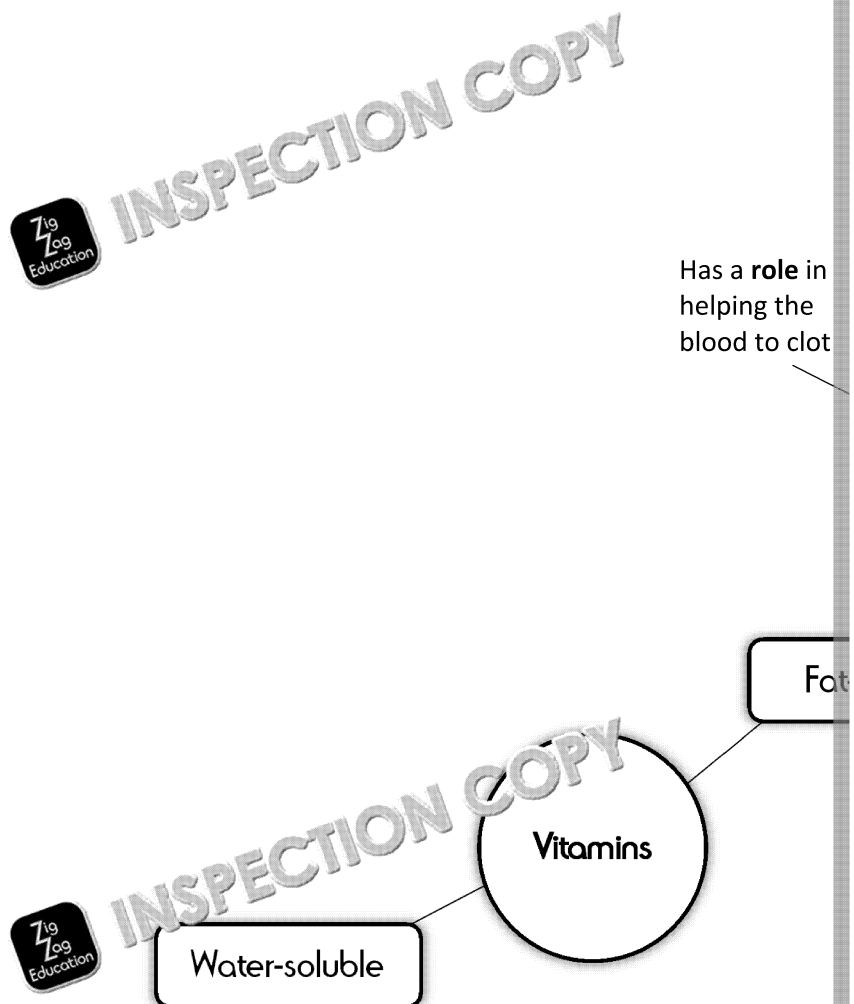
INSPECTION COPY

**COPYRIGHT
PROTECTED**



2. Micronutrients: Vitamins and minerals

- 1) Complete the spider diagram to identify the different types of vitamins, their roles, excess and deficiency, and sources in the human body. (One has been given for you)



**COPYRIGHT
PROTECTED**



Note: Vitamins E and K are not required by your specification, but have been added to your knowledge on the four fat-soluble vitamins.

- 2) i) Discuss the *functions* of the different minerals found in our body and of each, stating their *Dietary Reference Values*.

Calcium:



Fluoride:

Potassium:



Iodine:



INSPECTION COPY

COPYRIGHT
PROTECTED



Iron:

.....

.....

.....

.....



INSPECTION COPY

esium:

.....

.....

.....

.....

.....

- ii) Identify one source of each of the minerals listed below.

Calcium	Potassium	Chloride	Magnesium



INSPECTION COPY

- 3) Some nutrients work together in the body to ensure its proper functioning of nutrients complement each other's actions.

- i) calcium and vitamin D

.....

.....

.....

.....

- ii) iron and vitamin C

.....

.....



INSPECTION COPY

COPYRIGHT
PROTECTED



Exam-style Question

Dietary Reference Values indicate how much of a given nutrient a healthy person needs.
Discuss how and why teenagers may need more of certain micronutrients than adults.

Extended Task

Excessive sodium consumption can cause hypertension (abnormally high blood pressure). Doctors recommend to limit sodium intake to less than 6 g a day.

- 1) Research and list various herbs and spices which could substitute salt in cooking.
- 2) Research Reference Nutrient Intake values for all vitamins and minerals. Write an essay in which you explain potential discrepancies between values for men and women.

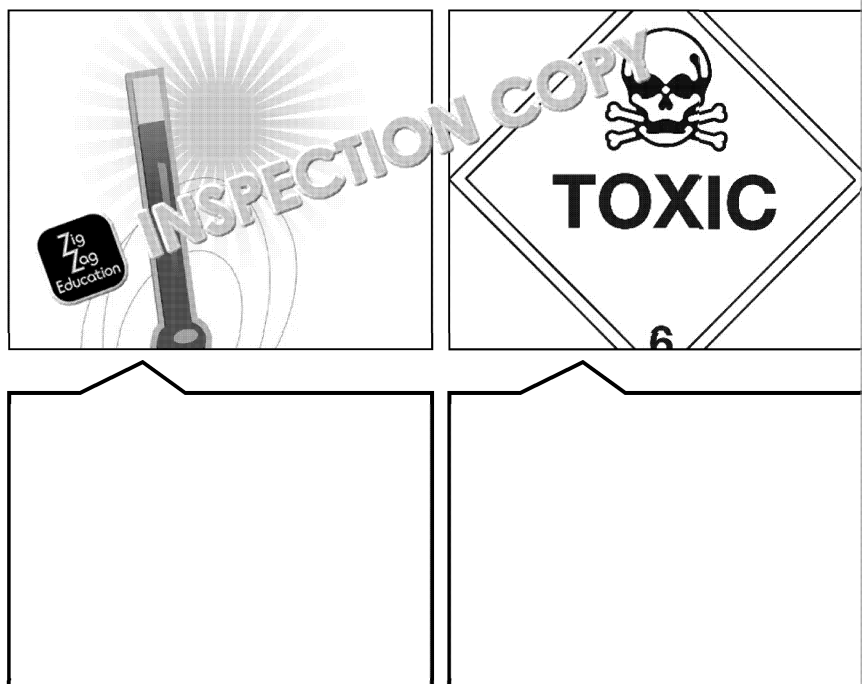
INSPECTION COPY

COPYRIGHT
PROTECTED

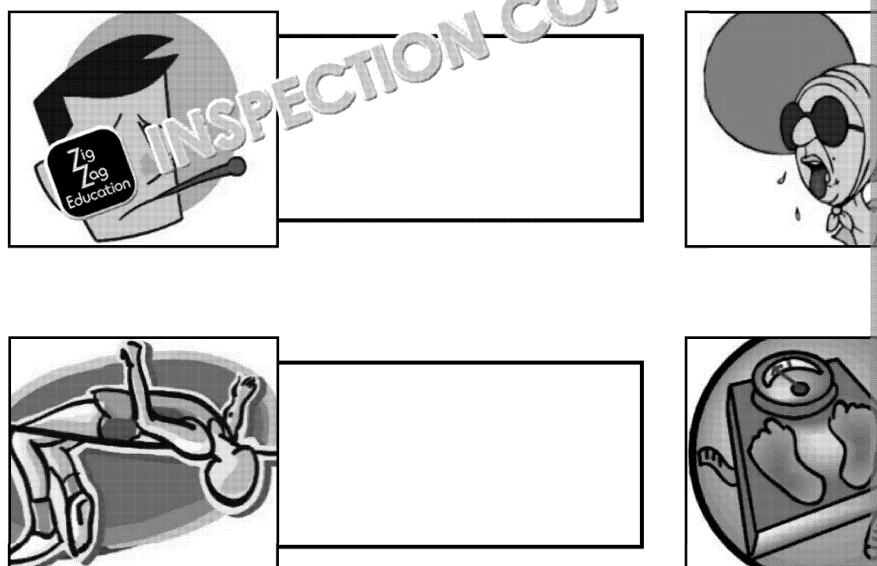


3. Nutrients: Water and dietary fibre

- 1) Complete the diagram to describe the functions of water and the importance of dietary fibre.



- 2) Look at the pictures and identify situations when oral fluids are needed.



**COPYRIGHT
PROTECTED**

INSPECTION COPY



3) Explain how water is lost from the body via:

i) lungs

.....

.....

.....

ii) kidneys

.....

.....

.....

iii)



INSPECTION COPY

.....

.....

.....

4) For each of the given effects of dehydration explain why it happens.

Feeling thirsty:

.....

.....

.....

Dark urine:

.....

.....

.....

A lack of energy:

.....

.....

.....

Increased heart rate:

.....

.....

.....



INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 5) i) Using the keywords below, fill in the gaps in the text to explain the role of dietary fibre in a healthy diet.

soluble	fruit	cancer	
wholegrain products	constipation		
digestive	insoluble	sugars	

Dietary fibre is an important part of a healthy diet. It can be found in wholegrain products, fruit, and vegetables. It plays a crucial role for the proper working of the digestive tract. It can be divided into two groups: soluble and insoluble. Pectin slows down ingestion of sugars, therefore, prevents blood sugar levels from rising too quickly. It also helps with the absorption of the minerals and prevents the risk of diseases such as constipation and cancer.

- ii) Colour-code the conditions in which a high-fibre diet may be of benefit.

tooth decay	hypertension	coronary heart disease	
osteoporosis	type 2 diabetes	scurvy	

Example Question

Following a high-fibre diet can bring multiple health benefits.

- Name **two** sources of dietary fibre in a diet.
- State **two** reasons why people may choose to follow a high-fibre diet.

Extension Task

Hydration is very important for maintaining health. Every person needs different amounts of water depending on his or her activity level, the weather, health, etc.

Design a poster to explain how water is lost from the body and how much a person needs to keep healthy.

COPYRIGHT
PROTECTED



3. Micronutrients: Water and dietary fibre

- 1) i) Explain why water is necessary for health.

.....

.....

.....

.....

.....

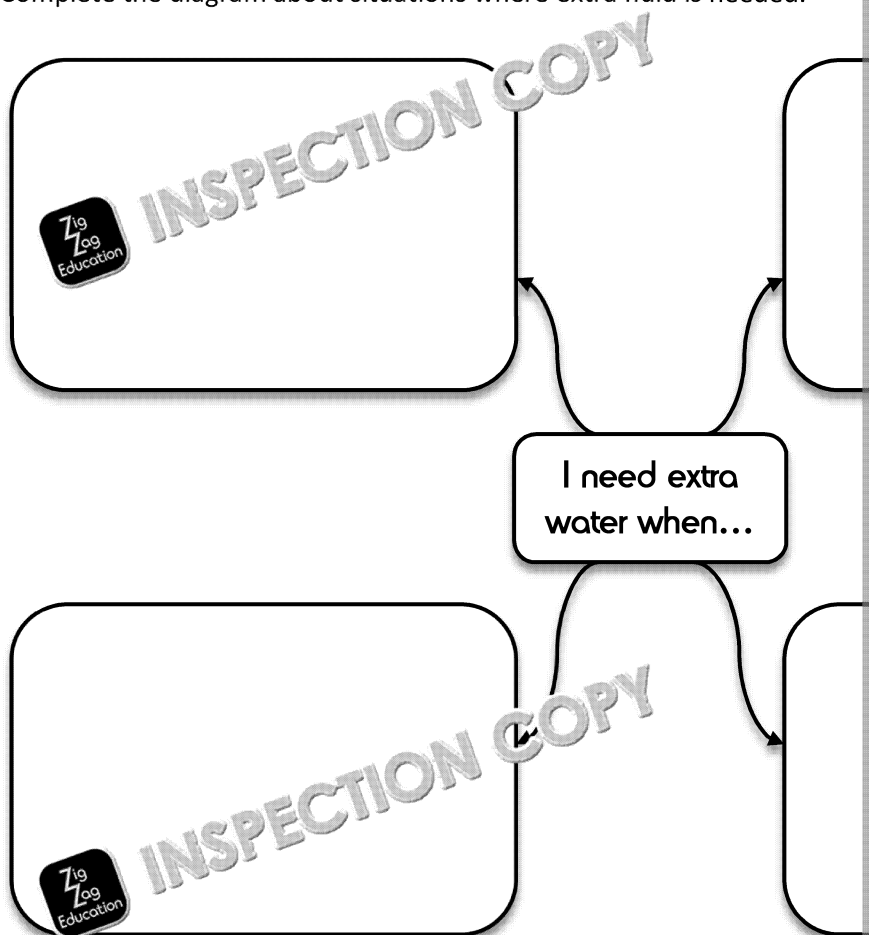
.....

- ii) Give an example of a situation where dehydration may occur.

.....

.....

- 2) Complete the diagram about situations where extra fluid is needed.



COPYRIGHT
PROTECTED



3) List and explain at least three ways in which water is lost from the body.

.....

.....

.....

.....

.....

.....

.....

.....

.....



INSPECTION COPY

4) Identify four symptoms of dehydration and explain why they occur.

1.

.....

.....

2.

.....

.....

3.

.....

.....

4.

.....

.....



INSPECTION COPY



INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 5) i) Explain the role of dietary fibre in the human diet and for health, using the following words:

cancer	balanced	fruits	digestive	fibre
bowel	constipation	diabetes	vegetables	insoluble fibre



- ii) Explain how a high-fibre diet helps to maintain a healthy body weight.

Exam-style question

Follow the example. A high-fibre diet can bring multiple health benefits.

- a) Identify **three** health implications of a lack of fibre in the diet.
- b) Identify **two** reasons why large amounts of water should be drunk while on a high-fibre diet.

Extension Task

Hydration is very important for maintaining health. Create a leaflet that includes:

- 1) three functions of water in the human body
- 2) how water is lost from the body
- 3) how much water is needed by a healthy, moderately active person
- 4) how much water is needed by a marathon runner on a hot day

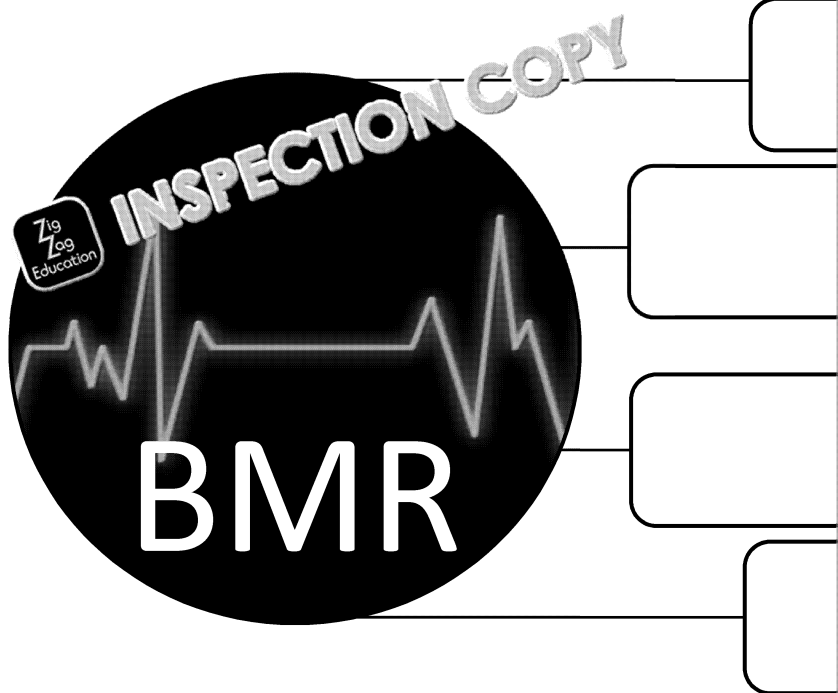


**COPYRIGHT
PROTECTED**



4. Energy requirements

- 1) i) Indicate four factors which affect basal metabolic rate.



- ii) Physical activity level (PAL) is the amount of energy needed to conduct *working, running, etc.* Explain how PAL affects energy needs of an individual.



- 2) Match the macronutrients with the recommended percentage of energy to a balanced diet.

Fats

Carbohydrates

Proteins

50%

15%

Up to 35%

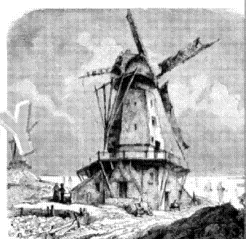


INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 3) Indicate what dietary changes might help maintain healthy body weight that help you.



.....

.....

.....

.....

.....

.....

- 4) Some individuals have higher energy needs due to their occupation and place where the extra energy should come from (in order for:

a) a marathon runner

b) a weightlifter



.....

Exam-style Question

State **two** health effects of eating a high-calorie diet for a 50-year-old individual with a sedentary lifestyle.

Extension Task

Create a fact file to identify the main sources of energy in a balanced diet. It should include:

- indicate the nutrients which provide energy in the diet
- show how much energy they should provide every day (in %)
- list the raw food sources of those nutrients






Use the Extension Task

**COPYRIGHT
PROTECTED**



Extension Task worksheet

INSPECTION COPY

_____ fact file	_____
Provides _____ kcal in 1 gram	Provide _____
_____ % of energy in a balanced diet should come from it!	_____ % of energy in a balanced diet should come from it!
 You can find it in:	You can find it in:
_____ fact file	_____
 Provides _____ kcal in 1 gram	Provide _____
_____ % of energy in a balanced diet should come from it!	_____ % of energy in a balanced diet should come from it!
You can find it in:	You can find it in:
	

**COPYRIGHT
PROTECTED**



4. Energy requirements

- 1) i) Explain what 'BMR' and 'PAL' are.

BMR stands for

It is

PAL stands for



- ii) Explain how BMR and PAL affect the total energy needs of an individual

- 2) Complete the table to indicate the recommended percentage of energy in a balanced diet.



Macronutrient	Percentage
Fats	
Carbohydrates	
of which sugars	
Proteins	



**COPYRIGHT
PROTECTED**



3) Indicate three factors that can help maintain healthy body weight through explanation for your answers.

1.

.....

.....

2.

.....

.....

3.

.....

.....

4) Some individuals have higher energy needs due to their occupation and provide examples of when an individual is likely to need more energy and indicate this energy from.

i)

.....

ii)

.....

Exam-style Question

Explain how **three** different factors can affect the energy needs of individuals.

Extension Task

Write a journal article about the main factors that influence an individual's energy needs. In your article, you can refer to one or more factors, from: sex, life stage, body composition, lifestyle, health state or genetic factors.

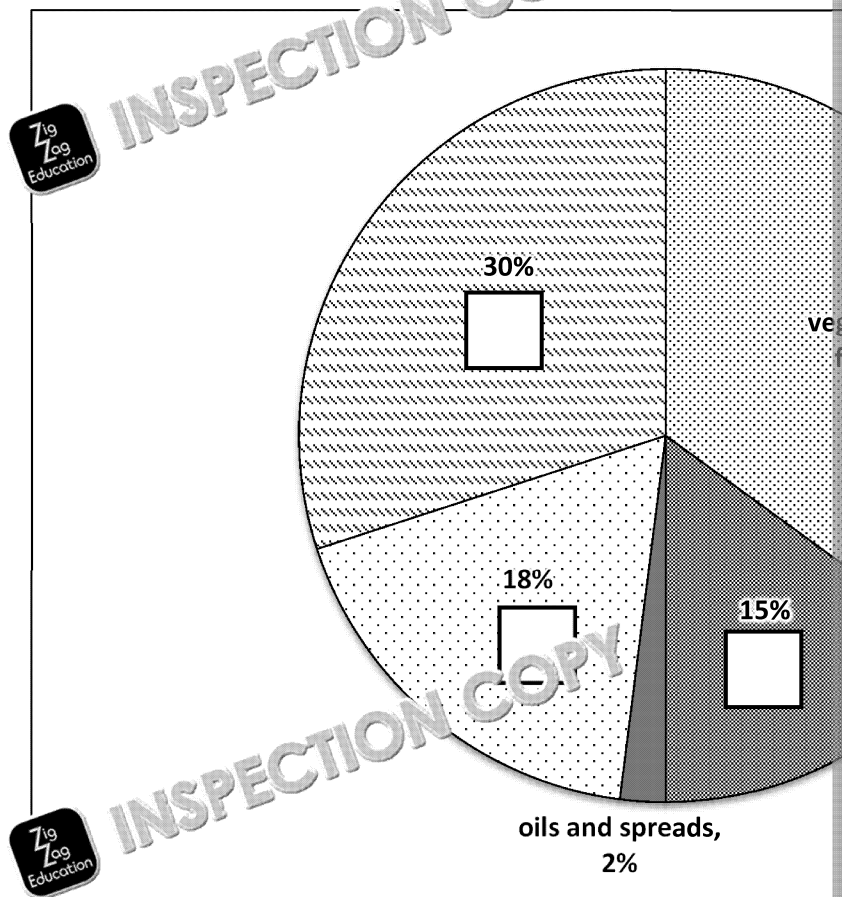
**COPYRIGHT
PROTECTED**



5. Planning balanced diets: Guidelines diet, nutritional needs in different life s

1) The Eatwell Guide is a pictorial representation of the proportions of differ

i) Complete the diagram below to illustrate the different foods contrib



A. Potatoes, bread, rice, pasta
and other starchy foods

B. Meat, fish, pulses and
other protein-rich foods

ii) Explain why the Eatwell Guide indicates that only 2% of the plate is ma

.....

.....

.....



INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 2) What dietary changes should be implemented at different stages of life, and why? Provide a list of dietary changes that should be implemented at different stages of life, and why. Some of them might be used more than once. You can also use the following table to help you.

More milk	Less salt	Less fat	Fewer carbohydrates
Eat more fish	Cut down on fast foods	Increase physical activity	More fibre
Drink water	To prevent obesity	Increase variety of foods	To prevent constipation
To provide protein for proper growth	To prevent constipation	To prevent anaemia	More fibre

Group	Dietary changes	
Teenagers		
Adults		
Elderly		

- 3) i) Rachel wants to make a meal using 2 eggs, 10 g of butter, 100 g of ham and 50 g of cheese. Calculate how much her meal will cost if:



- 10 free-range eggs cost £1.00
- 250 g of butter costs £1.70
- 150 g of ham costs £3.00
- 500 g of cheese costs £2.50

Food portion	Cost
2 eggs	
10 g butter	
100 g ham	
50 g cheese	
Total	

- ii) Assess whether each meal is appropriate if:



Meal is for a 10 years old	yes	no
Rachel is 15 years old	yes	no
Rachel is 65 years old with coronary heart disease	yes	no

COPYRIGHT
PROTECTED



- 4) The British Nutrition Foundation recommends that diets for toddlers and '5532' guide. Match the number of portions with the foods they refer to.

5
5
3
2

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

- 5) The Eatwell Guide recommendations state that babies and small children should avoid certain foods. For each of the following conditions these recommendations help to prevent.

- i)
- ii)

- 6) The NHS advises pregnant women to limit consumption of certain foods. For each of the following foods, colour-code those which should be limited or avoided by pregnant women.

oily fish such as salmon	bread	cheddar cheese
lean fish such as cod	brie cheese	lettuce

Exam-style Question

The Eatwell Guide is a graphic representation of how to balance your meals. It shows the proportions of different food groups that should be eaten. Give two reasons why the Eatwell Guide recommends that more beans and pulses should be eaten.

Extension Task

Using the calculator on [zzed.uk/8907-recipe-calc](https://www.zzed.uk/8907-recipe-calc) design and assess a recipe for a 15-year-old in terms of macro- and micronutrient intake. Justify your choice.

Use the Extension Task

**COPYRIGHT
PROTECTED**



INSPECTION COPY

What macronutrients do he or she need? In what amounts?

What micronutrients does she need the most? In what amounts?

My meal's name:

Ingredients of my meal and why I chose them:

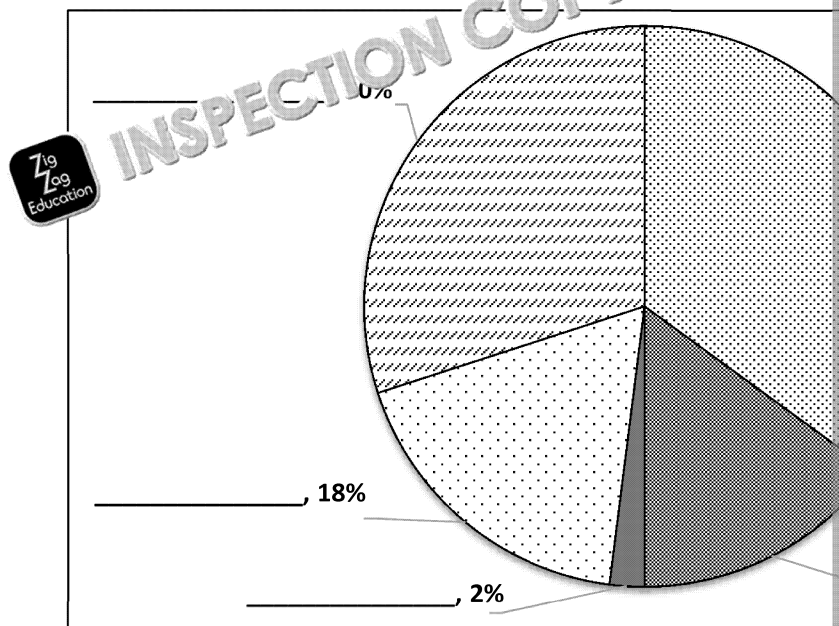
Nutritional value of my meal:

**COPYRIGHT
PROTECTED**



5. Planning balanced diets: Guidelines for a healthy diet, nutritional needs in different life stages

- 1) The Eatwell Guide is a pictorial representation of the proportions of different food groups in a healthy diet. Complete the diagram below to illustrate how different foods contribute to a healthy diet.



- ii) Explain why fats such as oil and butter make up only the percentage



**COPYRIGHT
PROTECTED**



- 2) Complete the table below to explain what dietary changes have to be implemented and give a reason for such changes.

Group	Should eat less...	Should eat more...
Babies and small children		
Teenagers		
Adults		
Elderly		

- 3) i) Rachel has to prepare her breakfast. Help her choose which option is

- 10 free-range eggs costs £1.00
- 250 g butter costs £1.00
- 150 g ham costs £3.00
- 100 g Cheddar cheese costs £2.50
- Toast bread (approximately 20 slices) costs £1.00
- Can of baked beans (400 g) costs £0.86

Meal A: An omelette made with 2 eggs, 10 g butter, 100 g ham and 100 g Cheddar cheese

Meal B: A sandwich made from two slices of bread with 10 g butter and a can of baked beans

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- ii) Assess whether the omelette mentioned above is appropriate for the
- 5 years old
- 15 years old
- 65 years old
with coronary
heart disease

- 4) The British Nutrition Foundation recommends that diets for toddlers and '5532' guide. Explain what the numbers in the recommendation mean.



- 5) Assess whether fruit juices should be a part of a healthy diet for babies and young children.

- 6) The NHS advises pregnant women to limit or avoid consumption of certain foods. Choose those which should be limited or avoided and justify your choices.

oily fish such as salmon	bread	cheddar cheese
lean fish such as cod	brie cheese	lettuce



Exam-style Question

Discuss reasons why individuals should decrease consumption of free sugar. In your answer, include a reference to the current dietary guidelines in the UK.

Extension Task

Use the online calculator at zzed.uk/8907-recipe-calc to design and assess a meal for a year-old child, and justify your choice.

Then indicate how you would modify it so it could be suitable for:

- an elderly person
- a vegan
- a person on a high-fibre diet

**COPYRIGHT
PROTECTED**



6. Planning balanced diets: Nutritional needs of individuals with specific dietary needs and deficiencies

1) Sugar consumption in the United Kingdom has been growing rapidly since 1970.

i) From the options below, tick which health conditions may be caused by eating too much sugar.

obesity	osteoporosis	anaemia
coronary heart disease	type 2 diabetes	overweight

ii) Give an example of one action that might help lower sugar intake of a person.

.....

.....

.....

2) Colour code the diseases with their dietary causes, outcomes, and potential changes that have to be made. Note that some of the options can be used multiple times.

Diseases		
Osteoporosis	Coronary heart disease	Type 2 diabetes
Dietary causes		
Lack of iron	Too much saturated fat	Overeating
Excess of phosphorus	Low physical activity	Folic acid deficiency
Too much sugar	Too much alcohol	
Health outcomes		
Heart failure	Stroke and amputation	Tiredness
Brittle bones	Tooth loss	Trouble during childbirth
Blindness	Joint and spine problems	Easy bone fractures
Changes in diet and lifestyle		
Eat more fish	Cut down on sugar	Cut down on fats
Lose weight (reduce energy intake)	Cut down on saturated fats	Drink more milk
Eat more vitamin C	Eat liver	Eat regularly

3) Explain the difference between food intolerance and a food allergy, using the words in the boxes below.

immune system	digestive system	reaction
---------------	------------------	----------

.....

.....

.....

.....

.....

**COPYRIGHT
PROTECTED**



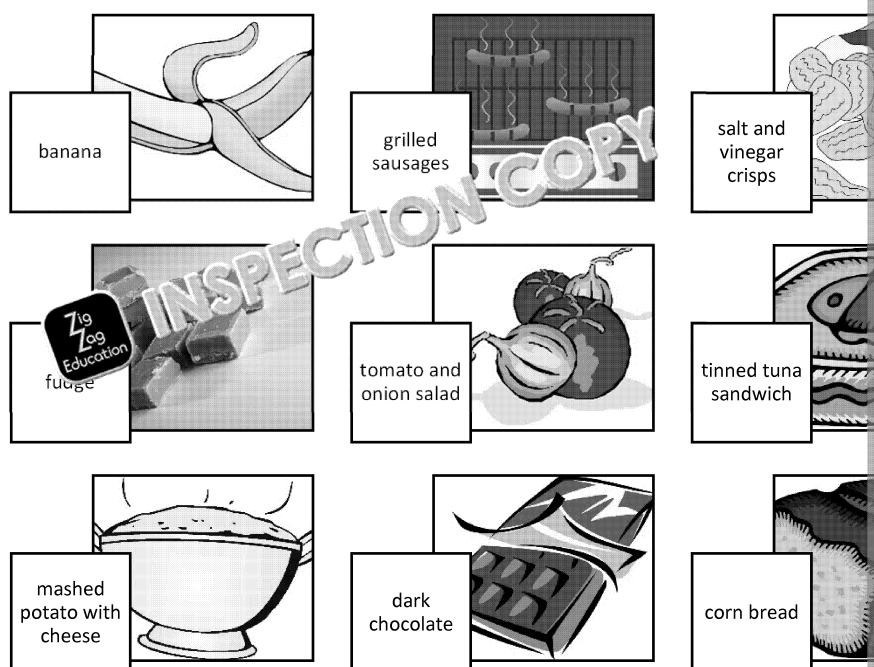
4) From the list below, choose products that will be suitable for:

A 70-year-old man
suffering from obesity

A 50-year-old woman
suffering from high blood pressure

A 14-year-old girl
suffering from bad tooth decay

Product list:



5) Complete the table below to identify some foods which different dietary conditions are not suitable for.

	Do not eat...	
Gluten intolerant		
Lactose intolerant		

**COPYRIGHT
PROTECTED**



- 6) Jim is a 55-year-old man suffering from type 2 diabetes and obesity. He's chips with mayonnaise and half a bar of milk chocolate for lunch. Consider him. How would you adapt the cooking methods and/or ingredients to make his lunch healthier?



Exam-style Question

The following is a list of ingredients for leek and potato soup.

- 1 tbsp butter
- 1 onion
- 225 g potatoes
- 2 leeks
- 1.5 l chicken stock
- 150 ml double cream
- salt and pepper

Suggest **one** change that could be made to the ingredients to make the soup healthier.

- a person suffering from coronary heart disease
- a person with a milk allergy



Extension Task

Design a poster in which you explain how diet affects a person's health. In your poster, you should:

- Identify a diet-related condition from: type 2 diabetes, obesity, cardiovascular disease, osteoporosis, bone health
- Indicate causes of the condition/disease (those related and unrelated to diet)
- Identify symptoms of the condition/disease
- Point out potential outcomes and health effects
- Explain how a person can change their diet to improve the situation



**COPYRIGHT
PROTECTED**



6. Planning balanced diets: Nutritional needs of individuals with specific dietary needs and deficiencies

- 1) Sugar consumption in the United Kingdom has increased by nearly 700% in the last century – from 8 kg per person in 1840 to 55 kg per person in 1980.

- i) List three health conditions that might be caused by high sugar intake.

1.

3.

- ii) Give one example of an action that the government could take to help the UK population.

.....

.....

- 2) Complete the table to indicate dietary causes, outcomes, and dietary advice made to improve the health of individuals suffering from the given condition.

Health condition	Cause	Symptoms and outcomes
Osteoporosis		
Coronary heart disease		
Type 2 diabetes		
Anaemia		

**COPYRIGHT
PROTECTED**



- 3) Explain the difference between a food allergy and food intolerance.

.....

.....

.....

.....

.....

.....

.....



- 4) List at least three products that should be avoided in the given health condition.

A 70-year-old man
suffering from obesity

.....

.....

.....

A 50-year-old woman
suffering from
hypertension



.....

.....

.....

A 14-year-old girl
suffering from bad
tooth decay

.....

.....

.....

- 5) Suggest how you would modify the recipes for the meals and groups shown below.

Group	Meal	Suggestion
Coeliac	Macaroni cheese	
Lactose intolerance	Strawberry milkshake	



**COPYRIGHT
PROTECTED**



- 6) Jim is a 55-year-old man suffering from type 2 diabetes and obesity. Design a diet appropriate for his conditions, taking into consideration cooking methods and your choices.

.....

.....

.....

.....

.....



Exam-style Question

An unhealthy diet has caused an increase in the number of related health conditions. Discuss the relationship between diet, nutrition and health and propose advice on how this can be addressed in Wales.

Extension Task

Plan a daily diet for the following individuals in order to improve their health. Justify your meal choices.

- 1) A teenage girl suffering from obesity
- 2) A 70-year-old man suffering from osteoporosis and type 2 diabetes



**COPYRIGHT
PROTECTED**



7. Planning balanced diets: Nutritional requirements for individuals with specific lifestyle, religious beliefs

- 1) Religion is an important factor on which people base their food choices. Using the list below, identify the main dietary restrictions (such as allowed food periods, etc.) for each of them.

MILSA.....



DHUIINSM.....

MUIJADS.....

- 2) From the list below, identify products which are suitable for vegetarians, and your choice.

cauliflower cheese	wholemeal bread tuna sandwich	tea with honey	coffee
tomato and onion salad	beetroot and raspberry chutney	cheesecake	soy

..... is not suitable for vegans because.....

..... is not suitable for vegans because.....

..... is not suitable for vegans because.....

..... is not suitable for vegans because.....

..... is not suitable for vegans because.....

..... is not suitable for vegans because.....

**COPYRIGHT
PROTECTED**



3) There are various groups of vegetarians. Match each specific dietary group

lacto-vegetarians
ovo-vegetarians
lacto-ovo-vegetarians
veg

eat eggs, but no
eat milk, dairy
do not eat an
eat milk and da

4) French cuisine is very popular in the UK. Inspect the list of ingredients for

<p>3 tsp goose fat 600 g beef shin 100 g streaky bacon 350 g shallots 250 g chestnut mushrooms 2 garlic cloves 1 tbsp tomato puree 750 ml red wine</p>

i) Indicate two ingredients which are not suitable for a vegetarian.

.....

.....

ii) Indicate one ingredient which is not suitable for a Hindu.

.....

iii) Explain why the dish is not suitable for a Muslim.

.....

.....

.....

.....

.....

**COPYRIGHT
PROTECTED**



Exam-style Question

Traditional cottage pie includes minced beef, beef stock, vegetables, and a potato topping with butter and milk.

Suggest **two** different modifications that could be made to this recipe to make it suitable for:

- a) a Hindu
- b) a vegan



Extension Task

Select a traditional British recipe (e.g. for a cottage pie) and adapt it to the needs of:

- a gluten intolerant person
- a Muslim

Use the Extension Task sheet



**COPYRIGHT
PROTECTED**



Extension Task worksheet

Traditional British meal:

Ingredients:

.....

.....

.....

.....



Gluten intolerant person

Changes I have to make:

Why this is so:



Changes I have to make:

Why this is so:


INSPECTION COPY

**COPYRIGHT
PROTECTED**



7. Planning balanced diets: Nutritional needs of individuals with specific lifestyle, religious beliefs

- 1) Religion is one of the factors influencing humans' food choices. Describe the foods they eat, and then identify some of the 'dietary laws' or restrictions.

Religion	Food beliefs	
		
Hinduism		
Judaism		

- 2) List five products or meals which are suitable for vegetarians, but not for vegans.

-
-
-
-
-

- 3) There are various groups of vegetarians. For each group, list **foods of animal origin** that they are not allowed to eat.

lacto-vegetarians

ovo-vegetarians

lacto-ovo-vegetarians

vegans

**COPYRIGHT
PROTECTED**



4) French cuisine is very popular in the UK. Inspect the list of ingredients for



3 tsp goose fat
600 g beef shin
100 g streaky bacon
350 g shallots
250 g chestnut mushrooms
2 garlic cloves
1 tbsp tomato puree
750 ml red wine

i) Explain why the recipe is not suitable for:

a Muslim

.....

a Hindu

.....

ii) Describe how the recipe could be modified to make it suitable for a v

.....

.....

.....



Exam-style Question

Evaluate the advantages and disadvantages of becoming a vegan.

Extension Task

Select a traditional British recipe and adapt it to the needs of:

- a gluten intolerant person
- a Muslim
- a person allergic to milk



Explain why the changes have to be made.

INSPECTION COPY

COPYRIGHT
PROTECTED

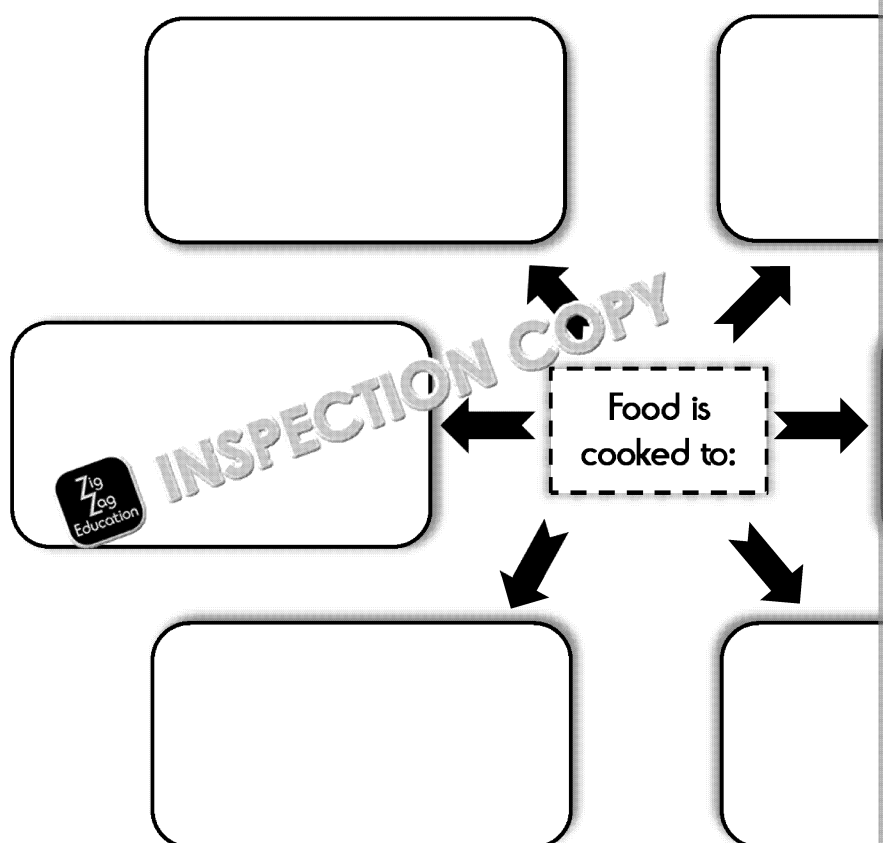


8. The effect of cooking on food: Why how heat is transferred, how cooking r food

- 1) Complete the diagram below to show the reasons for cooking food. Use the hints to help you.

Hints:

- Salmonella or Clostridium botulinum
- Best before dates
- Soups, gratin or jacket?
- Yummy! What smells so nice?
- This bread is so crispy!
- Look how these muffins grow!



COPYRIGHT
PROTECTED



- 2) i) Identify the processes in which heat is transferred to food, and give an example of how heat is applied.

I can only work when water or oil is here...

I am _____

You use me to _____
vegetables, boil eggs!

I can work remotely, radio!

I am _____

Example _____

I need to be close to give _____
my warmth!

I am _____

Examples:

- ii) Identify three dishes that use more than one heat transfer method to cook them.

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 3) Complete the table below to explain how cooking and preparation methods provided below (you can use them multiple times). You can also use your own ideas.

prevents vitamin loss	leads to vitamin loss	allows cooking
low in calories	high in calories	good for health
can lead to obesity	leads to enzymatic browning	
is quick	time-consuming	
slows down oxidation	prevents enzymatic browning	
makes the food easier to chew	creates a crunchy top	
softens texture	can't be used	

	Is good because...	
Steaming (cooking)		Can't be used
Boiling (cooking)		
Shredding (preparation)	Makes the food easier to chew, alters texture	
Deep-frying (cooking)		
Poaching (cooking)		Can't be used
Blanching (cooking and preparation)		
Baking (cooking)		
Braising (cooking)		
Marinating (preparation)		

INSPECTION COPY

COPYRIGHT
PROTECTED



4) Below you can see various cooking methods.

Cooking methods:

braising

simmering

roasting

grilling

dry-frying

Choose those which:

i) Lower the amount of fat in foods



ii) Increase the amount of fat in foods

iii) Decrease the nutritional value of foods

iv) Preserve the nutritional value of foods

(You can use each method more than once, and you can also give your own)



Exam-style Question

Sponge cake is made with plain flour, eggs, butter and sugar.
Explain **two** reasons why the sponge cake has to be cooked.

Extension Task

Take three potatoes and cook them using three different methods, e.g. boil, fry, roast.

- 1) Measure the time needed to cook the potatoes.
- 2) Put them on a paper towel and observe.
- 3) Assess the appearance, colour, flavour and texture of each of the potatoes.

Make sure the potatoes are the same size.



Use the Extension Task




INSPECTION COPY

**COPYRIGHT
PROTECTED**



Extension Task worksheet

INSPECTION COPY

	Potato 1	Potato 2
Cooking method		
Cooking 		
Paper towel experiment observations		
Appearance		
Colour		
Flavour 		
Texture		
Conclusions 		

COPYRIGHT
PROTECTED



8. The effect of cooking on food: Why food cooks, how heat is transferred, how cooking methods affect food

- 1) Complete the table to explain why people cook food and give examples with each method.

People cook food to...	Answer

- 2) i) Explain the difference between convection, conduction and radiation.

.....

.....

.....

.....

.....

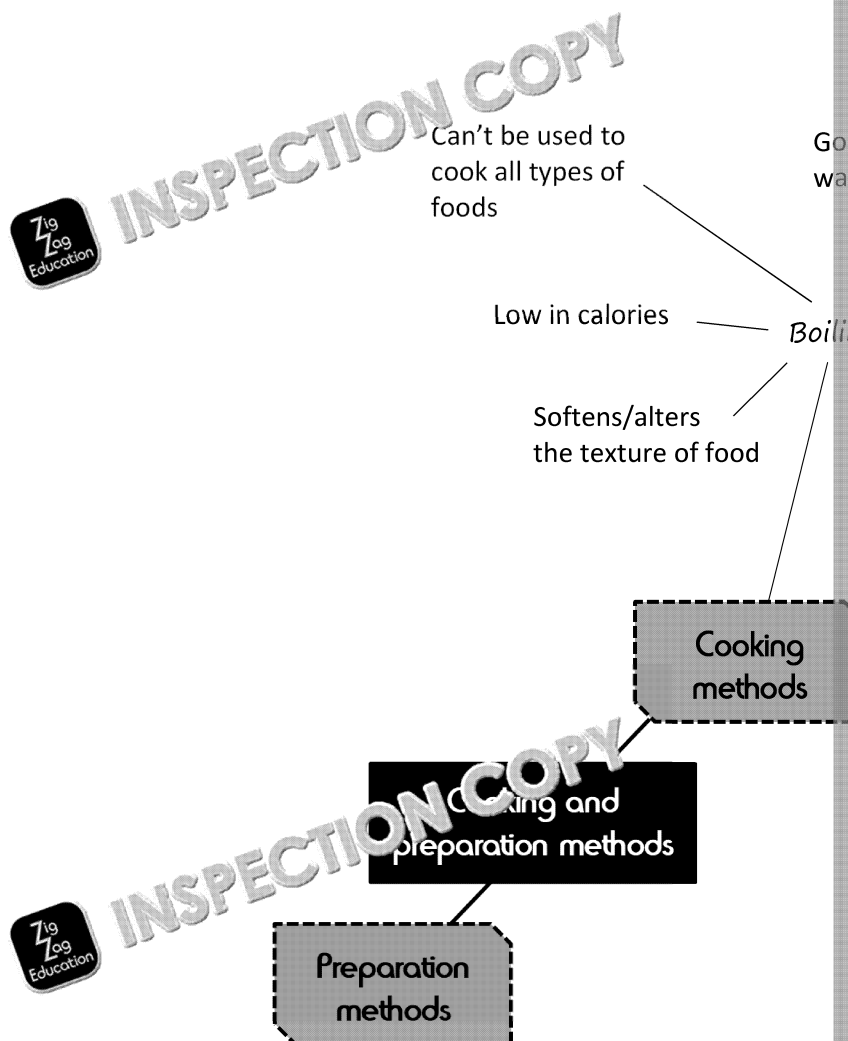
- ii) Identify which heat transfer methods take place during the following cooking methods and explain how and when it occurs.

Cooking method	Heat transfer method	
Baking an apple pie	Convection	<input type="checkbox"/>
	Conduction	<input type="checkbox"/>
	Radiation	<input type="checkbox"/>
Cooking soup	Convection	<input type="checkbox"/>
	Conduction	<input type="checkbox"/>
	Radiation	<input type="checkbox"/>
Frying chicken	Convection	<input type="checkbox"/>
	Conduction	<input type="checkbox"/>
	Radiation	<input type="checkbox"/>
Steaming vegetables	Convection	<input type="checkbox"/>
	Conduction	<input type="checkbox"/>
	Radiation	<input type="checkbox"/>
Grilling steak	Convection	<input type="checkbox"/>
	Conduction	<input type="checkbox"/>
	Radiation	<input type="checkbox"/>

COPYRIGHT
PROTECTED



3) Complete the diagram to explain how cooking and preparation methods a



INSPECTION COPY

COPYRIGHT
PROTECTED



4) Explain how different cooking methods alter the nutritional value and fat

Simmering:

Braising:

Roasting:

Grilling:

Dry-frying:

Stir-frying:

Shallow-frying:

Exam-style Question

Fat-based cooking methods are very popular in the UK.
Describe how **three** fat-based cooking methods affect the nutritional value of

**COPYRIGHT
PROTECTED**

Extension Task

Take five potatoes and prepare them using steaming, boiling, microwaving and roasting.

- Take notes on how the cooking methods affect their appearance, colour and texture.
- How could you check the fat content of each of the potatoes?



9. The effect of cooking on food: carb protein, fruit and vegetables

- 1) Fill in the gaps in the text to explain what happens to proteins during cooking.

air	gliadin	acid	gluten
amino acids	foam	heat	coagulation

Proteins are large molecules built from _____. They are

_____, which then twist and curl up to form specific proteins.

_____ or _____, proteins _____

_____ is a process in which proteins aggregate and form

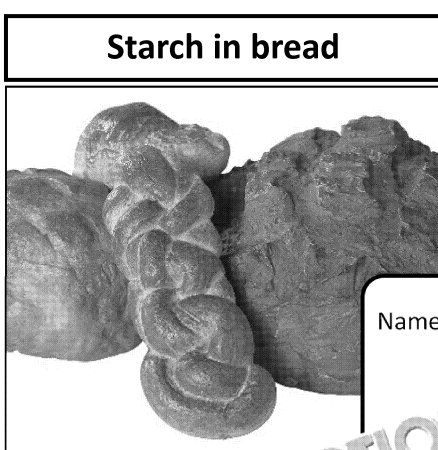
plain flour, contain _____ and _____

glue together and form _____. It has long elastic fibres

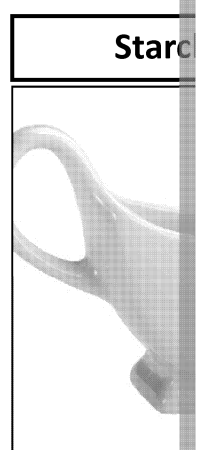
_____. If you whisk an egg white, you incorporate _____

mixture and _____ is created.

- 2) i) Identify the main processes which affect carbohydrates during cooking.



Name of process:



**COPYRIGHT
PROTECTED**



- ii) Explain the difference between gelatinisation and dextrinisation.

.....

.....

.....

.....

.....

.....



INSPECTION COPY

- 3) Complete the sentences below to explain how fats act during cooking. Use the words in the boxes below.

aeration	cream	water	spread and reshaped	
emulsion	melting point	mayonnaise	batter	shortbread biscuits

- i) Fat mixed with flour leads to

.....

This is used to prepare

- ii) Fat mixed with sugar



INSPECTION COPY

- iii) Fats do not dissolve in

.....

.....

- iv) Plasticity of fat means that it can be easily

have different

.....

- 4) Give an example of one dish in which:

Dextrinisation takes place:

Gelatinisation of starch occurs:



INSPECTION COPY

**COPYRIGHT
PROTECTED**

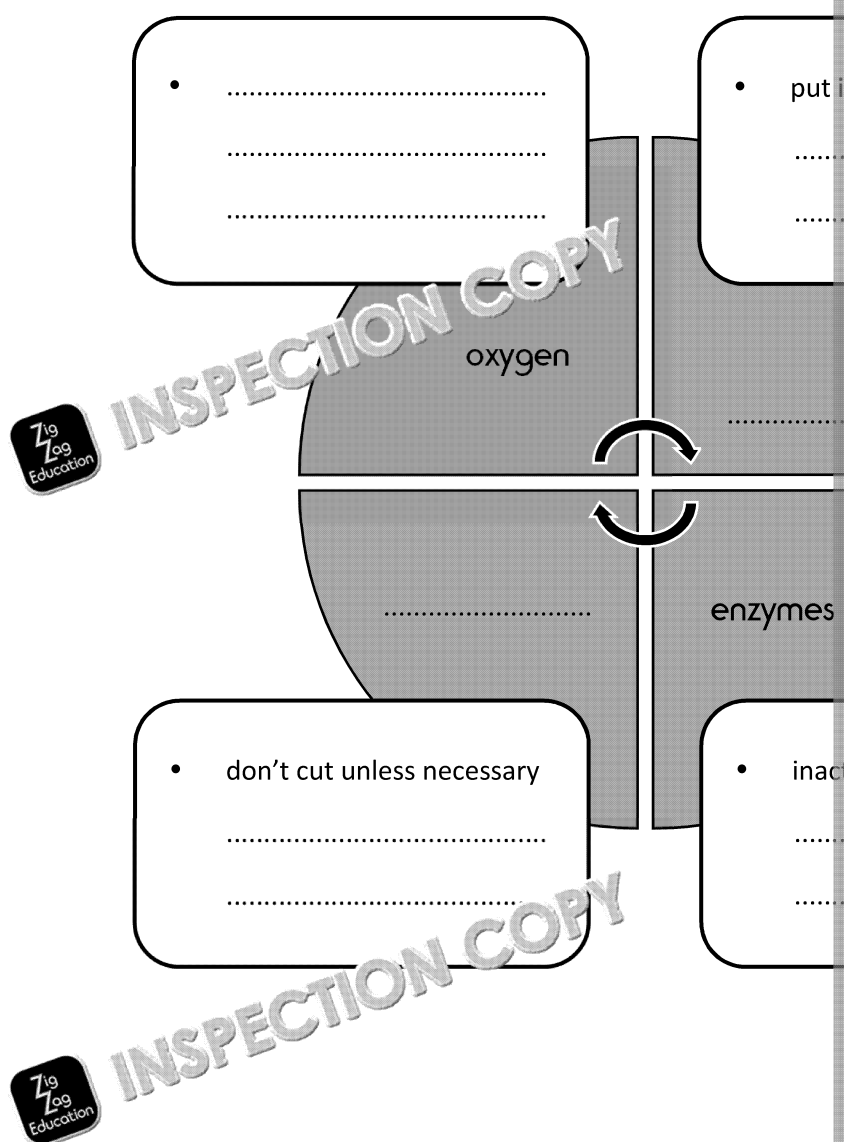


5) Fill in the gaps in the text below using the keywords provided.

bananas	damage	enzymes
colour	enzymatic browning	nutritional value

_____ is a process which takes place when plant cells are damaged. Enzymes from the cells leak out and cause _____ in the surrounding tissues. This leads to a change of _____ of the food. Some fruit and vegetables are particularly susceptible. These include _____.

6) i) Complete the diagram below to indicate the main factors that speed up enzymatic browning and ways to prevent them.



COPYRIGHT
PROTECTED



- 7) Oxidation is a process which affects foods that are exposed to air. Indicate food from oxidation.

.....

.....

.....

.....

- 8) Improper preparation and lack of cooking skills can lead to a failure. Identify situations that have happened in the test kitchen.

the top of a sponge cake has cracked	
shortcrust pastry is sticky and difficult to handle	

Exam-style Question

Crème brûlée is a classic dessert made from milk or cream, eggs and sugar.

Explain how the chemical changes in the proteins and sugars help to produce

Extension Task

Prepare a béchamel sauce and then explain:

- How conduction and convection are applied to cook it
- Where is the need for agitation (stirring)

Use the Extension Task

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Béchamel sauce ingredients:

.....

.....

.....

Cooking of béchamel sauce step by step:

.....

.....

.....

.....

.....

Which step of cooking uses conduction?

.....

Which step of cooking uses convection?

.....

What happens to the sauce?

.....

.....

.....

.....

Why do I have to stir the sauce, and what would happen if I didn't?

.....

.....

.....

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



9. The effect of cooking on food: carb

protein, fruit and vegetables

- 1) Explain what happens to proteins during the cooking and preparation of f

plasticity	foam	gluten	gliadin
high temperature	polymerisation	coagulation	glutenin



- 2) Con the table below to explain how different methods of heat trans

The process	Molecules affected	Conditions needed
Caramelisation		
Gelatinisation		
Dextrinisation		



**COPYRIGHT
PROTECTED**



3) Explain how the chemical structure of fats defines their use in cooking.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



INSPECTION COPY

4) Explain why:

Bread turns brown when baked

Egg turning boiling

Sauce thickens during simmering



INSPECTION COPY

5) i) Explain what enzymatic browning is.

.....

.....

.....

.....

.....



INSPECTION COPY

**COPYRIGHT
PROTECTED**



ii) List three fruits and three vegetables that are especially prone to enzymatic browning.

Fruits:

1.
2.
3.

Vegetables:

1.
2.
3.

6) Complete the table below to indicate why enzymatic browning takes place.

Factors causing and accelerating enzymatic browning	Why it happens

7) i) Explain what oxidation is.

.....

.....

.....

ii) Indicate two ways of preventing oxidation in foods.

.....

.....

.....

**COPYRIGHT
PROTECTED**



- 8) i) Improper proportions and lack of cooking skills can lead to a failure. It can prevent a bread from rising.

.....

.....

.....

.....



- ii) Identify two ways in which you can prevent the bread from failing.

a)

.....

b)

.....

Exam-style Question

Explain **three** functions of fats when cooking and preparing foods.



Extension Task

Research information on food additives at zzed.uk/8907-gov-additives and explain their use in production of mayonnaise.



**COPYRIGHT
PROTECTED**



10. The effect of cooking on food: The effect of microorganisms

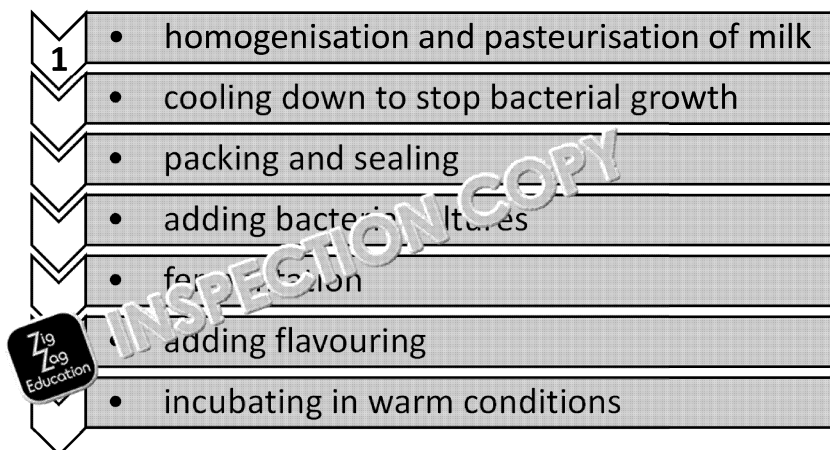
- 1) Various microorganisms are used in production of food products worldwide. Match the microorganisms below with foods they are used to produce. Remember that some of them are used to produce more than one food product.

bacteria

mould

yeast

- 2) i) Order the stages of yoghurt production.

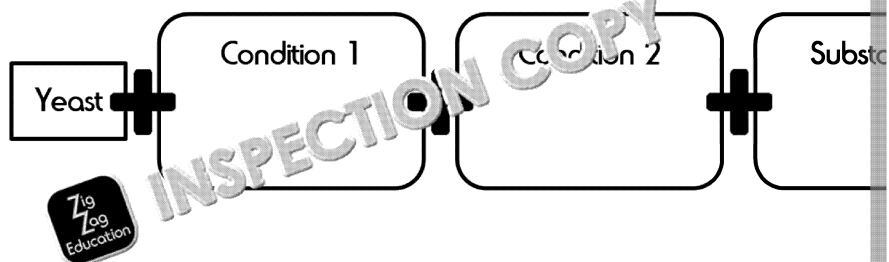


- ii) Identify two characteristics of milk which are affected by bacteria during fermentation.

.....

.....

- 3) Complete the equation below to explain the conditions needed for yeast to ferment sugar to produce ethanol and carbon dioxide.



INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 4) i) During production of salami, microorganisms produce acid. What is the effect of acid on the salami? What does it undergo in the presence of acid?
-
- ii) The same process happens to proteins due to enzymic action. What is the effect on cheese production?
-

Extension Task

Set up a taste panel for different types of yoghurt. Choose up to five different types of yoghurt (e.g. probiotic yoghurt, 0% fat yoghurt, Greek yoghurt, skyr). Code the samples and ask the panel to rate them from the least liked to the most liked (this is called a rating test).

Then try to answer whether the percentage of fat in yoghurt decided which

Use the Extension Task

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Step 1

Prepare up to five different kinds of plain, unflavoured yoghurt and code them to identify which yoghurt is which.

	Yoghurt 1	Yoghurt 2	Yoghurt 3

Sample code, e.g. XYZ			

Step 2

Prepare the samples. Take five plastic cups or bowls and pour a different kind of yoghurt into each. Provide each tester with five plastic spoons for the testers, and cups with clean water to clear their palate after each sample.

Step 3

Ask up to 10 people to assess the samples. Use a 1–5 scale, where 1 means 'the worst' and 5 means 'the best / like very much'.

Dislike very much / the worst	Dislike	Neither like nor dislike	Like	Like very much / the best
1	2	3	4	5

Step 4

Record your findings in the table below by indicating the rank each tester gave each yoghurt. At the end of the test, sum up the ranks each yoghurt obtained.

	Yoghurt 1	Yoghurt 2	Yoghurt 3	
Tester 1				
Tester 2				
Tester 3				
Tester 4				
Tester 5				
Tester 6				
Tester 7				
Tester 8				
Tester 9				
Tester 10				
SUM				

Step 5

Did the amount of fat in the yoghurt determine which yoghurt was assessed as the best? Explain your answer.

.....

INSPECTION COPY

COPYRIGHT
PROTECTED



10. The effect of cooking on food: The effect of cooking on microorganisms

- 1) Various microorganisms are used in production of food products worldwide. Name the microorganisms used in production of the following foods.

i) **Stilton cheese**

ii) **Panettone cake**

iii) **Apple juice**

iv) **Probiotic yoghurt**

- 2) i) Complete the chart to indicate the main stages of yoghurt production.

1	• homogenisation and pasteurisation of milk
	• cooling and sealing

- ii) Explain how bacteria work to transform milk into yoghurt.

.....

.....

.....

.....

.....

.....

- 3) Indicate the conditions that enable bacterial growth during production of bread.

.....

.....

.....

**COPYRIGHT
PROTECTED**



- 4) i) During production of wine, microorganisms transform sugar from grape juice into alcohol. What process is called?
-
- ii) The same process is used in production of sausages such as salami and chorizo. What is an efficient method of producing sausages?
-
-



Extension Task

Set up a taste panel for different types of bread. Choose up to five kinds of bread. Choose white soft bread made by different brands or different types of bread. When preparing the taste panel:

- decide what type of taste test you want to carry out
- decide what scale you need to use
- decide how many people need to assess your samples
- decide how to code your samples
- choose what characteristics of bread you want to assess

Remember to consider any special conditions you may need to control during the taste panel.

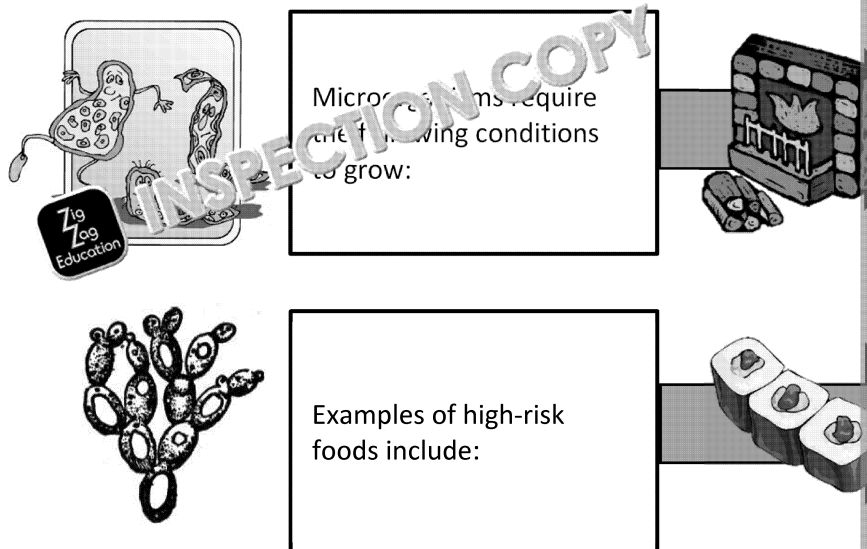


**COPYRIGHT
PROTECTED**



11. Food spoilage: The growth conditions for microorganisms and the signs of food spoilage

- 1) Complete the diagram below to indicate conditions for microorganisms' growth.



- 2) Enzymes are biological catalysts usually made from protein.

- i) Explain why the use of vinegar or lemon juice helps to prevent enzymatic action.

.....

.....

- ii) Explain why blanching vegetables helps to prevent enzymatic action.

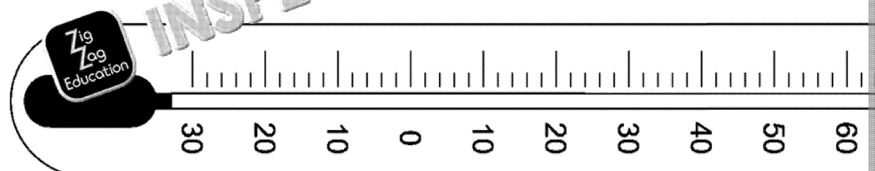
.....

.....

- 3) There are different signs of food spoilage depending on the factors causing spoilage signs it can cause.

Enzymes	green or white fuzzy
Mould	sour flavour, foam
Yeast	browning of food, r

- 4) Appropriate temperature is crucial for microorganisms' growth. Indicate the temperature range in which microorganisms grow the fastest.



**COPYRIGHT
PROTECTED**



Exam-style Question

Enzymes can cause food spoilage. Describe **two** methods that can help to con

Extension Task

Investigate the influence of diminution (cutting into smaller pieces), time and enzymatic browning of apples and potatoes. Use the Extension Task worksheet for this experiment. You can take pictures at every stage to help you assess the change

Use the Extension Task worksheet

INSPECTION COPY



INSPECTION COPY



INSPECTION COPY

**COPYRIGHT
PROTECTED**



Extension Task worksheet

INSPECTION COPY

	Freshly cut	After 30 minutes
Apple, peeled and cut in halves, room temperature		
Apple, peeled and cut in halves, in the fridge		
Apple, peeled and shredded, room temperature		
Apple, peeled and shredded, in the fridge		
Potato, peeled and cut in halves, room temperature		
Potato, peeled and cut in halves, in the fridge		
Potato, peeled and shredded, room temperature		
Potato, peeled and shredded, in the fridge		

How does temperature affect the rate of enzymatic browning?

.....

.....

How does time affect the rate of enzymatic browning?

.....

.....

How does diminution (cutting into smaller pieces) affect the rate of enzymatic browning?

.....

.....

**COPYRIGHT
PROTECTED**



11. Food spoilage: The growth conditions of microorganisms and the signs of food spoilage

- 1) Complete the table below to indicate the risk factors that allow bacteria to grow in foods that may be affected by bacteria.

Factors needed for microorganisms' growth	
	Foods that are rich in water
High pH (alkaline) content	

- 2) i) Explain what enzymes are, using the keyword: 'catalyst'.

.....

- ii) Give two ways of controlling enzymatic action in foods.

1.

 2.

- 3) Complete the table below to explain how microorganisms cause food spoilage.

Microorganism	Sign of spoilage caused by given microorganism	
Enzymes		
Mould		
Yeast		

- 4) Appropriate temperature is crucial for microorganisms' growth. Indicate the temperature at which microorganisms grow the fastest.

.....

Exam-style Question

State two reasons why uncooked meat is transported in controlled temperatures.

Free-form Task

Investigate how various factors affect the rate of enzymatic browning and of food products.

- What foods can you use in your experiment?
- What factors can you measure?
- How could you record your findings?

COPYRIGHT
PROTECTED



12. Food spoilage: Buying and storing food to prevent food spoilage. To store foods correctly, the importance of

- 1) Complete the table to explain why proper storage conditions are important to prevent food spoilage and poisoning.

Storage conditions	Is important to prevent food spoilage and poisoning
Keeping food covered	
Choosing the correct temperature	
Keeping the storage dry and mould – free	
Choosing the correct light	

- 2) Using the keywords provided, explain the difference between a 'use by' and a 'best before' date.

Quality	Safety	Fish	Dairy	Dry
---------	--------	------	-------	-----

.....

.....

.....

.....

- 3) Place the products listed in the boxes below in the correct areas in the fridge to prevent food spoilage and prevent food poisoning.

non-dairy creamer	eggs	cold cuts	fruit and vegetables
soy milk	cottage cheese	oil	frozen peas

Top shelf:

Middle shelf:

Bottom shelf:

Drawers:

Fridge




**COPYRIGHT
PROTECTED**



- 4) i) Match the storage conditions with the correct temperatures.


Freezing
Chilling
Cooking and reheating food
Boiling water

- ii) What is the range of 'danger zone' temperatures?

- iii)  ent storage means that food is stored at _____
the temperature between _____. This falls in the r

- 5) Fill in the gaps to explain the need for appropriate temperature control du food, using the keywords below.

increases (x2)	never	moisture	s
bacteria	defrosted	75°C	

In most cases, frozen food should be _____ before cookin
_____ the time of cooking, and all the _____
defrosted, food should _____ be frozen again because it
bac  rrc

Reheating food is a major cause of food _____. This is bec
the conditions needed for growth – _____,
reheating should be done thoroughly at temperatures above _____°C. Re
_____ the risk of food poisoning.

**COPYRIGHT
PROTECTED**



Exam-style Question

Many food products are labelled with the recommended storage conditions. State one example of a food which would be labelled with each of the following.

- refrigerate after opening
- store in a cool, dry place.



Extension Task

Go to a supermarket and investigate the labels of various food products. Check whether they:

- display a use by date
- display a best before date
- do not display any date mark
- include storage conditions
- include instructions for preparation

Then try to assess why food products are labelled (or not) with each piece of information.

Use the Extension Task



INSPECTION COPY



INSPECTION COPY

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Foods which display use by date mark	Foods which display best before date mark	

Foods which display storage conditions	What

Foods which display instructions for preparation	Are these instructions to prepare

INSPECTION COPY

COPYRIGHT
PROTECTED



Why are food products labelled with:

- a use by date mark?

.....

.....

- a best before date mark?

.....

.....

- storage instructions?

.....

.....

- instructions for preparation?

.....

.....

Why are some products not labelled with date marks at all?

.....

.....



**COPYRIGHT
PROTECTED**



12. Food spoilage: Buying and storing food correctly, the importance of

- 1) i) List five conditions that have to be met to ensure proper food storage

1.
2.
3.
4.
5.

- ii) Explain how the conditions you identified in part i) help to avoid cross-contamination

-
-
-
-
-

- 2) Explain the difference between 'use by' and 'best before' date marks.

-
-
-
-
-

- 3) Give an example of food that can be stored:

On the top shelf of the fridge

On the bottom shelf of the fridge

In the fridge door

In the freezer

**COPYRIGHT
PROTECTED**



4) i) Indicate the correct temperatures for:

Freezing

Chilling

Cooking and reheating food

Boiling water

ii) Explain the term 'danger zone' in relation to food safety. What is the danger zone?



.....

.....

.....

.....

iii) Explain what 'ambient storage' is. What is the temperature range of

.....

.....

.....

.....

5) Explain appropriate temperature control during defrosting and reheating



.....

.....

.....

.....

.....

.....

**COPYRIGHT
PROTECTED**



Exam-style Question

Many food products are labelled with the recommended storage conditions. State **two** reasons why food labels include this information.

Extension Task

Go to a supermarket and investigate the food labels of various foods. Choose one food item and investigate how it is preserved for a few months or years away. Then try to explain how different processing techniques help to obtain such long shelf life of food.

Also, find five products which include instructions for preparation on their labels. Explain why such instructions are necessary for these foods.

INSPECTION COPY



INSPECTION COPY



INSPECTION COPY

**COPYRIGHT
PROTECTED**



13. Food spoilage: Preparing and cooking of bacterial cross-contamination, prevention methods, signs and symptoms of food poisoning

1) From the names below, underline the pathogens that cause food poisoning

Salmonella

Shigella dysenteriae

Fusobacterium

Haemophilus influenzae

Helicobacter pylori

Staphylococcus aureus

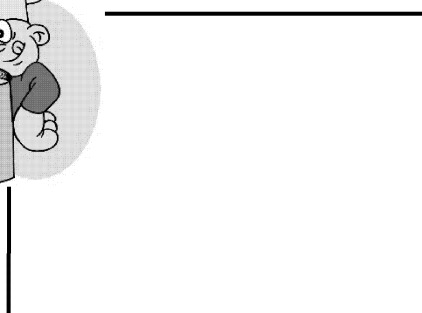
Enterobacteriaceae

Lactobacillus

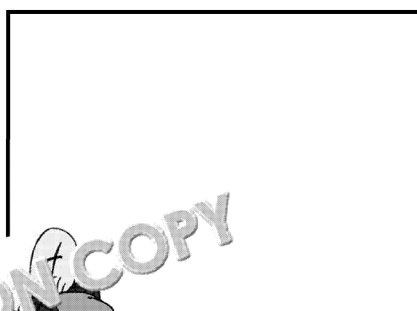
Campylobacter



2) i) Indicate the main sources of bacterial contamination. Use the pictures



Bacterial contamination



COPYRIGHT
PROTECTED



ii) Provide an example of how to prevent food contamination and food

.....

.....

.....

iii) List three symptoms of food poisoning.



1.

2.

3.

3) i) Identify high-risk kitchen activities which require you to wash your hands



**COPYRIGHT
PROTECTED**



- ii) Explain the role of hygiene in preventing food poisoning and cross-contamination. Write down the keywords below.

hands	clean	risk	
work surface	raw	utensils	



INSPECTION COPY

- 4) Colour coding kitchen utensils helps to prevent cross-contamination of food. Write down the colours and the foods they should be used to prepare.

BLUE
RED
YELLOW
BROWN
GREEN
WHITE



INSPECTION COPY

- 5) Correct cooking time and temperature are important in preventing food poisoning. Write down the correct cooking time helps to prevent food poisoning.

.....

.....

.....

.....

.....

.....



INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 6) Using the keywords below, describe two effects food waste has on the environment.

landfill

fossil fuel

methane

transport



- 7) Various preservation methods help to keep foods for longer. For each of the methods below, describe how it helps to extend the shelf life of food.

Preservation method	Extends the shelf life by
jam making	
pickling	
freezing	
bottling	
vacuum packing	

Exam-style Question

State two reasons why defrosted food should not be frozen again.



**COPYRIGHT
PROTECTED**



Extension Task

Design a leaflet for kitchen workers to help them prevent food poisoning.

In your leaflet:

- Explain what food poisoning is and what the main symptoms are
- State the main causes of food poisoning
- Outline the main hygiene and safety rules necessary to prevent food poisoning

You can use your textbook or zzed.uk/8907-gov-safety website for help.



INSPECTION COPY

COPYRIGHT
PROTECTED



13. Food spoilage: Preparing and cooking of food to prevent bacterial cross-contamination, preservation methods, signs and symptoms of food poisoning.

1) List three pathogens that occur in food and cause food poisoning.

1.
2.

2) i) Indicate the main sources of bacterial contamination of foods.

.....

.....

.....

.....

ii) Explain how food contamination and food poisoning can be prevented.

.....

.....

.....

.....

.....

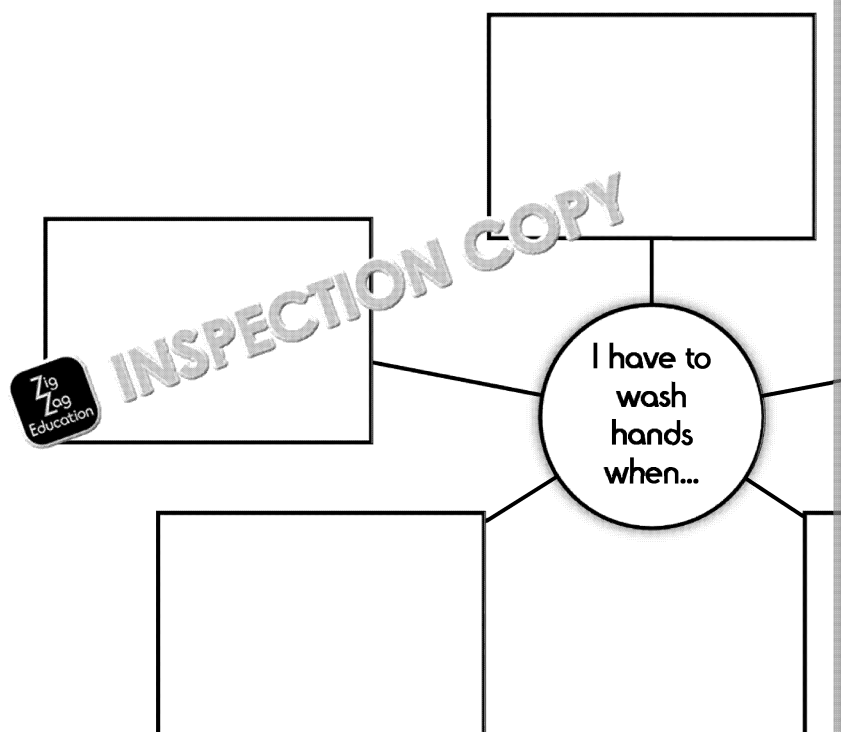
iii) List three symptoms of food poisoning.

1.
2.
3.

**COPYRIGHT
PROTECTED**



- 3) i) Identify high-risk kitchen activities which require you to wash your hands



- ii) Explain the role of hygiene in preventing food poisoning and cross-contamination.

.....

.....

.....

.....

- 4) Colour coding kitchen utensils helps to prevent cross-contamination of food. List the colours designated for:

Salads and fruit

Raw fish

Vegetables

Raw meat

Dairy

Cooked meat

- 5) Explain how correct cooking time helps to prevent food poisoning.

.....

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



6) Mishandling food can lead to food wastage. Describe the effects of food wastage.

.....

.....

.....

.....

.....

.....



7) Various preservation methods help to keep foods for longer. Explain how each method helps to extend the shelf life of food.

i) jam making

.....

.....

.....

.....

ii) vacuum packing

.....

.....

.....

.....



Exam-style Question

Food poisoning in the United Kingdom is one of the most neglected health issues.

Describe **three** ways of preventing food poisoning when preparing and cooking food.

Extension Task

Research information on food poisoning at www.food.gov.uk/3907-gov-safety

Then, design a poster to show the occurrence and main causes of food poisoning.



**COPYRIGHT
PROTECTED**



14. Food provenance: Food origins

- 1) Match the food sources with the way they are obtained. Remember that some foods can be obtained in multiple ways!

Venison	Reared
Mushrooms	
Beef	Grown
Lettuces	
Stinging nettles	Gathered
Pork	
Carrots	Caught
Sunflowers	
Thyme	
Lamb	
Olives	
Pumpkin	
Salmon	
Oysters	

- 2) Using the words below, explain the difference between organic farming and conventional farming.

pesticide antibiotic genetically modified



**COPYRIGHT
PROTECTED**



INSPECTION COPY

- 3) Fill in the gaps in the passage below using the keywords provided.

organic (x2)

cage

barn (x2)

free-range (x3)

Eggs can be produced in various ways. The most popular method of egg f
_____ production, where hens are kept in tight _____
on top of each other.

The second most popular method is _____ product
around the _____.

Animal welfare activists claim that _____ egg prod
and consumers. _____ hens are allowed outside a
have much more room than the hens in _____ or
production. _____ eggs are labelled as 1.

_____ eggs come from hens which are fed _____
labelled as 0.

- 4) Complete the graph to list the advantages and disadvantages of intensive

+

+

+

+

—

—

Exam-style Question

State two benefits of buying fish from sustainable fish farms.

Extension Task

For three consecutive days, note everything that you and your family eat.

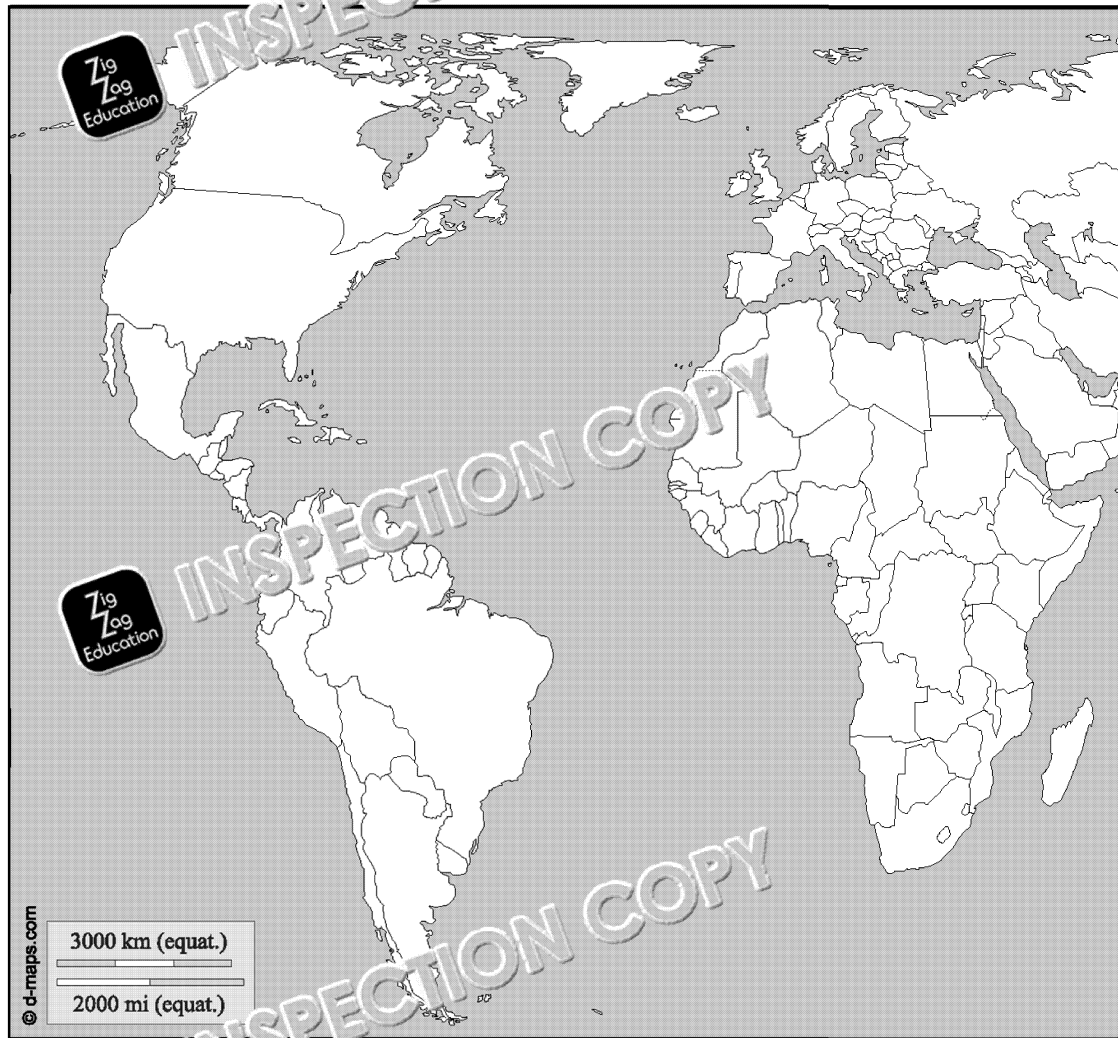
- Mark on the map on the following page where these foods came from.
- Using the Internet, calculate the total food miles for each of these food items.
- Suggest some ways of reducing your total carbon footprint / food miles.


Use the Exter

**COPYRIGHT
PROTECTED**



Extension Task worksheet



Remember to  down the distance of each marked food from your home!

INSPECTION COPY

**COPYRIGHT
PROTECTED**



14. Food provenance: Food origins

- 1) List three food ingredients that are:

Reared

Grown

Gathered

Caught

- 2) Explain the difference between organic farming and conventional farming

.....

.....

.....

.....

- 3) Describe different methods of egg production in the table below.

Label	Method name	Description
3		
2		
1		
0		

- 4) Discuss the advantages and disadvantages of intensive farming.

.....

.....

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



INSPECTION COPY



Exam-style Question

Evaluate the advantages and disadvantages of fish farms in maintaining sustainable food production.

Extension Task

Create a connections map to indicate various factors which affect the availability of food in the world.

To do this, put 'availability of food' in the centre and then draw lines to various factors. From those factors, draw lines to other factors which might influence them, and so on.

You can use the template connections map on the next page or create your own.

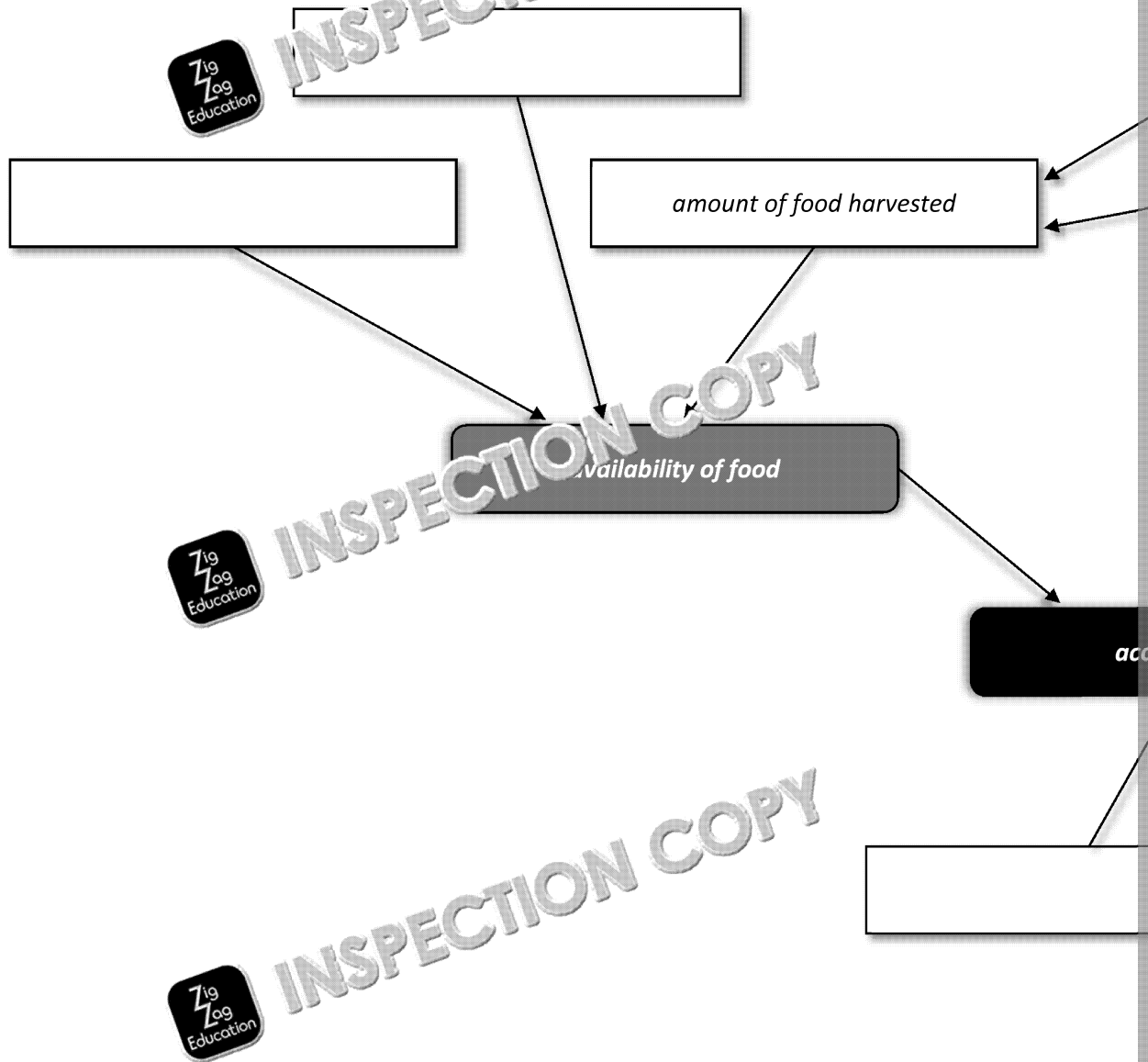
INSPECTION COPY

INSPECTION COPY

**COPYRIGHT
PROTECTED**



Connections map template



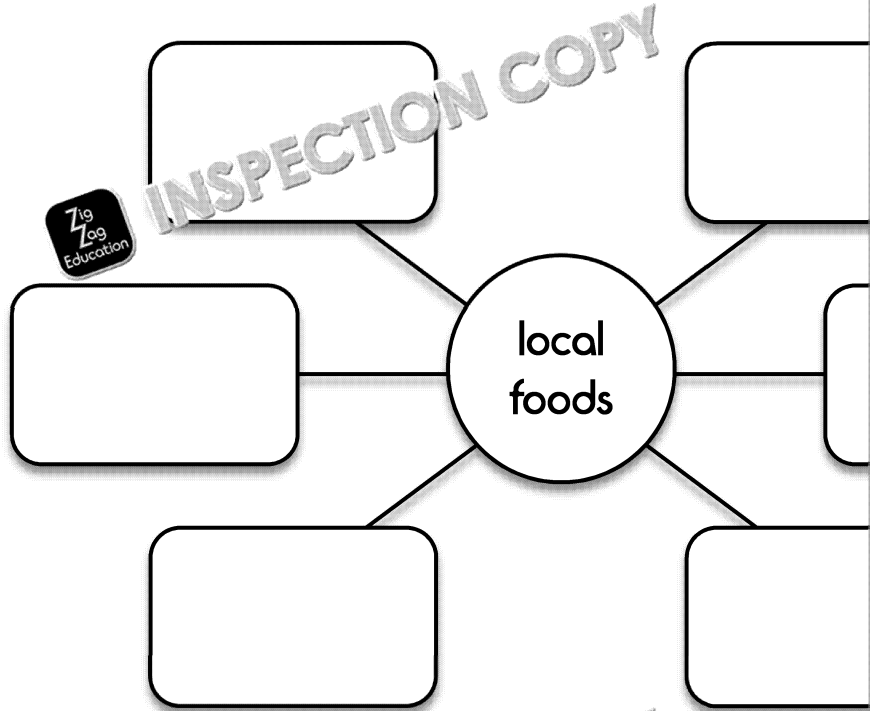
INSPECTION COPY

COPYRIGHT
PROTECTED



15. Food provenance: The impact of food on the environment

- 1) Complete the diagram below to indicate the advantages of buying seasonal



- 2) Unjumble the words to discover various aspects of food production which

WTEFODOAS

GINCKPAA

NTRBACOTOFC

FSSFLIOEUL

EGEEHGARNUOSSES

PRNOANATTSR

- 3) Put these stages of climate change into the correct order.

1

• greenhouse gases are released into the atmosphere

• crops are damaged and people suffer famine

• glaciers melt while oceans, seas and lakes evaporate

• the surface of the earth warms up

some regions suffer from drought while others are

INSPECTION COPY

**COPYRIGHT
PROTECTED**

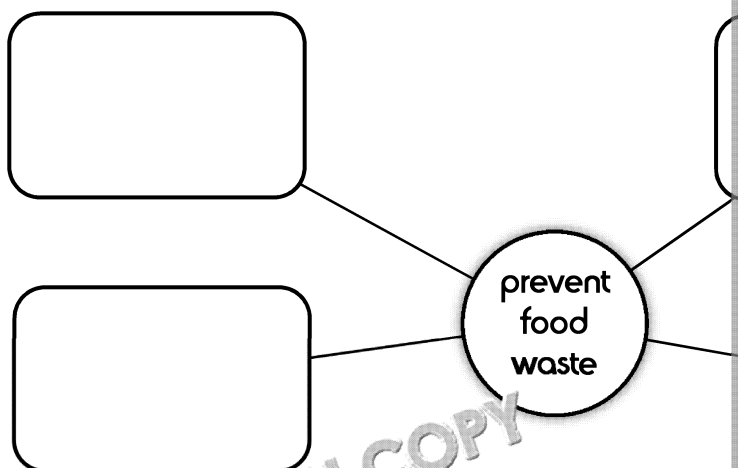


- 4) i) Fill in the gaps in the text below, using the keywords provided.

dispose extend pollute decompose inform

Food packaging is designed to _____ consumers about the food from external factors and _____ its shelf life. _____ of food packaging can _____ if possible, but if not _____ and instead will _____ the environment.

- ii) According to Eurostat, households are responsible for producing 42% of food waste. Provide four ways of preventing food waste in your home.



- 5) Access to safe, sufficient food helps to prevent food poverty. Complete the table by identifying factors that lead to malnutrition.

Factor	
	can lead to loss of
	can cause kwashiorkor
	can lead to poor bone health

Exam-style Question

Emission of greenhouse gases is one of the main causes of global warming. Identify **two** ways of tackling the emission of greenhouse gases in the food industry.



Extension Task

Consider what food products are characteristic of winter, and design a three-course meal using these seasonal foods.


Use the Extension Task sheet.

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Food products characteristic of winter:

Vegetables	Fruit	Meat and fish
		

My seasonal meal:

Ingredients of my meal:

.....

.....

.....

.....

.....

Preparation and cooking instructions:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



15. Food provenance: The impact of food on the environment

- 1) Indicate how buying seasonal, locally produced food is advantageous for the environment.

.....

.....

.....

.....

.....

.....

.....



- 2) Explain how food production affects the environment. Use the keywords provided.

transportation

carbon footprint

food miles

greenhouse

.....

.....

.....

.....

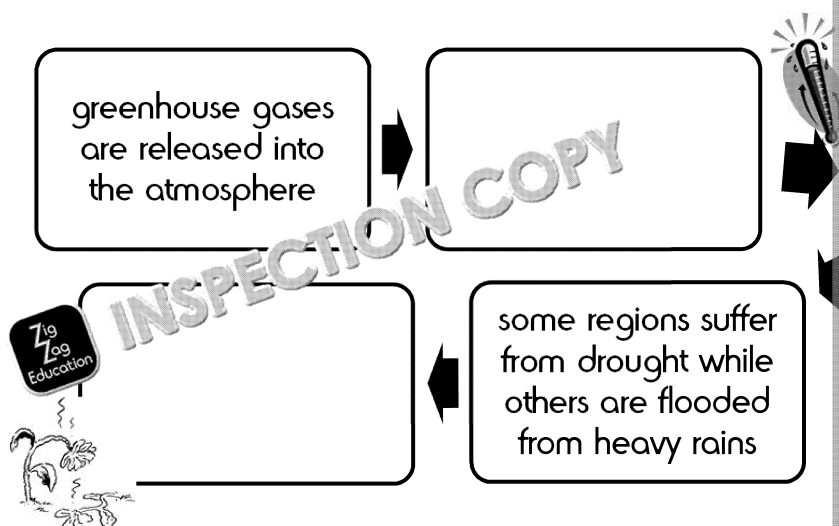
.....

.....

.....



- 3) Complete the chart to indicate the different stages of climate change.



**COPYRIGHT
PROTECTED**



4) i) Indicate three reasons why food is packaged and explain the need for

1.
2.
3.

Recycling is needed because



ii) According to Eurostat, households are responsible for producing 42% food and drink manufacturing produces another 39%. Discuss differences in the food industry AND in households.

.....

.....

.....

.....

.....

.....

.....



5) i) Identify three causes of food poverty in Wales.

1.
2.
3.

ii) Access to safe, sufficient food helps to prevent food poverty. Identify poverty.

a.
b.
c.



**COPYRIGHT
PROTECTED**



Exam-style Question

Explain **three** factors that influence the availability of food around the world.

Extension Task

List some examples of seasonal foods and design three meals characteristic of

INSPECTION COPY



INSPECTION COPY



INSPECTION COPY

**COPYRIGHT
PROTECTED**



16. Food manufacturing: British and cuisines

1) Indicate the country of origin for the following meals and dishes.

<p>Fish and chips</p> 	<p>Sushi</p> 
<p>Pizza</p> 	<p>Dumplings</p> 
<p>Paella</p> 	<p>Quiche</p> 
<p>Nacho</p> 	<p>Tacos</p> 

2) Fill in the gaps to define 'cuisine'. You can use some of the keywords below

country	region	county
meal	dish	cooking

Cuisine is a style of cooking that is characteristic of a particular _____
 where the _____, preparation and _____
 or serving techniques are used.

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 3) Using the definition from question 2), provide one feature or eating pattern

.....

.....

.....

.....

.....

.....

.....



- 4) British cuisine is very rich and varied. Colour-code the regions below and the food characteristic for each of them.

Wales		England		N. Ireland
clotted cream	kippers	Cumberland	sage	
boxty	cawl	champ	Corr	
bara brith	puddings	Dunlop cheese	U	



Exam-style Question

Identify two modifications to Welsh rarebit to make it suitable for a person with a healthier lifestyle.

Extension Task

Select a traditional dish from a different country (e.g. Brazil or South Africa) and create a recipe using British ingredients only.

Are there any ingredients which cannot be substituted? Why?



Use the Extension Task

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Traditional dish name: Country:

Traditional ingredients	Available in the UK?	If not, how?
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	
	<input type="checkbox"/>	

Is it possible to cook the dish? Yes ☐ No (too many) ☐

Why some ingredients cannot be substituted:

.....

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



16. Food manufacturing: British and cuisines

- 1) Colour code the map to indicate where the following meals come from.

fish and chips	sushi	pizza	dumplings
naan bread	spring rolls	tacos	doughnuts



- 2) Define 'cuisine'.



.....

.....

- 3) Using the definition from question 2), describe the features and eating patterns of British cuisine.

.....

.....

.....

.....

.....

- 4) British cuisine is very rich and varied. For each country below, identify at least one traditional British food or foods.

Wales.....

England.....

Northern Ireland.....

Scotland.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



Exam-style Question

The ingredients below are for traditional Glamorgan sausages.

1 leek
1 garlic clove
50 g butter
140 g cheddar cheese
140 g fresh breadcrumbs
20 g parsley leaves
1 tsp English mustard
1 whole egg
100 ml oil for frying
salt and pepper to taste

Suggest one modification that could be made to the recipe above to meet the needs of:

- a) vegans
- b) people suffering from obesity

Extension Task

Select a traditional dish from **two** distant countries (e.g. Japan and America) and create a new dish by combining the two cuisines. *You could try a sushi burger!*

Write down your new list of ingredients and recipe instructions.

**COPYRIGHT
PROTECTED**



17. Food manufacturing: Primary and processing of food

- 1) Match the methods of production to the stages of processing, by writing t

sorting	fermenting	adding colourants	
freezing	vacuum	milling	
trussing	drying	gutting	s



PRIMARY PROCESSING:

SECONDARY PROCESSING:

- 2) Match the keywords with the correct descriptions.

Homogenisation	Pressing the milk through very fine filters to remove bacteria
Pasteurisation	Heating the milk to over 110°C to kill bacteria and spores
Sterilisation	Process in which fresh milk is heated to 135°C for 2 seconds to remove up fat particles and prevent spoilage
Microfiltration	Process in which milk is heated to 135°C for 2 seconds, rapidly cooled, conducted to a vacuum and then filtered through a membrane to remove bacteria

- 3) Fill in the gaps using some of the keywords: (in order)

sweetener	preservative	pectin	fibre	sugar
-----------	--------------	--------	-------	-------

Sugar and _____ are necessary in jam production. _____ helps to bind the fruit and speeds up the gelling process. _____ acts as a preservative and protects the jam from bacterial growth.

INSPECTION COPY

COPYRIGHT
PROTECTED



4) Explain how the following processes affect the nutritional and sensory value of food.

Sterilisation of milk	
Baking bread	
Drying milk	
Turning milk into cheese	
Slicing an onion	
Juicing	

Exam-style Question

State two ways curing affects the sensory qualities of meat.

Extension Task

Investigate the amount of pectin in different kinds of fruits. To do that, you will need:

- 200 g cooking apples
- 200 g currants
- 200 g sour cherries
- 200 g blackberries
- 200 g grapes.
- 250 g white sugar

You can also choose other kinds of fruit.

Step 1: Prepare the fruit. Wash all fruit, remove inedible parts (e.g. remove green stalks and leaves from sour cherries) and carefully weigh 200 g of each kind of fruit.

Step 2: Weigh five portions of sugar, 50 g each. Add one portion of sugar to each portion of fruit.

Step 3: Place each portion of fruit and sugar in a tall cup and blend until smooth. Wait for one minute. Repeat for each kind of fruit.

Step 4: Let all samples cool down. After all samples have reached room temperature, measure the viscosity using the chart on the next page.

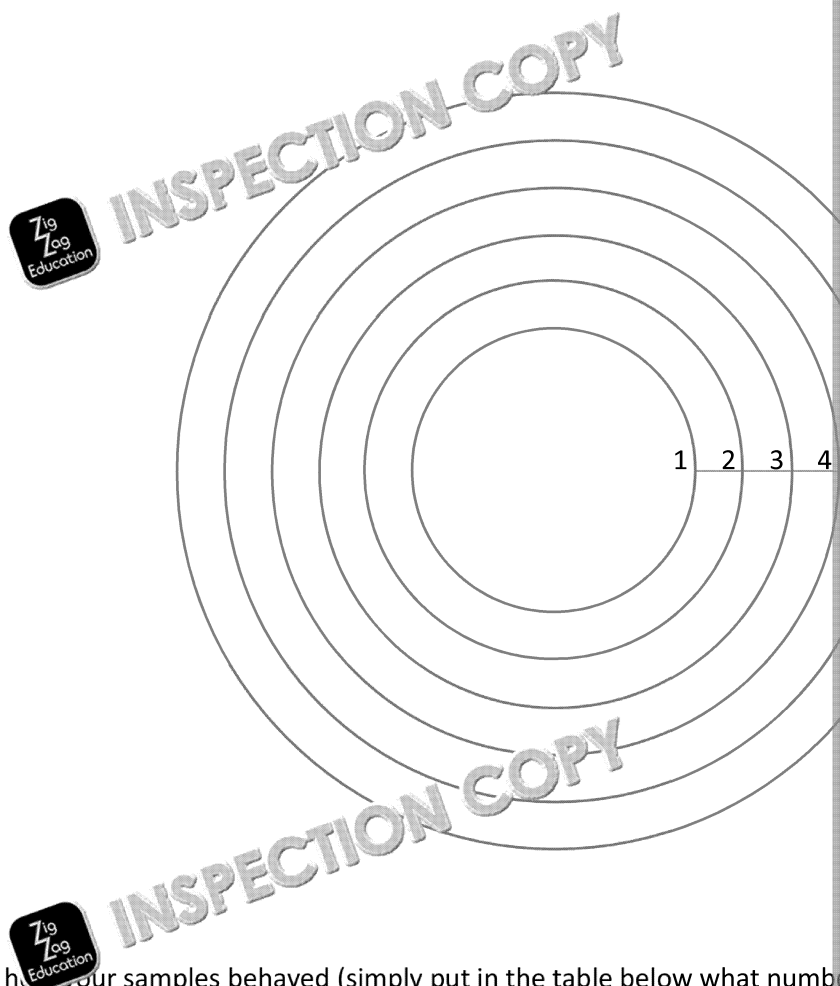
Use the Extension Task

**COPYRIGHT
PROTECTED**



Extension Task worksheet

Viscosity chart (ask your teacher to copy and laminate it for you)



Record how your samples behaved (simply put in the table below what number)

Apples	Currants	Sour cherries	Blackberries

Pectin is a natural gelling agent in fruit. This means that fruits which are naturally viscous (thicker) than those which don't contain much pectin. In other words, fruits with high pectin will not spread much and their record should be low (1 or 2), while those which are low in pectin will spread further from the centre.

Can you tell which fruits are rich in pectin?

.....

.....



INSPECTION COPY

**COPYRIGHT
PROTECTED**



17. Food manufacturing: Primary and processing of food

- 1) List five examples of primary and secondary processing of foods.

Primary processing	Secondary processing

- 2) Create your own glossary by defining the following terms.

homogenisation	
pasteurisation	
sterilisation	
microfiltration	

- 3) Explain the role of acid and sugar in food production.

.....

.....

.....

.....

- 4) Indicate how three different methods of primary and secondary processing increase the value of foods.

-
-
-

**COPYRIGHT
PROTECTED**



Exam-style Question

Flour is the main ingredient in bread.

Describe the function of flour in bread and explain how the type of flour used affects the texture of bread.

Extension Task

Investigate the amount of pectin in different kinds of fruit. When preparing for your investigation, consider:

- what kinds of fruits you can investigate
- how you can check the amount of pectin in them
- how you can record your findings



**COPYRIGHT
PROTECTED**



18. Food manufacturing: Technological changes in food products that claim to support better health and

- 1) Underline the products which are fortified by law.

breakfast cereals wheat flour margarine soy milk

- 2) Match the beginning of the statement with the end to indicate the health benefit.

The addition of plant sterols to margarine
The addition of iron to cereals
The addition of folic acid to bread
Fortification with vitamin B1
The addition of vitamin D
The addition of vitamin B12 to soy milk

prevents heart disease
helps prevent anaemia
helps prevent neural tube defects
helps prevent rickets
helps prevent osteoporosis
helps prevent neurological damage

- 3) Complete the table below to identify some of the advantages and disadvantages of food production. For each, identify one example. You can use the keywords below.

weight gain	asthma	itching	phenylketonuria	quick
natural	artificial	cancer	allergy	texture

Group	Advantages	Disadvantages
Colorants		
Emulsifiers, stabilisers, gelling agents and thickeners		
Flavour enhancers and sweeteners		
Preservatives and antioxidants		

COPYRIGHT
PROTECTED



- 4) Computer-aided manufacturing (CAM) is used worldwide to improve and
Indicate how CAM can be used in the process of cheese production shown

Step no.	Process	How
Step 1	Milk is transported to the factory	
Step 2	Milk is pasteurised	
Step 3	Milk is cooled down	
Step 4	Starter cultures are added	
Step 5	Milk is incubated at 32°C	
Step 6	Rennet is added	
Step 7	Curd is cut and heated to 38°C	
Step 8	Whey is drained off	
Step 9	The cheese undergoes <i>cheddaring</i> (the process in which curds are piled on top of each other and periodically flipped over)	
Step 10	The cheese is immersed in brine	
Step 11	The cheese is formed into blocks	
Step 12	The cheese is stored and aged	

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 5) Below you can see the label of a food product.

35% low fat vegetable spread with added plant sterols
Ingredients: Water, vegetable oils in varying proportions (sunflower, rapeseed, palm, rapeseed), plant sterol esters (12.5%), BUTTERMILK powder, salt (1%), emulsifiers (mono- and diglycerides of fatty acids, sucrose esters), preservatives (potassium sorbate), citric acid, natural flavours, colour (carotenes).

- i) List two food additives used in this product.



- ii) List two substances with which this product was fortified.

Exam-style Question

State two reasons why wheat flour has to be fortified.



Extension Task

Food modification can take place at any stage of food production – even before plants or rearing animals. This is possible due to genetic modifications – producing plants and animals to obtain the desired effect. The most often modified food crops are beans and maize.

In the UK, it is mandatory to include suitable information on a food label if a product contains, or is made from, genetically modified organisms.

Go to a supermarket and inspect the labels of various food products. List the products that are genetically modified (hint: start at the shelves with soy products, such as soy milk). Compare them with similar, non-GM products (e.g. soy milk labelled as GM-free). Note any differences (e.g. in colour, size, shelf life, etc.)



INSPECTION COPY

**COPYRIGHT
PROTECTED**

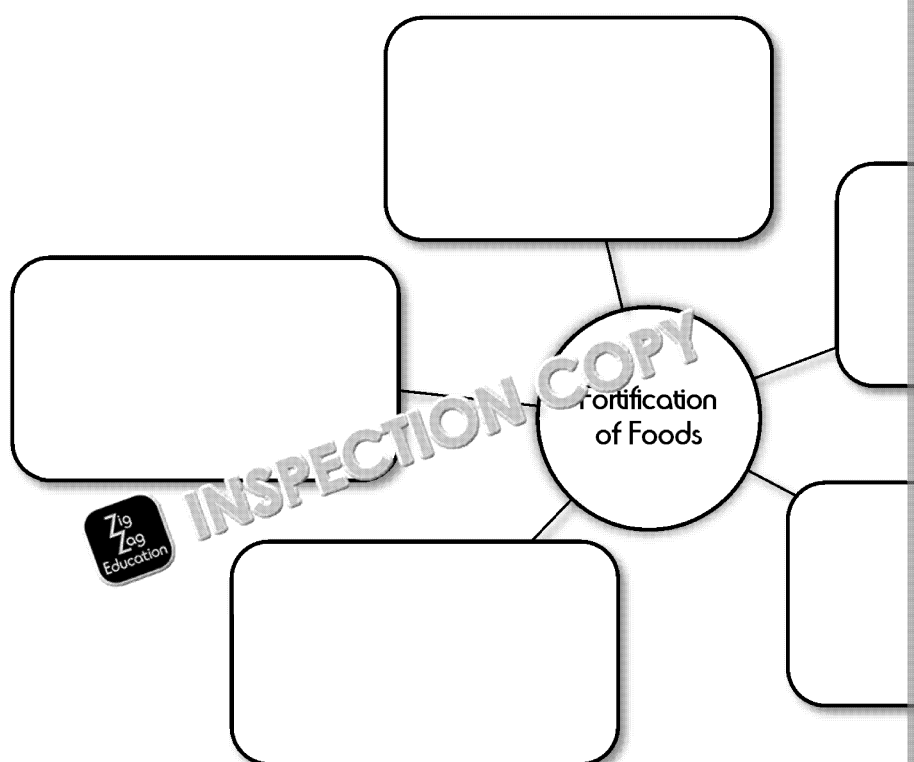


18. Food manufacturing: Technological products that claim to support better health and

- 1) Identify the three products that are obligatorily fortified in Great Britain, and the substances added to them.

Product	Substance

- 2) Indicate the health benefits of food fortification.



**COPYRIGHT
PROTECTED**



- 3) Complete the table to identify the advantages and disadvantages of using indicate two examples.

Group	Advantages	Disadvantages
Colourants		
Emulsifiers, stabilisers, gelling agents and thickeners		
Flavour enhancers and sweeteners		
Preservatives and antioxidants		

- 4) Computer-aided manufacturing (CAM) is used worldwide to improve the Explain how CAM can be used during production of pasta.

Step	Process	How CA
1.		
2.		
3.		
4.		
5.		
6.		
7.		

**COPYRIGHT
PROTECTED**



- 5) Below you can see the label of a food product.

35% low fat vegetable spread with added plant sterols
Ingredients: Water, vegetable oils in varying proportions (sunflower, rapeseed), plant sterol esters (12.5%), BUTTERMILK powder (1%), salt (1%), emulsifiers (mono- and diglycerides of fatty acids, sorbitan monooleate), (potassium sorbate), citric acid, flavourings, colour (carotenes)

- i) State the function of buttermilk in this product.



- ii) Explain why emulsifiers are used in this product.

Exam-style Question

Evaluate the advantages and disadvantages of using food additives in the food industry.



Extension Task

Food modification can take place at any stage of food production – even before the food is produced, for example, by genetic modifications to plants or rearing animals. This is possible due to genetic modifications – producing plants and animals to obtain the desired effect. The most often modified food products are soybeans and maize.

Go to [zzed.uk/8907-gm-foods](https://www.zzed.uk/8907-gm-foods) and read about food labelling rules which apply to genetically modified (GM) foods.

Then, go to a supermarket and try to find five food products labelled as genetically modified. Compare these with similar GM-free food products in terms of size, appearance, aroma, taste, shelf life.



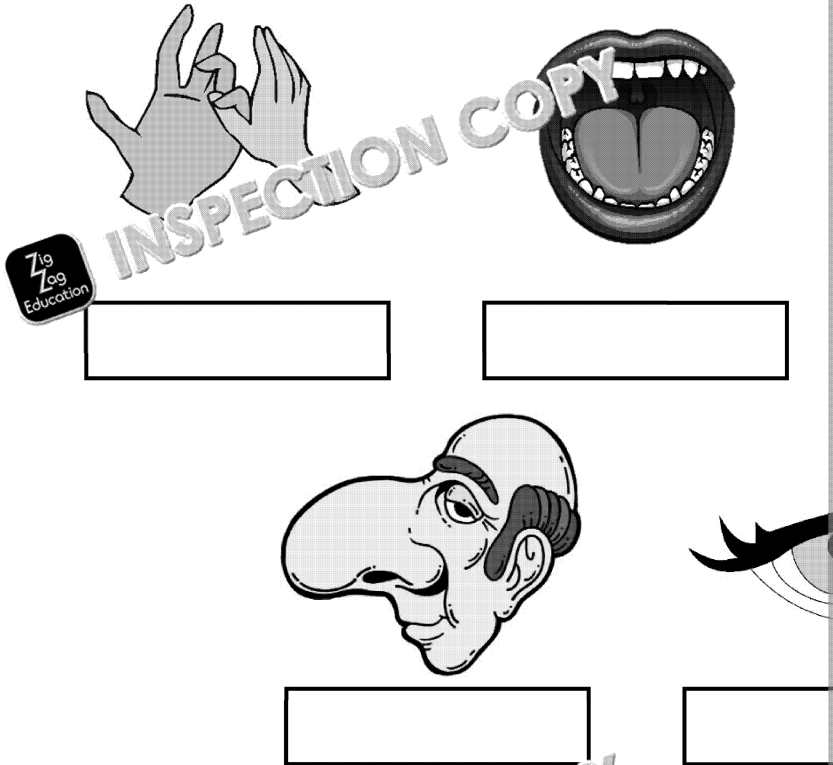
INSPECTION COPY

**COPYRIGHT
PROTECTED**



19. Factors affecting food choice: Sensory

- 1) i) Identify the five senses.



- ii) Explain why controlled conditions have to be assured for sensory test has to be controlled.

.....

.....

.....

- 2) Below are listed various food products/substances. Identify what taste each has.

honey

pretzels

lemon

coffee

parmesan cheese

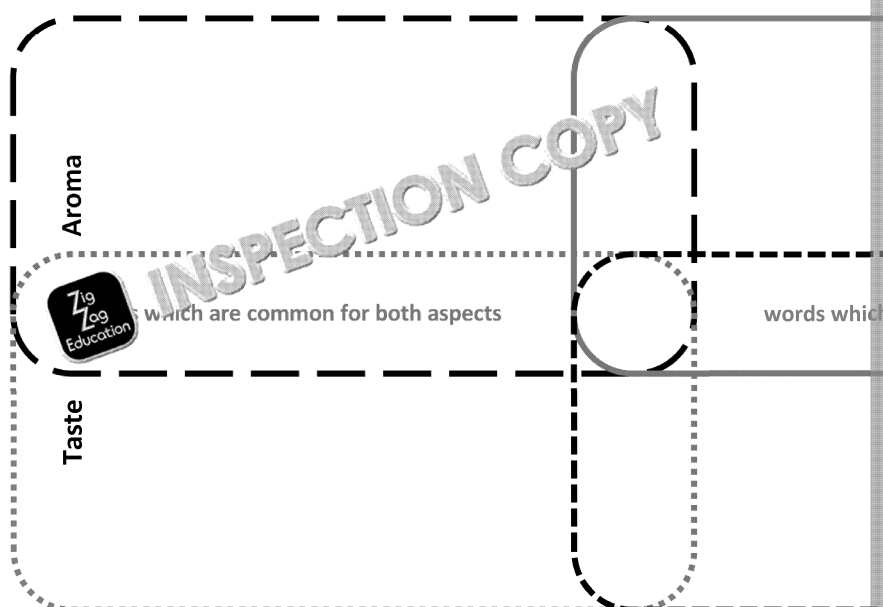


INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 3) Complete the diagram below to identify three terms used to describe the during a taste panel. Note that some words can be used to describe two or more aspects (e.g. zesty can describe both aroma and taste).



- 4) Explain why a person with a blocked nose or catarrh cannot take part in taste testing.

.....

.....

.....

.....



Example Question

State **two** qualities of cooked shortcrust pastry.

Extension Task

Prepare five samples of tomato soup containing different amounts of salt. Serve to a family or friends and ask them to assess the samples using various sensory tests.

- What tests can you use?
- What features, other than saltiness, can you test?

Use the Extension Task



**COPYRIGHT
PROTECTED**



Extension Task worksheet

Sensory evaluation 1

Method: ranking test (ask your testers to order the samples from the least salty to the most salty using the table below to record their answers)

Feature tested: saltiness

Results:


	least salty	second least salty	medium saltiness	
Tester 1				
Tester 2				
Tester 3				
Tester 4				
Tester 5				

Sensory evaluation 2

Method:

Feature tested:

Results:



Sensory evaluation 3

Method:

Feature tested:

Results:



INSPECTION COPY

COPYRIGHT
PROTECTED



19. Factors affecting food choice: Se

1) i) Identify the five senses.

1.
2.
3.
4.



ii) Explain how to set up a taste panel.

.....

.....

.....

.....

.....

.....

.....



2) List the five tastes and provide a food source of each.

Taste 1	• Source:
Taste 2	• Source:
Taste 3	• Source:
Taste 4	• Source:
Taste 5	• Source:

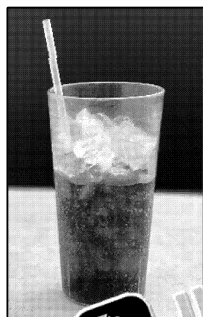


INSPECTION COPY

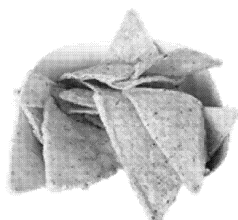
**COPYRIGHT
PROTECTED**



- 3) What words would you use to describe these foods? List at least five words and their characteristics.



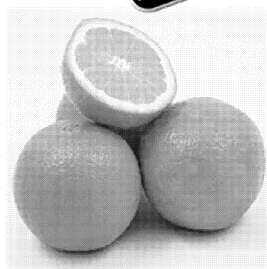
carbonated
beverage



maize
nachos



Filled milk
chocolate



oranges

- 4) Explain how the olfactory system works.



**COPYRIGHT
PROTECTED**



Exam-style Question

A food manufacturer is looking forward to performing a taste test for three kinds of tomato soup.

- Name **one** type of sensory test the manufacturer is most likely to carry out.
- State **three** conditions that have to be controlled when carrying out a taste test for instant soups.



Extension Task

Prepare five samples of a dish of your choice differing in the amount of salt, sugar and fat.

Set up a taste panel for your family or friends and ask them to assess the samples using the three sensory tests.

Change the taste and aroma by replacing salt with herbs and spices, and compare the results. Write an article on how salt can be replaced in meals and what the health benefits are.



**COPYRIGHT
PROTECTED**



20. Factors affecting food choice: The factors that influence food choices

1) Using the images below, identify the various factors that influence food choice



INSPECTION COPY







2) i) Using the information in the table, calculate the cost of making a thyme

Product	Price per pack	
Olive oil	£6.50 / 1 litre	
Salmon, fresh fillet	£15.00 / 1 kg	
Arborio rice	£4.50 / 1 kg	
White wine	£15.00 / 1 litre	
Fresh thyme	£1.25 / 70 g	
Pink Himalayan Salt	£35.00 / 1 kg	
Manuka honey	£50.00 / 1 kg	

**COPYRIGHT
PROTECTED**



ii) Suggest cheaper substitutes for the products listed below.

Olive oil can be exchanged for

Salmon can be exchanged for

Arborio rice can be exchanged for

White wine can be exchanged for

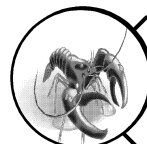
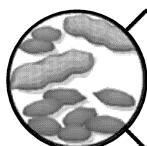
Fresh thyme can be exchanged for

Pink Himalayan salt can be exchanged for



Manuka honey can be exchanged for

3) Look at the pictures below and identify five of the most common food allergies



**COPYRIGHT
PROTECTED**



- 4) i) Indicate the four ethical beliefs which may influence a human's food

a _ _ _ _ _ w _ _ _ _ _	f _ _ _ _ _
p _ _ _ _ _	o _ _ _ _ _

- ii) In the table below, list three advantages and three disadvantages of

+ Advantages	

Exam-style Question

1. Suggest **two** reasons why individual food preferences may differ.
2. Suggest **two** factors that can impact on the availability of food.

Extension Task

Your task is to plan a dinner for a family of four. In the family:

- one person is lactose intolerant
- one person is allergic to nuts

Remember to justify your choice of ingredients.

As the family does not have a large disposable income, you also need to consider that the total cost does not exceed £4.00 per person. Make sure the quantity you plan for is suitable for four people.

Use the Extension Task

INSPECTION COPY

COPYRIGHT
PROTECTED



Extension Task worksheet

Ingredients I CAN use	Ingredients I CANNOT use

Main meal:

Dessert:

Ingredient	Why I use this ingredient	

Divide the total price by four to calculate how much your meal costs per person

.....

Is it cheaper than £4.00 per person? Yes ☐ No ☐

If not, how can you modify the recipe to decrease the price?

.....

.....

.....

.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



INSPECTION COPY

- PAL



3) Identify five out of the 14 most common food allergens.

1.
2.
3.
4.
5.

4) i) Create your own glossary of terms referring to the ethical and moral



animal welfare	
fairtrade	
local produce	
organic	

ii) Discuss the advantages and disadvantages of genetically modified food

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



**COPYRIGHT
PROTECTED**



Exam-style Question

Discuss how and why an individual's lifestyle may influence their food choices.

Extension Task

Plan a meal for a family of four, in which one member is lactose intolerant.

Remember to:

- justify your choice of ingredients
- consider different factors which will affect your meal choices

Use an online price comparison tool to cost your dish and, subsequently, chosen ingredients. The price limit is £2.00 per person.

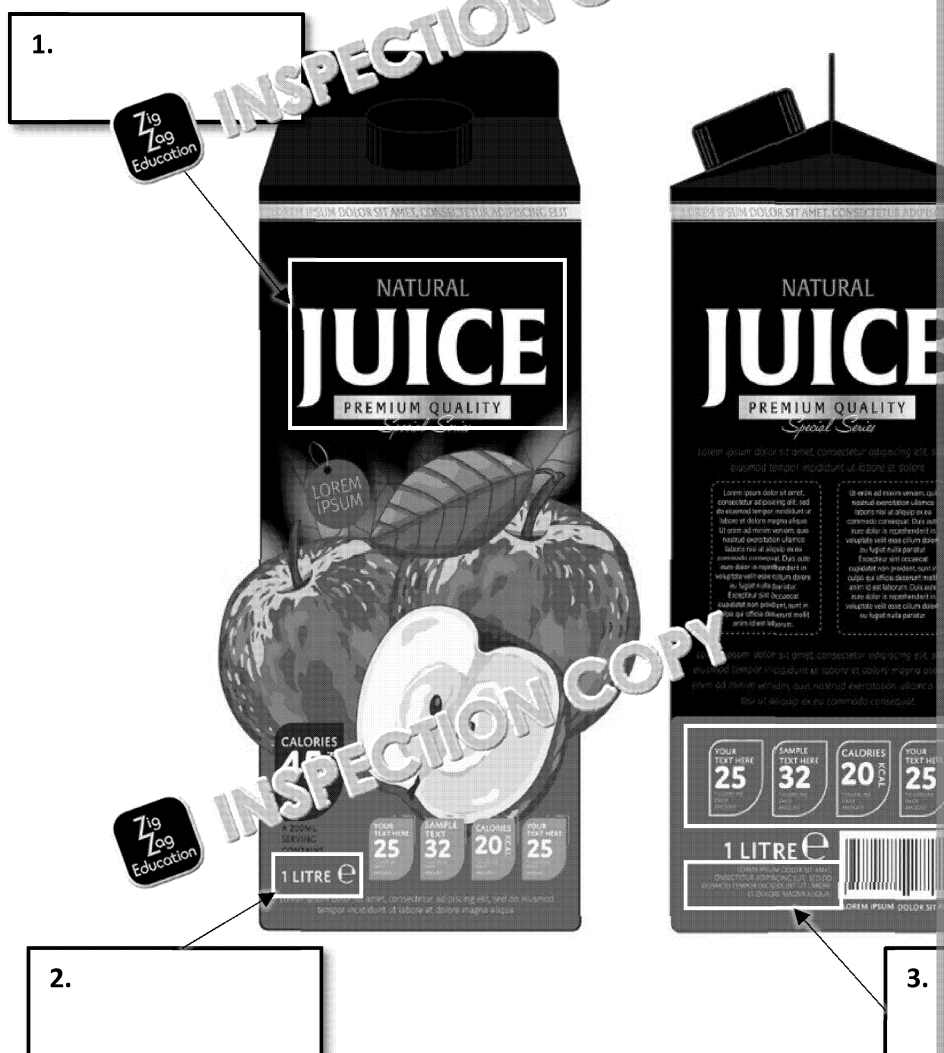
INSPECTION COPY

COPYRIGHT
PROTECTED



21. Factors affecting food choice: Food marketing

- 1) i) Complete the diagram by labelling four pieces of mandatory information on food packaging.



- ii) Identify four other pieces of information that are included on a food

- a)
- b)
- c)



**COPYRIGHT
PROTECTED**



2) Read the label carefully and answer the questions below.

LIGHT SPONGE CAKES WITH DARK CRACKLY CHOCOLATE AND SMASHING ORANGEY CENTRE
Ingredients: Glucose-Fructose Syrup, Plain Chocolate (19%) [Sugar, Cocoa Mass, Vegetable Fats (Palm, Sal and/or Shea), Butter Oil (**Milk**), Cocoa Butter, Emulsifiers (**Soya** Lecithin, E476), Natural Flavouring], Sugar, Flour (**Wheat** Flour, Calcium, Iron, Nicotinic Acid), Whole **Egg**, Water, Dextrose, Concentrated Orange Juice (8% Orange Juice Equivalent), Glucose Syrup, Vegetable Oils (Sunflower, Palm), Humectant (Glycerine), Gelling Agent (Gelatin), Acid (Citric Acid), Raising Agents (Ammonium Bicarbonate, Disodium Diphosphate, Sodium Bicarbonate), Dried Whole **Egg**, Acidity Regulator (Sodium Citrates), Natural Orange Flavouring, Colour (Curcumin), Emulsifier (**Soya** Lecithin).
For allergens, including cereals containing gluten, see ingredients in **bold**.

i) List the allergens present in the cakes.

.....

.....

.....

.....

ii) Are these cakes suitable for vegetarians? Justify your answer.



.....

.....

.....

.....

iii) Explain why these cakes might be unsuitable for children.



.....

.....

.....

.....

.....

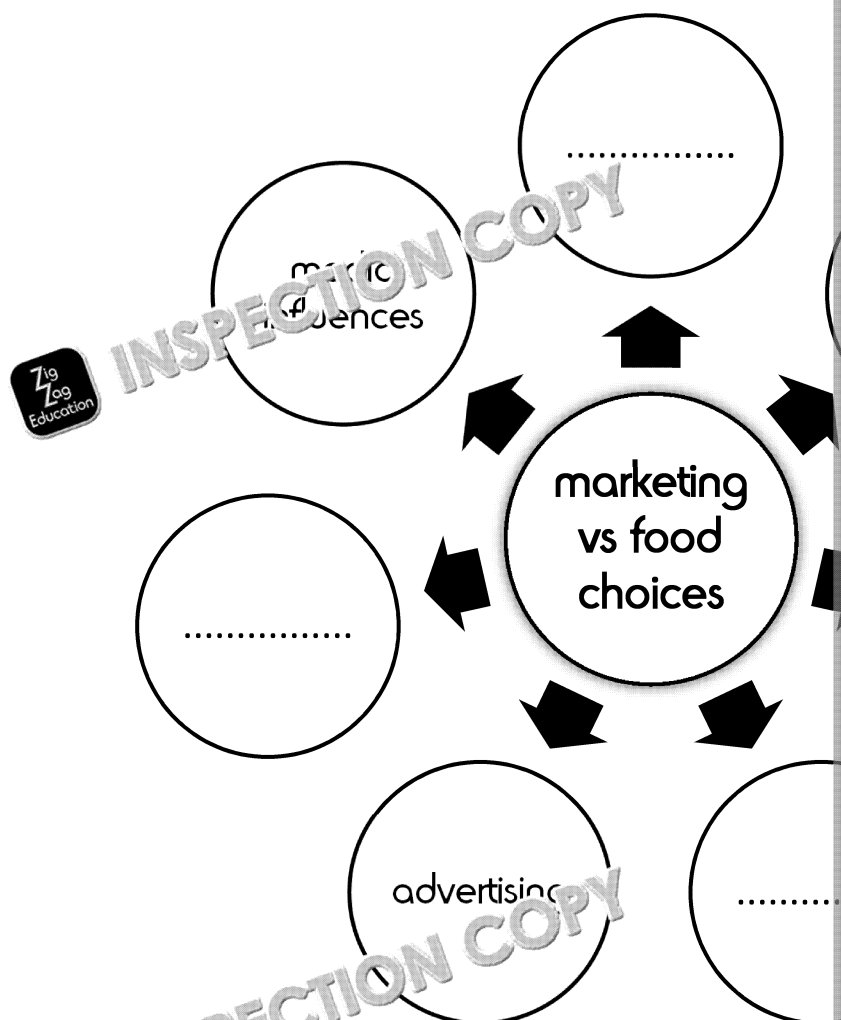
.....

INSPECTION COPY

**COPYRIGHT
PROTECTED**



- 3) i) Complete the diagram below to indicate marketing techniques which



- ii) Explain what 'marketing power' is.



.....

.....

.....

.....

.....

Exam-style Question

State three allergens that are mandatorily indicated on a food label.

Extension Task

Design a label for a chosen food product. In your label, remember to:

- include all mandatory information required by law (you can use the Intake value and the percentage of recommended intake in a portion; remember to **embolden** the allergens!)
- include some non-mandatory information
- include some information for marketing purposes

INSPECTION COPY

**COPYRIGHT
PROTECTED**



21. Factors affecting food choice: Food marketing

- 1) Design your own food package to include at least five pieces of mandatory information to include this information on a food label.



INSPECTION COPY



INSPECTION COPY

Mandatory information	Why it is important



INSPECTION COPY

COPYRIGHT
PROTECTED



- 2) Inspect the label and answer the following questions.

LIGHT SPONGE CAKES WITH DARK CRACKLY CHOCOLATE AND SMASHING ORANGEY CENTRE
Ingredients: Glucose-Fructose Syrup, Plain Chocolate (19%) [Sugar, Cocoa Mass, Vegetable Fats (Palm, Sal and/or Shea), Butter Oil (**Milk**), Cocoa Butter, Emulsifiers (**Soya** Lecithin, E476), Natural Flavouring], Sugar, Flour (**Wheat** Flour, Calcium, Iron, Niacin, Thiamin), Whole **Egg**, Water, Dextrose, Concentrated Orange Juice (6% Orange Juice Equivalent), Glucose Syrup, Vegetable Oils (Sunflower, Palm), Humectant (Glycerine), Gelling Agent (Sodium Acid (Citric Acid), Raising Agents (Ammonium Bicarbonate, Sodium Diphosphate, Sodium Bicarbonate), Dried Whole **Egg**, Acidity Regulator (Sodium Citrates), Natural Orange Flavouring, Colour (Curcumin), Emulsifier (**Soya** Lecithin).
For allergens, including cereals containing gluten, see ingredients in **bold**.

- i) List the allergens present in the cakes. Indicate in which health condition they are present.

.....

.....

.....

.....

.....

.....

- ii) Assess whether the product is suitable for vegans. Justify your answer.

.....

.....

.....

.....

.....

.....

- iii) Describe how the list of ingredients is constructed.

.....

.....

.....

.....

.....

.....

INSPECTION COPY

COPYRIGHT
PROTECTED



- 3) i) Explain what 'pester power' is.

.....

.....

.....

.....

- ii) Write three marketing techniques which influence food choices.

1.
2.
3.

Exam-style Question

Explain how marketing and advertisements can affect food choices.

Extension Task

Plan and design a traditional British dish of your choice. Then, design a package for it.

- What kind of packaging will you use? What should it be made of? How microwaveable?
- Design the label to include all mandatory information required by law for food packaging.
- What non-mandatory information can you include on the label?

Once the package is ready, design an advertisement for your product. Which marketing techniques can you use? Can the package help you to increase the sales of your product?

**COPYRIGHT
PROTECTED**



Answers

1. Macronutrients: Proteins, fats and carbohydrates

- 1) ●■ Higher ability to provide similar answer to lower-ability worksheet

Macronutrients include proteins, fats and **carbohydrates**. They are called macronutrients because they are needed in **large** quantities to remain healthy. Proteins can be found in both animal and plant sources. They can be divided into two main groups – ones that have single only bonds in the carbon chain are called **saturated**, and those which contain one or more double or triple bonds are called **unsaturated**. Carbohydrates include **starch**, **sugars** and **fibre**. Fibre is necessary for the proper functioning of the digestive system.

- 2) ●■ Higher ability to provide similar sources to ones given below, on their own

Proteins	Cheese, butter, avocados, pork chops, doughnut
Carbohydrates	Hazelnuts (nuts and seeds), tuna (fish), eggs, pork chops, chicken, bread, rice, pasta, potatoes, grapes (berries), carrots, oranges, bread, rice, pasta, potatoes

- 3) ●■ Higher ability to provide similar functions

	Functions
Fats	<ul style="list-style-type: none"> Provide protection of the vital organs Help dissolve and absorb vitamins in the body Provide insulation from the cold to maintain body heat
Proteins	<ul style="list-style-type: none"> Help build hormones and enzymes Help develop antibodies to fight bacteria and viruses Building material of body cells such as muscle
Carbohydrates	<ul style="list-style-type: none"> Provide the main source of energy Increase satiety Dietary fibre supports bowel movements

- 4) i) ●■
- Low biological value (LBV) proteins contain a low quantity of amino acids and are usually of plant origin.
 - LBV proteins do not contain enough essential amino acids or contain them in proportions that are not easily absorbed by the body.
 - HBV proteins contain all the essential amino acids and are usually of animal origin.

- ii)
- Protein complementation is a process in which low biological value proteins are combined to form a high biological value protein meal.
 - An example of this is beans on toast, when lysine-low bread is balanced with the lysine-rich protein of beans.

- iii) ●■ Lower ability to provide two alternatives, higher ability to provide for protein alternatives include:
- Soy beans and all soy-derived products such as tofu, tempeh, soy ch
 - Quinoa
 - Quorn™ (mycoprotein)
 - Various legume-based meals such as hummus which is made of chickpeas

- 5) i)
- | | | | |
|----------------|------------|-------------|---------------|
| Avocado (US) | Cod (US) | Salmon (US) | Chocolate (S) |
| Olive Oil (US) | Cheese (S) | Butter (S) | Nuts (US) |

- ii)
- Monounsaturated fats have only one double bond in the fatty acid chain, while polyunsaturated fats have more than two of them.
 - Monounsaturated fats begin to solidify at low temperatures while polyunsaturated fats remain liquid at room temperature.

COPYRIGHT
PROTECTED



- 5) ■
- Depending on the chemical structure, we can differentiate two kinds of fats.
 - Unsaturated fats may be further split into monounsaturated and polyunsaturated.
 - In saturated fats all the chemical bonds in fatty acid chains are single. An example of a saturated fat is butter.
 - In monounsaturated fats there is one double bond in the fatty acid chain. An example of a monounsaturated fat is olive oil.
 - In polyunsaturated fats there is more than one double bond in the fatty acid chain. An example of a polyunsaturated fat is sunflower oil.
 - The other way of categorising fats is by dividing them into visible and non-visible.
 - Visible fats include lard, suet, butter, cream and margarine. White visible fatty tissues are found in meat.
 - Non-visible fats include fats which are not visible in food products, but can be found in oils, olives, milk and cheese, meat and fish (other than the white visible fat).

6) ■■

Type of carbohydrate	Description	Source
Starch	Polysaccharides	Is built from many sugar molecules bound together into long chains; can be broken down by enzymes in the human digestive tract. Also known as complex carbohydrates.
Sugars	Monosaccharides	Group of sugars built from one molecule of sugar only
	Disaccharides	Group of sugars built from two sugar molecules
Dietary fibre	Polysaccharides	Is built from many sugar molecules bound together into long chains; cannot be broken down by the human digestive tract



Accept other suitable answers.

- 7) ■■ Higher ability to provide similar information in their explanations.

	Proteins	Fats
Effects of deficiency	<p>Swelling – proteins are responsible for maintaining the so-called oncotic blood pressure, so if there is too little protein, the water will be retained in the body and this will cause swelling.</p> <p>Hormonal disorders – many hormones are made of protein, so if there is not enough, the hormones could not be built.</p> <p>Growth arrest – protein is necessary to build all cells around the body, so if there is no protein, the body cannot build new cells and cannot grow or develop.</p> <p>Kwashiorkor – this is the effect of long-term, chronic protein deficiency. Lack of protein will lead to retention of water in the tissues, and this will cause them to swell, so the stomach will look big and swollen.</p> <p>Hair thinning – when there is not enough protein, the body reserves it to carry out the most important functions for survival; therefore, the skin, nails and hair will become thinner, brittle or more prone to damage.</p>	<p>Loss of body mass – fat is used to build cell walls and forms fat tissue around the body to insulate it and store energy for later. If there is not enough fat, the body will use the energy reserve and in effect you will lose weight.</p> <p>Vitamin deficiency – fat is a solvent of many vitamins, so not enough fat means you are also eating few vitamins, and this may cause further health problems.</p> <p>Hormonal disorders – many hormones require fat to be built, so lack of fat means that they could not be built.</p>

COPYRIGHT
PROTECTED



	Proteins	Fats
<div></div> <div>Effects of excess</div>	<p>Depression, low mood – proteins are needed to build hormones which are responsible for improving mood (e.g. serotonin), so deficiency will lead to low levels of these hormones, and effectively will result in a lower mood or even depression.</p> <p>Kidney and liver disorders – the protein is processed in the liver which breaks it down into urea, so too much protein will overburden the liver. The kidneys filter the blood to form urine, and if there is too much protein they will be overburdened, and won't filter the blood properly, which might cause them to fail.</p> <p>Weight gain – protein is a secondary source of energy; eating an excess amount of protein may lead to a situation where the extra amount will be turned into fat and cause weight gain as the body won't be able to process it if</p>	<p>Overweight and obesity – excess fat is stored in the body as fatty tissue. This accumulates around your internal organs, in the hips, arms and thighs, so eating too much fat will lead to weight gain.</p> <p>Coronary heart disease – fat, especially saturated fat, increases the LDL cholesterol level in blood. This can bond with calcium and accumulate in blood vessels as plaque. The plaque may build up and block the vessels around the body and in the heart, and may increase the risk of a heart attack or stroke.</p> <p>Hypertension – excessive consumption of fat, especially saturated fat, causes the plaque to accumulate in blood vessels. The more plaque, the less room in the vessels for blood, so the pressure will rise, as the amount of blood remains stable.</p> <p>Type 2 diabetes – obesity increases the risk of type 2 diabetes. Type 2 diabetes occurs more often in obese people than in people with healthy body weight.</p>
	<div></div> <div>% or grams for an average diet of 2,000 kcal</div>	<div>10–15% (50–75 g)</div>

Accept other suitable answers.

- 8) ●■ Essential amino acids cannot be built by the human body from scratch and a healthy balanced diet. Non-essential amino acids can be built by the human body.

Exam-style Question

- 1) Any two from: (max. 2 marks)
- oily fish / fish oil (any from salmon, sardines, mackerel, tuna, etc.)
 - olive oil
 - egg yolk
 - nuts (any from almonds, hazelnuts, etc.)
 - seeds (any from pumpkin, poppy seed, linseed, etc.)
- or any other suitable answer.

**COPYRIGHT
PROTECTED**



■ 6 marks

The answer shows excellent knowledge and understanding of the topic. Student identifies all three macronutrients and provide relevant, detailed food sources. Students identify that energy needs at adolescence may be increased. Subject-specific vocabulary is used throughout, with few mistakes.
The answer shows good knowledge and understanding of the topic. Student identifies all three macronutrients and provide relevant, detailed food sources for each macronutrient. Subject-specific vocabulary is used throughout, with few mistakes.
The answer shows limited knowledge and understanding of the topic. Student identifies two of the macronutrients, but the food sources are not indicated or incorrect. The answer may be generic and simplistic.
Students don't provide an answer.

Indicators of correct response

- Carbohydrates – carbohydrates are the primary source of energy and, therefore, should be indicated in detail, i.e. 'wholemeal or white bread' instead of 'juice'.
- Fats – students identify the two types of fats – saturated and unsaturated – and indicate a relevant, detailed source, i.e. 'mature low-fat cheddar cheese' instead of 'cheese'.
- Proteins – students indicate that proteins are a secondary source of energy, used only if there are no carbohydrates or fats available. Students indicate a relevant, detailed source of proteins, i.e. 'lean beef' instead of 'bread with seeds'. If students choose LEAN, they should provide another complementary source of protein.
- Other correct responses may be accepted.

2. Micronutrients: Vitamins and Minerals

1) i)

Functions		
E: Ensures proper growth and development of cells	D: Lowers the risk of type 2 diabetes and cancer	A: Maintains healthy skin, nails and hair
A: Crucial for good eyesight	K: Prevents haemorrhages	D: Necessary for bone and teeth growth and development
K: Necessary for proper blood clotting	A and E: Antioxidant	
Effects of deficiency		
E: Tiredness	A: Dry and flaky skin	D: Depression
D: Osteoporosis	E: Wrinkled, thin skin	A; Brittle hair and nails
K: Excessive bleeding	E: Muscle degeneration	A, E and K: Decreased immunity
Effects of excess		
A and E: Headaches	K: Jaundice	K: Degradation of blood cells
E: Stomach problems	D: Feeling weak	D: Itchiness
A: Swelling of the liver and spleen	E: Diarrhoea	A: Hair loss
Sources		
D: Fatty fish and fish oil	A and K: Broccoli	A: Carrots
A: Cheese	A: Liver	K: Kale
E: Sunflower oil	A and E: Blueberries	A and D: Egg yolk

COPYRIGHT
PROTECTED



1) i) ■

Fat soluble vitamins A, D, E and K

Name	Function	Effects of deficiency	Effects
Vitamin A (retinol and beta carotene)	<ul style="list-style-type: none"> Maintains healthy skin, nails and hair Crucial for good eyesight Anticancer 	<ul style="list-style-type: none"> Night blindness Brittle hair and nails Dry and flaky skin Decreased immunity 	<ul style="list-style-type: none"> Swelling of the liver Headaches Hair loss Dry skin
Vitamin D (cholecalciferol)	<ul style="list-style-type: none"> Necessary for proper bone and teeth growth and development Prevents depression Lowers the risk of type 2 diabetes and cancer 	<ul style="list-style-type: none"> Rickets Osteoporosis Depression Decreased immunity 	<ul style="list-style-type: none"> Nausea Diarrhoea Itching Fatigue
Vitamin E (tocopherol)	<ul style="list-style-type: none"> Antioxidant Necessary for proper growth and development of the foetus during pregnancy Ensures proper growth of sperm cells 	<ul style="list-style-type: none"> Tiredness Wrinkled, thin skin Muscle degeneration Decreased immunity 	<ul style="list-style-type: none"> Headaches Stomach problems Eye problems
Vitamin K	<ul style="list-style-type: none"> Necessary for proper blood clotting Prevents haemorrhages 	<ul style="list-style-type: none"> Excessive bleeding Slow wound healing Decreased immunity 	<ul style="list-style-type: none"> Decreased blood clotting Jaundice

INSPECTION COPY

COPYRIGHT
PROTECTED



1) ii) ● ■

Water soluble vitamins B group and C

Name	Function	Effects of deficiency	Effects of excess
Vitamin B1 (thiamine)	Takes part in carbohydrate metabolism; is an important part of numerous enzymes	Beriberi disease, which shows as weakness and muscle degeneration	Practically impossible to overdose by taking amounts of vitamin
Vitamin B2 (riboflavin)	Important part of enzymes; takes part in creating haemoglobin	Cracked and dry lips (especially in the corners of the mouth), dry skin	No known effects
Vitamin B3 (niacin)	Helps release energy from food, takes part in red blood cells production, has a positive effect on the performance of the nervous system, extends blood vessels which helps deliver oxygen to the tissues	4D syndrome – dermatitis (inflammation of skin), diarrhoea, dementia (loss of memory), death Low concentration (inability to focus), irritability Increased sensitivity of the skin to sunlight	Reddening and itching of skin Nausea
Folate / folic acid (vitamin B9)	Important in the process of DNA synthesis, takes part in creating red blood cells, reduces the risk of spinal cord diseases in the newborns	A disease called spina bifida in newborns Anaemia (lack of red blood cells)	No known effects
Vitamin B12 (cobalamin)	Together with folic acid takes part in creating red blood cells	Anaemia (lack of red blood cells) might occur in vegans if not supplemented	No known effects
Vitamin C (ascorbic acid)	Takes part in collagen synthesis, helps with the ingestion of iron, increases iron absorption in the blood	Decrease in immunity A disease called scurvy, which shows as bleeding, weakness, weight loss leading to the loss of teeth Anaemia (due to impaired iron ingestion) Slow wound healing, excessive bleeding	Occurs but mainly through diarrhoea

*Effects of excess of water-soluble vitamins can be observed very rarely in the body easily with urine, but answers are provided to indicate what high doses can do

INSPECTION COPY

COPYRIGHT
PROTECTED



- 2) i) ● Lower ability to match up
i) ■ Higher ability to construct sentences with main points included.

Mineral	Functions	Effects of excess
Calcium (Ca)	Helps build strong bones and teeth	Demineralisation of bones
Fluoride (F)	Builds tooth enamel, prevents tooth decay	Attacks tooth enamel, staining of teeth
Potassium (K)	Balance fluids in the body, keeps the blood pressure stable	Chest pain, palpitations
Iodine (I)	Builds the thyroid gland hormones and coordinates metabolic rate	<ul style="list-style-type: none"> Brain immaturity in foetus Difficulties when focusing Can lead to weight gain
Iron (Fe)	Helps build red blood cells	Constipation, feeling sick, stomach pain
Magnesium (Mg)	Necessary to build DNA, controls muscle functions	Diarrhoea, abdominal cramps

- ii) ● ■ Any of the following sources or suitable alternatives:

- Calcium – milk, sardines
- Fluoride – sardines
- Potassium – bananas
- Iodine – salmon and seafood, kitchen salt
- Iron – red meat, salmon and seafood
- Magnesium – nuts and seeds

- 3) ●
- vitamin D and calcium
 - iron and vitamin C
 - folic acid and vitamin B12
 - magnesium and calcium
 - folic acid and iron
 - niacin and tryptophan
 - vitamin D and fluoride

- 3) ■
- i) calcium and vitamin D
Vitamin D is necessary for calcium absorption. Without vitamin D, calcium is not absorbed by the body, and non-haem, which is not absorbed as well. Vitamin D also helps in the absorption of iron, helping to prevent iron deficiency anaemia. Vitamin C also is necessary for iron absorption, such as that which builds blood cells, so supports the cardiovascular system. Vitamin C also helps in the production of haemoglobin, which carries iron, and by strengthening the walls of blood vessels.
- ii) iron and vitamin C
Vitamin C increases absorption of iron in the intestine. Iron occurs in food as haem iron, which is absorbed by the body, and non-haem, which is not absorbed as well. Vitamin C also helps in the absorption of iron, helping to prevent iron deficiency anaemia. Vitamin C also is necessary for iron absorption, such as that which builds blood cells, so supports the cardiovascular system. Vitamin C also helps in the production of haemoglobin, which carries iron, and by strengthening the walls of blood vessels.

- Exam-style question
- (1 mark for each correct, max. 2 marks)
- a) Vitamin B12 (cobalamin)
- b) Vitamin C (ascorbic acid)

**COPYRIGHT
PROTECTED**



■ Any five from: (1 mark for each correct point, max. 5 marks)

- Teenagers need more calcium, vitamin D, iron and magnesium than adults
- Calcium and vitamin D are necessary in larger amounts because teenagers are growing
- During growth spurt, the skeleton (bones) grows rapidly until the teenage years
- Vitamin D is necessary to improve calcium absorption, and calcium directly affects bone growth
- Iron is needed in larger amounts by teenage girls than teenage boys or adult women up to the age of 50),
- This is because they begin to menstruate.
- Extra iron is necessary to prevent anaemia
- Magnesium is needed in larger amounts by teenagers because their bodies are growing
- Magnesium is needed to build the bones and muscle tissue.
- Magnesium is also an important electrolyte, which is necessary to conduct electricity in the body.

Or any other relevant answer.



3. Nutrients: *Water and dietary fibre*

1) ●■ Higher ability to provide similar answer to lower-ability worksheet

Water is necessary for:

- Maintaining stable body temperature, preventing the body from overheating/sweating
- Proper digestion and bowel movements, e.g. by dissolving substances, becoming saliva or stomach acid), making swallowing easier, bulking up the food with fibre, making defecation easier, helping to transport nutrients around the body by making blood
- Elimination of waste products and toxins, e.g. by excretion of stools and urine
- Keeping the mucous membranes moist, allowing them to function properly (e.g. lungs, in the mouth and stomach)
- Taking part in many chemical reactions in the cells around the body
- ■ Dehydration may occur, e.g. after a marathon, where runners are sweating a lot. Other relevant responses possible.

2) ●■ Higher ability to provide similar answer to lower-ability worksheet

Extra fluid has to be provided:

- During diseases with high fever or when you are ill and lose water, e.g. diarrhoea
- During sport and other physical activity – to replace water lost as sweat
- Warm and hot weather – to replace water lost as sweat
- ■ For some people, e.g. some bodybuilders, who want to lose weight – water helps to bulk up the fibre, making stools softer and, therefore, a person needs to eat less



3) ●■ Higher ability to provide similar answer to lower-ability worksheet

Water is lost from the body via:

- Lungs – during breathing air is breathed out as vapour
- Kidneys (and bowel) – water is lost with urine and stools
- Skin – water is lost with sweat

Higher-ability students may also indicate other possible ways in which water is lost:

- Eyes – water is lost with tears
- Mouth – water is lost with saliva
- Wounds – water is lost with blood when bleeding occurs



**COPYRIGHT
PROTECTED**



- 4) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Feeling thirsty – this is the first symptom of dehydration. Lack of water available for the most important processes. This leads to less water so a person will have a dry mouth and feel thirsty.
 - Dark urine – this is because water dissolves the waste products filtered in the urine. If water is not available, the more water will be retained by the body, so the urine will be a darker colour.
 - Lack of energy – water makes up a large part of the brain (around 75%). If the brain cannot work properly, and, as a result, a person might feel tired, have trouble with concentration and headaches.
 - Increased heart rate – water makes up approximately 90% of the blood volume. If the blood becomes thicker, the heart needs to work harder to pump it.

High ability students may also indicate other symptoms of dehydration, such as:

- Drinking less often – as there is less water in the body, it will retain it for longer.
- Constipation – water helps to bulk up the food waste in the intestine and there is no moisture, and the food waste is not bulked up, the bowel will result constipation may occur.
- Dry, inelastic skin – water makes up a large part of body fluids, including blood. If there is little water, it will move from the cells to the blood to equal their concentration. The cells will be less moist and become inelastic and dry.
- Fever – water helps to cool the body, so, if there is not enough water, the body will eventually raise its temperature, which may be fatal.
- Low blood pressure – water makes up around 90% of the blood volume. If there is not enough water, the vessels will not be 'filled', and the blood pressure will drop, leading to fainting.

Other relevant responses possible.


- 5) ●■ Higher ability to provide similar answer to lower-ability worksheet
- i) Dietary **fibre** is an important part of a **balanced** diet. It can be found in many **plant-based products**. It plays a crucial role for the proper working of the **digestive system**. There are two groups: **soluble** and **insoluble**. Pectin slows down ingestion of **sugars** and helps to control blood sugar levels. Cellulose controls the movements of the **bowel** and prevents the risk of diseases such as **diabetes** and **cancer**.
- ii) Soluble fibre swells up in the stomach, increasing the feeling of satiety. This can lead to a reduction in their overall consumption and eat less (because they don't feel hungry as often). For those who wish to lose weight as their bodies will begin to use the energy stored in the fat, eventually leading to weight loss.

Exam-style Question


-
- a) Any two from: (max. 2 marks)
- wholemeal bread / cereals / cereal products
 - fruit and vegetables
 - dried fruit
 - beans and pulses
 - oatmeal and porridge
- or any other relevant answer.
- b) Any two from: (max. 2 marks)
- to prevent constipation / diarrhoea
 - to decrease the risk of bowel cancer
 - to increase satiety
 - to lose weight
 - to alleviate symptoms of disease (e.g. irritable bowel syndrome)
- or any other relevant answer.

COPYRIGHT
PROTECTED



-
- a) Any three from: (1 mark for each correct, max. 3 marks)
- constipation
 - bloating
 - feeling hungry more often
 - eating more for each meal, resulting in overconsumption and weight gain
 - increased risk of obesity
 - increased risk of developing bowel cancer
 - increased risk of developing breast cancer
 - increased risk of developing insulin resistance / type 2 diabetes
 - increased risk of developing hypercholesterolemia / atherosclerosis
- Accept other suitable answers.
- b)  Any two from: (1 mark for each correct, max. 2 marks)
- to allow the fibre to swell and increase satiety
 - to allow the fibre to swell and accelerate bowel movements
 - to avoid constipation
 - to allow the fibre to dissolve and control sugar absorption in the intestine
 - to allow the fibre to dissolve and control cholesterol/fat absorption in the intestine
- Accept other suitable answers.

4. Energy requirements

- 1) ● i) gender/sex, age, height, weight
- ii) The higher the PAL, the more energy a person needs. The lower the PAL, the less energy a person needs.
- 1) ■ i) • BMR – basal metabolic rate – the amount of energy needed to sustain life; BMR is the amount of energy needed to maintain body warmth and heart beat; BMR depends on sex, age, height, weight, and body composition
- PAL – physical activity level – an indicator of how active a person is; PAL depends on lifestyle, type of work performed, sports, etc.
- ii) BMR multiplied by PAL gives total energy expenditure (TEE) which is the total amount of energy necessary to perform all actions and maintain body weight
- 2) ●■  ability to provide similar answer to lower-ability worksheet
- Carbohydrates should provide up to 35% of energy
 - Proteins 15%
 - Carbohydrates 50%
 - of which sugars 5%
- 3) ●■ Higher ability to also provide explanation
- Physical activity helps burn fat tissue, preventing overweight and obesity
 - Drinking sufficient amounts of water gives the feeling of satiety, decreases hunger
 - Eating fresh vegetables provides micronutrients and fibre
 - Choosing wholegrain products such as bread, pasta or rice to provide slow release energy
- Other relevant responses possible.
- 4) ●
- i) complex carbohydrates / starch
- ii) protein
- 4) ■ Any two from:
- when carrying out physical activity (e.g. professional athletes), e.g. training, the extra energy is required for the movement, increased blood flow, increased amount of red blood cells and repair damaged tissues such as muscle; the energy requirements likely depend on the type of physical activity; for example, marathon runners would source it from carbohydrates while weightlifters would source it from proteins
 - during a disease, such as cystic fibrosis, cancer or any disease with high fever; the body needs the extra energy to repair the damaged tissues and improve the immunity; the extra energy would likely come from proteins and fats
 - when suffering from extensive burns or scalds; this is to enable the body to repair the underlying tissue; the energy would likely come from proteins and fats

**COPYRIGHT
PROTECTED**



- when carrying out physical work, e.g. builders, road workers; this is to ensure they can carry out their duties throughout the day; the energy should come from carbohydrates (up to 50%) and fats (up to 35%)
 - during adolescence; this is to ensure the body has enough energy to grow and develop, activity and increased brain activity (the brain uses up to 25% of TEE!); a balanced diet (i.e. up to 50% from carbohydrates, up to 35% from fats and 25% from protein)
- Accept other suitable answers.

Exam-style Question

- Any two from: (max. 2 marks)
 - the person can become overweight and obese
 - the person can develop coronary heart disease
 - the person can develop hypertension
 - the person can develop type 2 diabetes
 - the person can develop atherosclerosis
 - the person can develop depression
- or any other relevant answer.
- Any three from: (1 mark for each **factor** and 1 mark for a relevant description)
 - **energy needs differ depending on age of a person** – children and young people need more energy than adults due to the growth processes
 - **energy needs also differ depending on the physical activity of a person** – people with an active lifestyle have higher energy needs than people leading a sedentary lifestyle
 - **energy needs will differ depending on the body composition** – people with more muscle have higher energy needs than people who have more fatty tissue
 - for the same reason, **men usually have higher energy needs than women** – men have more muscle tissue than women, and, therefore, need more energy
 - **energy needs will also depend on the health state of a person** – some people with coeliac disease, cystic fibrosis, some forms of cancer or extensive burns, need extra energy for regeneration of the body
 - **energy needs also differ depending on one's occupation** – people who are teachers, instructors, builders, have higher energy needs than people who work in an office
 - **energy needs also increase during pregnancy and lactation** – this is because a woman has to provide energy for the growth and development of the foetus, and for milk production
 - or any other relevant answer

5. Planning balanced diets: Guidelines for a healthy diet, nutritional needs

- 1) ■ Ability to provide similar answer to lower-ability worksheet
- i) The Eatwell Guide states that:
- 35% of daily intake should be made up of vegetables and fruits
 - 30% of it should be wholegrains and starchy foods [●A]
 - 18% is meat and other protein-rich foods [●B]
 - 15% is dairy and alternatives [●C]
 - 2% is fats
- ii) Free (visible) fats make up only 2% of the chart because there are already fats in foods such as fish, dairy and meat.

- 2) ■ Higher ability to provide similar answer to lower-ability worksheet

Group	Dietary changes	
Babies and small children ■ only	Increase variety of foods, increase physical activity, drink milk, eat fish, cut down on sugars and sweets	To prevent obesity and prevent
Teenagers	Eat more fish, increase physical activity, more meat and legumes, drink more water, increase variety of foods, drink more milk, eat fewer sweets and sugar, eat more fruit and vegetables	To prevent obesity, prevent protein deficiency and anaemia
Young adults	Cut down on fast foods, drink milk, eat more fish, eat less salt, less fat, fewer sweets and sugar, increase physical activity, drink water, more fruit and vegetables	To prevent obesity and constipation
Elderly	Cut down on fast foods, drink milk, eat more fish, eat less salt, less fat, fewer sweets and sugar, increase physical activity, drink water, more fruit and vegetables	To prevent obesity and constipation

COPYRIGHT
PROTECTED



- 3) i) ●■ Higher ability to provide similar answer to lower-ability worksheet
- An omelette will cost: 20p for eggs, 68p for butter, £2.00 for ham and
 - The sandwich will cost: 10p for bread, 68p for butter, 43p for beans
 - The omelette is cheaper than the sandwich.
- ii) ●
- no (the portion is too large)
 - yes
 - no (the omelette is likely to provide too much saturated fats and so
- ii) ■
- 5 years old – no, because the portion is too large
 - 15 years old – yes, there is enough protein and calcium (from cheese) to be present during adolescence
 - 5 years old – no, there is too much salt (from ham and cheese) and for an older person, who should cut down on these ingredients
- 4) ●■ Higher ability to provide similar answer to lower-ability worksheet
- 5 starchy foods a day
 - 5 portions of fruit and vegetables
 - 3 portions of milk and/or dairy
 - 2 portions of protein-rich foods
- 5) ● Any two from: overweight, obesity, tooth decay, type 2 diabetes, or any other
- 5) ■ Fruit juices are not a part of a healthy diet for babies and children under one year old as they contain no dietary fibre, but are high in sugar, which can contribute to the development of obesity in children.
- 6) ●■ Higher-ability students to provide explanation as well.
- Oily fish such as salmon (very high in vitamin A and may contain mercury)
 - Brie cheese (usually made from unpasteurised milk and contains moulds)
 - liver pate (very high in vitamin A which in excess may be toxic for the foetus)

Exam-style Question

- Any two from (2 marks)
- Beans and pulses are a good source of protein
 - Combining beans and pulses with other foods helps to provide whole protein
 - Beans and pulses are a source of dietary fibre
 - Beans and pulses provide group B vitamins
 - Beans and pulses are a good source of potassium
 - Beans and pulses provide folic acid
 - Beans and pulses are low in fat
 - Beans and pulses are low in sugars
 - Beans and pulses contain no cholesterol
 - Beans and pulses are very low in saturated fats
- or any other relevant answer.

■	The answer shows excellent knowledge and understanding of the topic. Response is well structured and shows thorough understanding of the topic. The answer includes at least two reasons why people should decrease consumption of free sugars and saturated fats. The answer includes examples of foods consumption of which should be limited. Subject-specific vocabulary is used throughout.
■	The answer shows good knowledge and understanding of the topic. Response is well structured and shows good understanding of the topic. The answer includes at least two reasons why people should decrease consumption of free sugars and saturated fats. The answer includes examples of foods consumption of which should be limited. Subject-specific vocabulary is used throughout, with few mistakes.
■	The answer shows limited knowledge and understanding of the topic. Response is poorly structured and shows limited knowledge of the topic. The answer includes a maximum of two reasons why people should decrease consumption of free sugars and saturated fats. No examples are given. The language used may be generic and simplistic.
■	No answer provided or answer incorrect.

**COPYRIGHT
PROTECTED**



Indicative content:

- to prevent/avoid weight gain / overweight / obesity
- to prevent cardiovascular diseases
- to prevent coronary heart disease (condition in which cholesterol plaque accumulates in the heart)
- to prevent hypercholesterolemia (high blood cholesterol levels)
- to prevent hypertension (high blood pressure)
- to prevent type 2 diabetes
- to prevent atherosclerosis (condition in which cholesterol plaque accumulates in the arteries)
- to prevent tooth decay
- to prevent other conditions, such as arthritis (inflammation of the joints)

The following dietary guidelines include:

- the Eatwell guide
- the eight tips for healthy eating
- five a day
- all dietary guidelines recommend to limit consumption of sweets, which are high in fats
- dietary guidelines also recommend to limit consumption of saturated fats and to choose alternatives of food products
- the Eatwell guide recommends that oils and other fats should constitute a small proportion of recommended fats comes from other foods, such as dairy, fish, nuts and seeds

Examples may be used to exemplify points made:

- sources of saturated fats include: meat, poultry, milk and dairy (especially full-fat products), foods made with their use (e.g. sweets, biscuits, puddings, custard, sauce, etc.)
- sources of sugars include: table sugar, honey, syrups (e.g. golden syrup, etc.), products containing them (e.g. candies, cakes, puddings, custard, ice creams), some condiments and fruit juices and squash

Other relevant answers may be accepted.

6. Planning balanced diets: Nutritional needs of individuals with specific defined needs


- i) Tooth decay, obesity, overweight, type 2 diabetes
 - ii) Exchange sugary drinks for spring water; eat fewer sweets; cook from scratch; use less processed foods
- i) Tooth decay, obesity, overweight, type 2 diabetes
 - ii)
 - increase taxes on sugary drinks and snacks
 - promote water and natural unsweetened juices instead of sugary drinks
 - promote and grant manufacturers that don't sweeten their products
- Higher ability to provide similar answer to lower-ability worksheet

Diseases		
Osteoporosis	Coronary heart disease	Type 2 diabetes
Dietary causes		
Lack of vitamin D	Too much saturated fat	Too much saturated fat
Excess of phosphorus	Too much sugar	Overeating
Too little calcium	Low physical activity	Low physical activity
Low physical activity	Too much sugar	Too much sugar
	Too much fat	Too much fat
Health outcomes		
Brittle bones	Heart failure	Limb amputation
Tooth loss	Chest pain	Kidney failure
Joint and spine problems		Blindness
Easy bone fractures		

COPYRIGHT
PROTECTED



Changes in diet and lifestyle		
Eat more fish	Cut down on sugar	Cut down on sugar
Consume more vitamin D	Cut down on fats	Cut down on fats
Drink more milk	Lose weight (reduce energy intake)	Lose weight (reduce energy intake)
Increase physical activity	Cut down on saturated fats	Cut down on saturated fats
	Increase physical activity	Increase physical activity
		Eat regularly

- 3) ■ Higher ability to provide similar answer to lower-ability worksheet
Food allergy is a reaction of the **immune system** to a food ingredient, **not** of the digestive system to the food ingredient.
- 4) ●  7-year-old obese man: banana, brown rice cakes, tomato and onion salad, lettuce
- 50-year-old woman with hypertension: banana, brown rice cakes, tomato, corn bread, lettuce
- 14-year-old girl with bad tooth decay: grilled sausage, salt and vinegar corn, onion salad, mashed potato with cheese, corn bread, lettuce
- 4) ■
- 70-year-old obese man should avoid: sweets, sweetened beverages, high fat foods
- 50-year-old woman with hypertension should avoid: salt, salty snacks, sugar
- 14-year-old-girl with bad tooth decay should avoid: sweets, chocolate, sugary fruit juices (because of high content of fructose)
- Or any other relevant answer.

- 5) ● (Other correct responses possible)

	Does not eat.	
Coeliac	Gluten, wheat, barley, oat products, bread, pasta, dumplings, pancakes, bread, fish, ham	Corn and corns, rice, quinoa, but vegetables, meat
Lactose intolerant	Milk and dairy, pancakes, some meats, sauces which contain milk or added lactose	All foods that contain fruit and vegetables

- 5) ■
- | Group | Meal | Suggeste |
|--------------------|----------------------|---|
| Coeliac | Macaroni cheese | Exchange pasta to a gluten-free
Make the cheese sauce without
flour |
| Lactose intolerant | Strawberry milkshake | Exchange milk for a plant milk |

Or any other relevant answer.

- 6) ●
- Frying and deep-frying increases the amount of fat in the food, which is not healthy. Frying and deep-frying should be replaced with other cooking methods, such as boiling, steaming, grilling.
 - Milk chocolate is not suitable because of the large amount of sugar, not suitable for people with diabetes. It can be replaced with fresh fruit or a small amount of dark chocolate.

- 6) ■
- The diet must apply their knowledge of healthy eating and cooking methods. The diet will be suitable for a person suffering from type 2 diabetes and obesity.
 - A exemplary meal would include a source of polysaccharides (e.g. wholegrain bread), a source of fibre (e.g. vegetables, preferably raw), source of unsaturated fats (e.g. olive oil), a source of lean protein (e.g. lean meat or soy) or two sources of LBV proteins complementing each other.
 - The ingredients should be described in detail, i.e. 'wholegrain rye bread'.
 - Some cooking techniques should be indicated, such as steaming, dry frying, etc. which produce low fat, healthier meals than other cooking methods.

Exam-style Question

- a) Any one from: (max. 1 mark)
- swap butter for vegetable oil
 - use vegetable stock instead of chicken stock
 - use single cream, milk or yoghurt instead of double cream
 - limit the use of salt by using more herbs and spices
 - use unsalted butter instead of salted butter
- b) Any one from: (max. 1 mark)
- swap butter for a low fat spread or vegetable oil
 - swap double cream for a dairy free alternative, e.g. soy cream, coconut cream
- Accept any suitable answers. Only award marks if the two suggestions are for identifying swapping butter for oil twice).



The answer shows excellent knowledge and understanding of the topic, demonstrates ability to analyse, explain and assess the relationship between diet, nutrition and health, and provides advice on how the issues can be addressed in Wales. Response shows evaluation and application of knowledge in relation to 5–6 points from the indicative content. Subject-specific vocabulary is used throughout.

The answer shows good knowledge and understanding of the topic, demonstrates ability to analyse, explain and assess the relationship between diet, nutrition and health, and provides some advice on how the issues can be addressed in Wales. Response shows evaluation and application of knowledge in relation to 3–4 points from the indicative content. Subject-specific vocabulary is used throughout, with few mistakes.

The answer shows limited knowledge and understanding of the topic, demonstrates limited ability to analyse, explain and assess the relationship between diet, nutrition and health, and provides limited advice on how the issues can be addressed in Wales. Response shows limited evaluation and application of knowledge in relation to 1–2 points from the indicative content. The language used may be generic and in places unclear.

No answer given or answer irrelevant.

Indicative content

Diet (what an individual usually eats throughout the day) has a great impact on health. Diet may determine the health (total physical, mental and social well-being). Students should analyse how diet impacts on nutrition, and, therefore, health, in both the UK and Wales.

- example:
- eating a lot of processed foods -> high saturated fats / trans fats intake -> obesity, coronary heart disease, type 2 diabetes
 - low intake of vegetables and fruits -> low intake of vitamins and minerals -> for example, anaemia, scurvy, spina bifida
 - low intake of wholemeal products and vegetables -> low intake of dietary fibre -> constipation/diarrhoea, bowel cancer (and other types of cancer), obesity, high blood sugar level and type 2 diabetes, coronary heart disease
 - high consumption of vegetables and fruits -> higher intake of antioxidants -> developing certain types of cancer (e.g. bowel cancer, breast cancer)
 - eating a lot of sugary foods and drinking carbonated beverages -> high intake of sugar -> developing tooth decay, obesity, type 2 diabetes
 - eating a lot of salty snacks such as pretzels, crisps -> high intake of salt/sodium -> developing high blood pressure (hypertension)
 - eating more food than required -> too high energy intake -> increased risk of obesity and related conditions
 - eating an unbalanced vegetarian/vegan diet -> low intake of iron -> iron deficiency
 - eating a poorly planned vegetarian/vegan diet -> low intake of protein -> muscle wasting



**COPYRIGHT
PROTECTED**



Students indicate various methods of improving the public health:

- sugar levy to make sugary foods and drinks less appealing / less affordable
- increased tax on high-fat foods to make them less appealing for people
- improving access to fresh fruit and vegetables (e.g. by lowering prices or increasing the nutritional value of everyday diet and increase the consumption of dairy)
- implementing physical activity programmes to lower the risk of obesity,
- implementing healthy nutrition in schools to teach proper eating habits: fibre, polyunsaturated fats and complex carbohydrates

Other relevant answers may be accepted

7. Planning balanced diets to meet the nutritional needs of individuals with specific lifestyles

- 1) ●■ Higher ability to provide similar answer to lower-ability worksheet

Religion	Food beliefs (■ only)	
Islam	<ul style="list-style-type: none"> • Animals must be killed in a certain way to be called <i>halal</i> • Dairy cannot contain enzymes of animal origin • Believe that pigs are 'impure', 'unclean' 	<ul style="list-style-type: none"> • Don't eat pork • Have a fast during Ramadan • Eat only <i>halal</i> food
Hinduism	<ul style="list-style-type: none"> • Cows are sacred • Can't cause pain or violence against any living creature • Some foods, such as onion or garlic, are believed to excite the body and are forbidden • Dairy is believed to enhance spiritual purity 	<ul style="list-style-type: none"> • Do not eat meat • will drink milk • Mostly vegetarian • Don't eat onion or garlic • Some eat dairy
Judaism	<ul style="list-style-type: none"> • The animals need to be killed in a certain way to be called <i>kosher</i> • The fish have to have scales and fins to be considered <i>kosher</i> • No working or cooking on Saturdays, so food is made in advance 	<ul style="list-style-type: none"> • Don't eat pork • don't eat shellfish • will observe kosher

Or any other relevant answer.

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet

Vegetarian (but not vegan) are:

- Cauliflower cheese, because it contains cheese (from milk)
- Tuna sandwich, because it contains tuna (fish)
- Tea with honey, because honey is made by bees (animals) and vegans do not eat animals
- Scrambled eggs, because vegans don't eat eggs
- Cheesecake, because it contains cream cheese (from milk)
- Quorn™ hot dog, because Quorn™ often contains egg white
- The other products (coffee with sugar, tomato and onion salad, beetroot and carrot salad, latte) are suitable for both groups – vegetarians and vegans – as they contain no animal products

Or any other suitable food and explanation.

- 3) ●■ Higher ability to provide similar answer to lower-ability worksheet

- lacto-vegetarians – eat milk and dairy, but not other animal-derived products
- ovo-vegetarians – eat eggs, but not other animal-derived products
- lacto-ovo-vegetarians – eat milk, dairy and eggs, but not meat or fish
- vegans – do not eat any products of animal origin, to include honey

- 4) ●
- i) goose fat, beef shin, streaky bacon

ii) beef shin, streaky bacon, shallots, garlic, wine

iii) because it contains bacon (from pork) and wine (alcohol), both of which are not vegetarian

COPYRIGHT
PROTECTED



4) ■

- i)
 - it is not suitable for a Muslim due to the presence of pork (bacon) and alcohol (wine), shallots and garlic (many Hindus avoid eating these)
- ii)
 - goose fat – could be replaced with a plant-derived oil, e.g. olive oil
 - beef shin – could be replaced with tofu, lentils, or another suitable alternative
 - bacon – could be replaced with a vegetarian alternative (facon)

Exam-style Question

- 1 mark for each correct answer, max. 2 marks

- a)
 - replace beef mince with another source of protein, e.g. fish, chicken
 - replace beef stock with another liquid, e.g. chicken stock, vegetable stock
- b) as above plus:
 - exchange butter for a vegetable oil or vegetable fat spread
 - exchange milk for a vegan alternative, e.g. soy milk, rice milk, almond milk

1) ■

Band	A01	
3	Award 3 marks The answer shows excellent knowledge and understanding of the advantages and disadvantages of a vegan diet. Subject-specific vocabulary is used throughout.	Award 4 marks The answer shows excellent knowledge and understanding of the advantages and disadvantages of a vegan diet. Subject-specific vocabulary is used throughout, to at least four points in relation to both advantages and disadvantages.
2	Award 2 marks The answer shows a good knowledge and understanding of the advantages and disadvantages of a vegan diet. Subject-specific vocabulary is used throughout, with few mistakes.	Award 2-3 marks The answer shows a good knowledge and understanding of the advantages and disadvantages of a vegan diet. Subject-specific vocabulary is used throughout, to 2–3 points in relation to advantages and disadvantages.
1	Award 1 mark The answer shows limited knowledge and understanding of the advantages and disadvantages of a vegan diet. The language used may be generic and simplistic.	Award 1 mark The answer shows limited knowledge and understanding of the advantages and disadvantages of a vegan diet. The language used may be generic and simplistic, to at least one point in relation to either advantages or disadvantages.
0	Award 0 marks No answer given or answer incorrect.	Award 0 marks No answer given or answer incorrect.

Indicative content:

Advantages:

- as a vegan diet is based solely on plant foods, it is usually very high in dietary fibre, which can help maintain a healthy body mass, control blood sugar and cholesterol level, prevent cardiovascular disease
- vegan diets are usually very high in water-soluble vitamins (except for B12, which is not found in all plant foods)
- often very high in antioxidants such as vitamin E (alpha-tocopherol), beta-carotene, C (ascorbic acid), which can help people to remain healthy for a longer time and prevent certain conditions
- may be low in calories and promote weight loss, as plant foods are usually lower in energy density than animal products (such as nuts, seeds, avocados and olives)
- may be cheaper than meat-based diets as vegetables and fruits are often cheaper than meat, cheese and dairy products
- may help prevent deficiencies, e.g. of folate, which is present in cereals, legumes and green leafy vegetables
- may be more sustainable as less resources are needed to grow plants than to grow animals for meat
- may help lower the carbon footprint / food miles as many foods may be grown locally

**COPYRIGHT
PROTECTED**



Disadvantages:

- unbalanced vegan diet may lead to protein deficiency, causing health issues, hair loss; this is because most plant foods only contain low biological value protein; how to apply protein complementation may lead to deficiency in certain amino acids
- unbalanced vegan diet may lead to iron deficiency anaemia; this is because haem iron, which is poorly absorbed in the body; in addition, iron absorption is inhibited by high dietary fibre intake
- unbalanced vegan diet may lead to vitamin B12 (cobalamin) deficiency; occurs in animal-derived foods; deficiency may lead to anaemia
- unbalanced vegan diet may lead to vitamin D deficiency, and osteoporosis; vitamin D is only present in animal-derived foods (and in small amounts in fortified foods); prevented by moderate sunbathing exposure (but then, there may be not enough UVB to stimulate the skin to produce the vitamin)
- unbalanced vegan diet may lead to weight gain; that's because many vegetables, fruits, oils, nuts, seeds, avocados, olives
- vegan diet may be very costly, especially if choosing organic foods (which are often more expensive); also, plant-based milk is more expensive than home-made
- unbalanced vegan diet may cause constipation due to very high dietary fibre intake
- may require a lot of time to prepare the meals
- may require a high level of creativity to ensure the diet is varied and balanced

Accept other suitable answers.

8. The effect of cooking on food: Why food is cooked, how heat is transferred

- 1) ● Higher ability to provide similar answer to lower-ability worksheet

People cook food to...	An example of how heat is transferred
Avoid diseases and make food safe to eat	Heat kills salmonella and inactivates harmful bacteria; solanine in potatoes
Make food tastier and better smelling	In a stew, water evaporates and the flavour is concentrated; dextrinises giving the food a sweet flavour
To improve or alter texture	Baking makes food crunchy and crispy, boiling makes food soft and chewy
To improve shelf life	Killing bacteria and mould so they cannot grow; food can be safely stored for longer
To increase variety	One ingredient, e.g. potatoes or eggs, can be used in a variety of dishes
To improve appearance	The use of raising agents in cakes, the use of sugar (e.g. caramelisation), the use of egg wash on top of pastries

- 2) ●
- i) I can only work when water or oil is here – I am **convection**. Used to steam, boil, braise, etc.
I can work remotely, like a radio – I am **radiation**. You use me to cook roasts, grill, bake, etc.
I need to be close to give you my warmth – I am **conduction**. You use me to fry, sauté, etc.
- Other relevant responses possible.
- ii) Examples could include:
- braised meat (uses conduction to seal the meat and then convection to cook it)
 - quiche Lorraine (uses conduction and radiation as it is baked, and convection to cook the filling)
 - grilled meat (uses primarily radiation, but also conduction, which gives the meat its char)
 - tuna pasta bake (uses conduction and convection to boil pasta, and radiation to bake the top)

Accept other suitable answers.

- 2) ■
- i) ● Radiation is a process in which heat is transferred to food through electromagnetic waves. It can be transferred **remotely**.
Convection is a process in which heat is transferred to food through the movement of fluids. It can be transferred **remotely**.
Conduction is a process in which heat is transferred **directly from** one object to another. The food and the pan have to be in **direct** contact for conduction to occur.

Or any other relevant answer including keywords (bold).

COPYRIGHT
PROTECTED



ii)

Cooking method	Heat transfer method	Explanation
Baking an apple pie	Radiation Convection Conduction	Sending heat waves from the oven to the pie Transferring heat from water particles in the oven to the pie Transferring heat directly from the hot oven to the pie
Cooking soup	Convection Conduction	Transferring heat from water to foods in the pot Transferring heat from the hob to the pot
Frying chicken	Radiation Convection Conduction	Sending heat waves from the oven to the chicken Transferring heat from water and oil in the pot to the chicken Transferring heat from the pot to the chicken
Steaming vegetables	Convection Conduction	Transferring heat from vapour to the vegetables Transferring heat from the hob to the pot
Grilling steak	Radiation Conduction	Sending heat waves to the food Transferring heat from the hot grill to the food

3) ■ Higher ability to provide similar answer to lower-ability worksheet

	Is good because...	
Steaming (cooking)	Prevents vitamin loss, allows cooking of delicate ingredients, low in calories, good for people who want to lose weight, is quick, makes the food easier to chew, alters texture	Can't be used for all foods
Boiling (cooking)	Low in calories, good for people who want to lose weight, is quick, softens the proteins, makes the food easier to chew, alter texture, softens texture	Leads to vitamin loss, prepares certain foods
Shredding (preparation)	Makes the food easier to chew, alters texture	Leads to vitamin loss, browning, prepares certain foods
Deep-frying (cooking)	Creates a crunchy surface / outer layer, is quick	Leads to vitamin loss, leads to obesity
Poaching (cooking)	Prevents vitamin loss, allows cooking of delicate ingredients, low in calories, good for people who want to lose weight	Can't be used for all foods
Blanching (cooking and preparation)	Prevents oxidation, prevents enzymatic browning, makes peeling easier, prevents vitamin loss	Doesn't change texture
Stir-frying (cooking)	Makes the food easier to chew, alters texture	Is time-consuming, certain foods
Braising (cooking)	Seals the surface of food and keeps it moist, softens the food and makes it easier to chew, develops flavour and aroma	Is time-consuming
Marinating (preparation)	Softens the proteins, prevents vitamin loss	Is time-consuming

Other correct responses are possible.

- 4) ●
- Simmering, grilling, dry-frying, stir-frying, steaming
 - Braising, roasting
 - Braising, simmering, roasting, grilling
 - Dry-frying, stir-frying, steaming

- 4) ■
- Simmering increases amount of fat, causes vitamin loss
 - Braising increases amount of fat, causes vitamin loss
 - Stir-frying increases amount of fat, causes vitamin loss
 - Shallow-frying decreases amount of fat, vitamin loss occurs
 - Stir-frying decreases amount of fat, vitamin loss occurs
 - Stir-frying decreases amount of fat, preserves vitamin value
 - Shallow-frying increases amount of fat, vitamin loss occurs

INSPECTION COPY

COPYRIGHT
PROTECTED



Exam-style Question

- (1 mark for a reason, 1 mark for a suitable explanation, max. 4 marks)

Any two from:

- to make the cake safe to eat (raw eggs can contain salmonella and cause food poisoning)
- to make the cake more digestible ('raw' flour is rich in complex carbohydrates which are not easily digested; baking and are more digestible for the human digestive tract)
- to obtain the desired texture (during baking the air in the batter expands and creates a light texture; also during baking the proteins from the eggs set, and the cake coagulates)
- to improve appearance (during baking the cake rises and obtains a golden brown colour)

- 1 mark for each food cooking method identified, 1 mark for explanation of the nutritional value of food

Do not include answers which indicate other aspects, e.g. how the method affects the taste or texture of the food.

Method: shallow-frying

How it affects nutritional value of food: increases the amount of fat; increases the amount of vitamin A; very high temperature decreases the amount of vitamins in the food (especially water-soluble vitamins which are very unstable and non-heat-resistant)

Method: stir-fry

How it affects nutritional value of food: helps to maintain the nutritional value of the food; foods with low calorific value

Method: deep-frying

How it affects nutritional value of food: increases the amount of fat; increases the amount of vitamin A; very high temperature decreases the amount of vitamin in the food; due to the relatively long time of cooking, poses a risk of introducing harmful substances (e.g. acrylamide) or any other relevant answer.

9. The effect of cooking on food: Carbohydrates, fats, protein, fruit and vegetables

- 1) ● ■ Higher ability to provide similar answer to lower ability worksheet

Proteins are large molecules built from **amino acids**. They are bound together by **peptide bonds** which then twist and curl into **specific proteins**. If treated with **acid** or **heat**, they can be broken down.

Coagulation is the process in which proteins aggregate and form lumps. Protein coagulation occurs with **acid** and **glutenin**. When mixed with water, they glue together and form a network of fibres which give the dough **plasticity**. If you whisk an egg white, you incorporate air into the mixture, creating a foam.

- 2) ●
- Starch in bread: dextrinisation
 - Starch in sauce: gelatinisation
 - Gelatinisation takes place when starch is heated in the **presence of water**, breaking the starch chains, thickening the mixture. Dextrinisation takes place when starch is heated, breaking the starch chains into shorter ones, changing the look and flavour of the food.
- Other correct responses possible, with the use of keywords (bold).

2) ■

The process	Molecules affected	Conditions needed	Example
Caramelisation	sugars	High temperature	Caramel
Gelatinisation	starch	High temperature and water	Sauce
Dextrinisation	starch	High temperature	Crisps

- 3) ●
- Fat mixed with flour leads to **shortening** because it prevents gluten from forming. This is used to prepare **shortbread biscuits**, shortcrust pastry, etc.
 - Fat mixed with sugar creates **cream** due to the process called **aeration**. Examples include **ice creams**, **sponge cake**, etc.
 - Fats do not dissolve in **water**. Instead, they create an **emulsion**. Examples include **mayonnaise**, hollandaise sauce, etc.

**COPYRIGHT
PROTECTED**



iv) Plasticity of fat means that it can be easily **spread and reshaped** and has **low melting points**. This is used to cook various types of **pastry**, such as shortcrust, etc.

3) ■ Students may indicate that:

- Fats are built of a **hydrophilic** glycerol 'head' and a **hydrophobic** fatty acid molecules **immiscible**. Due to this they will not **dissolve** in water and, it is usually with the use of an emulsifier to prevent the mixture from separating.
- Fats which have single bonds only in the fatty acid chain are saturated and Examples of this are lard and butter. Lard is better used in shortcrust pastry as it will be more crumbly. Butter contains little water so the shortcrust will be more crumbly than when made with lard only as some gluten will develop in it.
- Fats which have one double bond only (monounsaturated) are better for cooking as they are less prone to turning into trans fats than polyunsaturated fats.
- Unsaturated fats from raw oils, such as extra virgin olive oil, are best as high temperatures may cause them to turn into harmful trans fats.
- The length of the fatty acid chains is also important as it defines their melting point. Other correct responses are possible.

4) ●

- Dextrinisation: baking bread
 - Gelatinisation: thickening sauce with starch, cooking rice or potatoes
- Other correct responses are possible.

4) ■

- Bread turns brown when baked due to the caramelisation of sugars, dextrinisation and Maillard reaction
- Eggs set during boiling due to protein denaturation and coagulation
- Sauce thickens due to the gelatinisation of starch and the evaporation of water

5) ●■ Higher ability to provide similar answer to lower-ability worksheet

i) **Enzymatic browning** is a process which takes place when plant cells are damaged and from the cells leak out enzymes and cause **damage** to the surrounding tissues, which affects the **nutritional value** of the food. Some fruit and vegetables are more susceptible to enzymatic browning than others, such as **bananas, apples and potatoes**.

ii) Give three fruits and three vegetables from:

- Fruits susceptible to enzymatic browning include apples, pears, bananas, peaches, avocados
- Vegetables susceptible to enzymatic browning include potatoes, lettuce, mushrooms

6) ●■ Higher ability to provide similar answer to lower-ability worksheet

i) Oxygen: cover the food to protect from air, use lemon juice or dressing to cover the food
Temperature: put in the fridge to slow down the process
Enzymes: inactivate by blanching
Diminution (cutting or shredding into smaller pieces) (especially with ingredients that are high in surface area)

7) ● Oxidation can be prevented by:

- covering the food
- using lemon juice

7) ■

i) Oxidation is a process in which oxygen affects molecules in food (oxidise) and causes the development of a bad smell and flavour in food.
ii) Oxidation can be prevented by:

- covering the food
- using lemon/lime juice or vinegar

**COPYRIGHT
PROTECTED**



8) ● Any one reason from:

the top of a sponge cake has cracked	<ul style="list-style-type: none"> too much batter the oven was too hot the middle, which is expanding and pushing the top up the cake was put in the oven when the surface was too dry baked too early
shortcrust pastry is sticky and difficult to handle	<ul style="list-style-type: none"> the dough was too wet too warm the fat used was straight from the fridge the dough was kneaded too vigorously, possibly making it too warm the pastry is too dry too much water used, placed in it started to rise

8) ■

i) There are multiple reasons for a bread to fail:

- too cold temperature / too hot temperature – yeast require warmth to rise; will not rise if it's too hot or too cold (e.g. ice-cold or boiling water)
- the yeast was old – the yeast used could have been old and dead, and not raise the dough
- wrong type of flour was used – bread requires gluten to rise, as it forms a network to trap the gas; lack of gluten will cause the bread to be dense and not rise
- too much salt was added – salt inhibits yeast growth
- too little salt was added – salt strengthens gluten, so too little of it means the bread will not hold all the gas produced by the yeast and the bread will be dense

ii) Any two from:

- carefully measure the temperature of the water used with a food thermometer
- check the use by date on the yeast / how long they have been stored for
- store yeast in (they should be refrigerated)
- check the type of flour available / check the best before date of the flour to be used
- calculate and weigh the amount of salt needed (its proportion to the flour)
- measure the temperature of the room the bread is left to prove in
- measure the time of proving
- ensure that the bread dough has doubled in size before putting it in the oven
- ensure the oven is not too hot as it could burn the surface of the bread (the bread would continue to rise while the oven warms up)

or any other relevant answer.

Exam-style Question

● 1 mark for identifying the processes (denaturation, caramelisation), 1 mark for explaining how to obtain the dish. Max. 2 marks for each.

Changes in proteins:

- Proteins from milk and eggs undergo denaturation and coagulation due to heat
- Protein denaturation and coagulation causes the mixture to thicken and curdle
- Denaturation damages the structure of protein and the protein uncoils.
- Coagulation causes protein molecules to aggregate and trap water, so the mixture thickens

Changes in sugars:

- Sugar undergoes caramelisation due to high heat treatment.
- Caramelisation changes the flavour of the meal and creates a crunchy, golden-brown crust.
- During caramelisation, molecules of sugar break down and release water and form a caramel. While the water evaporates, only the sweet brown residue is left.

**COPYRIGHT
PROTECTED**



- 1) ■ Any three from: (1 mark for each function and 1 mark for a relevant explanation)
- help to obtain a short/crumbly texture of food – when fat is rubbed into it prevents them from accessing water, meaning that gluten strands cannot become crumbly after cooking
 - help to obtain a layered texture – when fat is rolled between sheets of pastry it melts and creates water vapour which expands and rises, creating space so the pastry has the specific flaky texture after cooking
 - help to obtain airy texture – during aeration fat can create a very thin film within the mixture; the protein-fat structure can be extended to a great level and trap bubbles, increasing the volume of the mixture
 - adding moisture and flavour – fats are important for the correct mouthfeel during cooking and can add moisture to the food, e.g. beef steaks (lean cuts) after cooking to add butter on toast
 - giving nutritional value – fats are solvents for vitamins A, D, E and K and are added to salads to enable and improve their absorption in the human body
- Accept other suitable answers.

10. The effect of cooking on food: The positive use of microorganisms

- 1) ●
- camembert – bacteria, mould
 - bread – yeast
 - soy sauce – yeast, mould
 - croissants – yeast
 - yoghurt – bacteria
 - cheddar cheese – bacteria
 - blue cheese – bacteria, mould
- 1) ■
- Stilton cheese – mould, bacteria
 - Pannettone cake – yeast
 - Soy sauce – yeast, mould
 - Probiotic yoghurt – bacteria
- 2) i) ●■ Higher ability to provide similar answer to lower-ability worksheet
1. Homogenisation and pasteurisation of milk
 2. Inoculating with bacteria cultures
 3. Incubating in warm conditions
 4. Fermentation
 5. Cooling down to stop bacterial growth
 6. Adding flavouring
 7. Packing and sealing
- ii) ●
- taste (becomes sour)
texture (becomes thick)
- ii) ■
- Milk contains lactose (sugar). Bacteria **ferment** the sugar and produce lactic acid, which thickens the milk, making it **acidic**. In an acidic environment, the proteins from milk thicken into yoghurt.
- 3) ●■ Higher ability to provide similar answer to lower-ability worksheet
- warmth, moisture, sugar (food)
- 4) ●
- i) Description of the process
- ii) Description of the process
- 4) ■
- i) Fermentation
- ii) During **fermentation**, bacteria produce **acid**. Acid causes the protein in the meat to denature, which changes the taste and texture of the meat, turning it into a sausage.

COPYRIGHT
PROTECTED



11. Food spoilage: The growth conditions for microorganisms and the signs

- 1) ● To grow, Microorganisms require: warmth, moisture, protein, time
Examples of high-risk foods include: raw meats, raw eggs, raw fish, foods that have been defrosted and frozen again (other correct responses possible)

1) ■

Factors needed for microorganisms' growth	High-risk foods
Warmth	Foods that are reheated; foods that have been frozen and thawed; foods that were incorrectly cooked
Time	Foods that are reheated repeatedly
High protein content	Raw chicken, eggs, fish
Moisture	Foods rich in water such as raw chicken

- 2) ● Vinegar and lemon juice contain acid. Proteins (such as enzymes) denature in acid.
ii) Blanching means that the vegetable is put into boiling water. High temperatures denature proteins (such as enzymes).

- 2) ■ i) Enzymes are biological catalysts usually made from protein. (Other correct responses possible)
ii) Enzymatic action can be controlled by the addition of acid or by applying heat because proteins denature and inactivate in acidic and/or hot environments.

- 3) ●
- Enzymes – browning of food, ripening of bananas
 - Mould – green or white furry coating formed on the surface
 - Yeast – sour flavour, foam on top, air bubbles in the food

3) ■

Microorganism	Sign of spoilage caused by given microorganism
Enzymes	Browning, ripening
Mould	Growth of green, white or black 'furry' coat on the surface
Yeast	Sour flavour, foam on top, bubbles

Other correct responses possible.

- 4) ● ■ Ability to provide similar answer to lower-ability worksheet
From 5 to 63°C (and especially between 20 and 40°C)

Exam-style Question

● (1 mark for the method, 1 mark for the correct description of why it is effective)

Method: blanching

Why it is effective: enzymes are built of protein; in high temperatures (such as boiling) they denature and become inactive

Method: using acid

Why it is effective: enzymes are built of protein; in acidic pH (after adding acid) they denature and become inactive

■

Any two from: (1 mark for each correct, maximum 2 marks)

- because uncooked meat is high in protein, which may boost the growth of microorganisms
- because uncooked meat is high in water, which can be used by microorganisms
- because low temperatures halt the growth and development of microorganisms
- because the time of transport may be affected by various factors such as distance, temperature, time, etc. If the meat is at low temperature as the more time, the higher probability of microorganisms to multiply
- because the chemical changes in uncooked meat break it down and provide nutrients for microorganisms

Accept other suitable answers.

**COPYRIGHT
PROTECTED**



12. Food spoilage: Buying and storing food (how to store foods correctly, the

1) ●

	Is important
Keeping food covered	It shields the food from oxygen (mice and insects) or pets
Choosing correct temperature	Prevents microorganism growth
Keeping the storage dry and mould – free	Prevents growth of bacteria
Choose correct lighting	Light that is too strong will be needed to spot any possible spoilage (removed as soon as possible from other foods)

1) ■

Any five from:

- Keep food covered
- Ensure dry conditions
- Keep the storage clean
- Keep the storage mould-free
- Choose correct temperature
- Protect from light and choose correct lighting
- Keep the food off the floor

ii)

- Maintaining dry and clean storage helps avoid growth of microorganisms
- Choosing the correct temperature prevents bacteria growth.
- Protecting food from light helps maintain its nutritional value.
- Correct lighting helps you to spot any possible spoilage.
- Keeping food off the floor helps protect it from insects and vermin

2)

Higher ability to provide similar answer to lower-ability worksheet

Use by date is used for **fresh** foods such as **dairy** and **fish**. It helps ensure food should not be eaten after that date.

Best before is used for **dry** and **long-lasting** foods such as pasta, and applies date when its nutritional value or quality may be affected.

3)

Higher ability to provide similar answer to lower-ability worksheet

- Top shelf: milk, yoghurt and dairy; cottage cheese
- Middle shelf: cold cuts, soup
- Bottom shelf: raw meat
- Drawers: fruit and vegetables
- Door: eggs, juice, oil, ketchup
- Freezer: ice cream, frozen peas

Other correct responses are possible.

4)

Higher ability to provide similar answer to lower-ability worksheet

i)

- Freezing: -18 °C
- Chilling: 0 to 5 °C
- Cooking and reheating: 75 °C
- Boiling water: 100 °C

ii)

The range of danger zone temperatures is from **5 °C to 63 °C**. It is temperature where microorganisms grow the fastest and the risk of food spoilage is therefore highest.

iii)

Room storage means that food is stored at **room** temperature. This is between **10 °C and 22 °C**. This falls in the range of **danger zone temperatures**.

INSPECTION COPY

COPYRIGHT
PROTECTED



- 5) ●■ Higher ability to provide similar answer to lower-ability worksheet

In most cases, frozen food should be **defrosted** before cooking. This is necessary to **defrost** and kill all the **bacteria** inside of the food. Once defrosted, food should **never** be reheated as this **increases** the risk of bacterial growth.

Reheating food is a major cause of food **poisoning**. This is because the microorganisms needed for growth – **warmth, moisture** and food. For that reason, reheating food at temperatures above **75°C**. Repeatedly reheating food **increases** the risk of food poisoning.

Exam-style Question

- 1) ● 1 mark for each correct answer, max. 2 marks
- any preserved food which becomes high-risk after opening, e.g. UHT milk, ready-made soups, dressings, condiments and sauces (such as mayonnaise)
 - any non-preserved, non-high-risk food, e.g. dried pasta, rice, cereals, peanut butter
- Other suitable examples may be accepted.

- 1) ■
- Any two from: (max. 2 marks)
- to help prevent food spoilage
 - to help keep the best quality (sensory characteristics) of the food
 - to help preserve the best nutritional value of the food
 - to protect the food from external factors which could deteriorate it
 - to extend the shelf life of the food
 - to help the customers make their choices (e.g. when choosing food which they consider not to buy it if they don't have a freezer)
 - to help retailers plan their stock orders
- or any other suitable answer.

13. Food spoilage: Preparing and cooking food (the types of bacterial cross-contamination, methods, signs and symptoms of food poisoning)

- 1) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Salmonella, Clostridium, Staphylococcus aureus, E. coli, Campylobacter

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet

- Sources of bacterial cross-contamination include:
 - Contact with other contaminated foods
 - Contact with contaminated surfaces and equipment
 - Dirty hands of the people cooking/preparing the food
 - Pests (insects) having contact with the food
 - Waste food and rubbish
- Cross-contamination and food poisoning can be prevented by:
 - Dealing with foods separately
 - Using specific, dedicated equipment
 - Maintaining personal and work hygiene
 - Protecting kitchen and storage from pests
- Main symptoms of food poisoning include:
 - Vomiting and nausea
 - Diarrhoea
 - Fever
 - Stomach cramps
 - Headache

**COPYRIGHT
PROTECTED**



3) ●■ Higher ability to provide similar answer to lower-ability worksheet

i) High-risk activities include:

- handling high-risk foods such as raw eggs
- using the toilet
- handling raw meat
- eating
- touching the face or hair
- cleaning or putting rubbish in the bin

Higher-ability students may provide other relevant responses.

ii) Bacteria are found everywhere – from **hands**, through clothing, to water and air. After handling high-**risk** foods such as **raw** meat or eggs help to prevent contamination. Other hygiene rules include changing clothes when starting work **outdoors**, using separate **utensils** for **raw** and **cooked** products and keeping hands clean.

4) ●■ Higher ability to provide similar answer to lower-ability worksheet

Blue – raw fish

Red – raw meat

Yellow – cooked meat

Brown – vegetables

Green – salads and fruit

White – dairy

5) ●■ Higher ability to provide similar answer to lower-ability worksheet

Correct cooking time helps to kill bacteria and other microorganisms, which die at temperatures above 65 °C. Cooking helps to prevent food poisoning by killing microorganisms, and by deactivating toxins and enzymes with the use of high temperatures.

6) ●■ Higher ability to provide similar answer to lower-ability worksheet

Food waste has a huge effect on the environment:

- to produce food, a lot of **fossil fuels** are used, so wasting food means wasting energy
- once the food is disposed of, it has to be picked up and **transported** to landfill (e.g. by gas or oil) and produces exhaust gases, which pollute earth, waste energy and contribute to global warming
- food waste left in landfills decomposes and produces large amounts of methane gas and leads to global warming

Or any other relevant answer.

7) ●■ Higher ability to also provide an explanation/description of the process.

Preservation method	Extends the shelf life by
jam making ■	high percentage of sugar (draws water from the spoilage microorganisms)
pickling	high percentage of acid (most microorganisms die in acid)
freezing	very low temperature (most microorganisms become dormant)
bottling	very hot temperature (most microorganisms die)
vacuum packing ■	lack of oxygen (stops aerobic microorganisms from growing; anaerobic microorganisms may still grow)

Exam-style Question

●

Any two from the list for each correct statement, max. 2 marks)

- to prevent bacterial growth in defrosted food
- to reduce the number of bacteria in the food
- to prevent food spoilage
- to prevent food poisoning
- to prevent freezer burn if defrosted food has contact with oxygen

Other relevant answers may be accepted.

**COPYRIGHT
PROTECTED**



- Any three from: (1 mark for indicating a method, 1 mark for explaining why it)
 - keeping good personal and workplace hygiene** – this prevents the spread of bacteria from hands and clothing of personnel, as well as from the working surface to the food
 - using separate tools to deal with high-risk foods** – this is useful as it prevents cross-contamination from safer foods and prevents contamination from chopping boards, knives or other tools
 - cleaning and disinfecting utensils before and after use** – hot water will kill bacteria and other microorganisms and prevents the risk of contamination from the use of the same utensil
 - using correct cooking times** – this helps to cook food thoroughly and any microorganisms could be killed
 - storing foods correctly** – storing food in covered or sealed containers prevents contamination with other foods and contaminating them; storing food at low temperatures slows down the possibility of bacterial growth as the temperature scope is beyond the optimal range for growth
 - using foods beyond their 'use by' date** – foods have a stated 'use by' date to ensure they are safe to eat up to that date; microorganisms require time to grow, which is increased when stored, the higher the risk of bacterial growth in it. Also, the chemical structure of food creates more optimal conditions for bacterial growth.
- Other correct responses may be accepted.

14. Food provenance: Food origins

- Higher ability to provide similar answer to lower-ability worksheet

Reared – beef, pork, lamb, salmon and oysters in fish farms
Grown – lettuce, carrots, sunflowers, olives, pumpkin, thyme, mushrooms
Gathered – mushrooms, stinging nettles, thyme
Caught – venison, wild salmon and oysters
Or any other relevant examples.
- Higher ability to provide similar answer to lower-ability worksheet

Organic farming does not allow the use of **pesticides, antibiotics, fertilisers** (such as animal feed) which can be used in conventional farming in order to increase yields.
- Higher ability to provide similar answer to lower-ability worksheet

Eggs can be produced in various ways. The most popular method of egg farm production is **enriched cage** production, where hens are kept in tight **cages**, placed on top of each other. A more popular method is **barn** production, in which hens can move freely around the farm. Some people claim that **free-range** egg production is better both for the birds and consumers as the hens are outside at least for a part of the day and have much more room than the hens in cages. **Free-range** eggs are labelled as 1. **Organic** eggs come from hens which are fed organic food.
- Higher ability to provide similar answer to lower-ability worksheet

Advantages:

 - It is cheaper to rear large numbers of animals in one place than it is to rear small numbers in many places
 - Less land is used (which helps maintain sustainability)
 - Fewer people are needed to run the farm
 - The price of food is lower and more affordable

Disadvantages:

 - Need to invest a lot of money to start a farm
 - Increased risk of disease spread
 - Animal welfare standards are not met
 - Animal injury among animals are possible

Or any other relevant answer.

**COPYRIGHT
PROTECTED**



Exam-style Question

- Any two from: (1 mark for each correct, max. 2 marks)
- Sustainable fish farms care about animal welfare so the fish are treated better
- The consumer knows how the fish were reared, fed and caught
- It is easier to control diseases and fish feed and avoid accidental eating of fish
- Sustainable fish farms help to protect the natural environment
- Sustainable fishing helps to protect wild species
- Sustainable fishing prevents species extinction
- Sustainable fishing helps to cease overfishing of natural fisheries
- Sustainable fish farms provide jobs for many people around the world

More healthy or better quality food may be accepted due to lack of reliable evidence.

Any other suitable answer may be accepted.

Band	A01	
3	Award 3 marks The answer shows excellent knowledge and understanding of the advantages and disadvantages of fish farms for sustainability of food. Subject-specific vocabulary is used throughout.	Award 4 marks The answer shows excellent ability to analyse, explain advantages and disadvantages of fish farms. The answer includes a reference to the advantages and disadvantages of fish farms.
2	Award 2 marks The answer shows good knowledge and understanding of the advantages and disadvantages of fish farms for sustainability of food. Subject-specific vocabulary is used throughout, with few mistakes.	Award 2–3 marks The answer shows good ability to analyse, explain advantages and disadvantages of fish farms. The answer includes a reference to the advantages and/or disadvantages of fish farms.
1	Award 1 mark The answer shows limited knowledge and understanding of the advantages and disadvantages of fish farms for sustainability of food. The language used is generic and simplistic.	Award 1 mark The answer shows limited ability to analyse, explain advantages and disadvantages of fish farms. The answer includes a reference to the advantages or disadvantages of fish farms.
0	Award 0 marks No answer given or answer incorrect.	Award 0 marks No answer given or answer incorrect.

Indicative content:**Advantages of sustainable farming:**

- Health of the stock is controlled and maintained, leading to production of better amounts and helping to rebuild the stock (i.e. not leading to extinction of a species)
- Positive impact on the ecosystem as only limited resources are used (e.g. less damage to the ecosystem or habitat, no by-catch of other species)
- The resources are used more responsibly, helping to avoid waste
- Enables fair wages and prices for fish farm workers, leading to improvement off unemployment and poverty, and helping to prevent human trafficking / slavery
- Fish farms may produce as much fish as is needed to feed the growing population
- The number of fish may be easily controlled and adjusted
- The quality of fish is better controlled, so the fish people eat is safe and healthy
- Fish farms are environmentally friendly so don't affect the availability of other resources
- Fish farms require only limited space, so there is more room to grow plants or other crops
- Fish farms only use the necessary resources, so there are more resources left for other uses
- The waste products are disposed of in a controlled way, so create no pollution

Arguments against fish farming:

- Only certain fish species can be reared, i.e. not all species are suitable for rearing
- Low variety as only limited number of species may be produced
- The fish are fed synthetic feed, which affects their flavour and nutritional value
- Fish may be overcrowded, which could affect animal welfare and health
- Animals can be treated with antibiotics as a prevention, and traces of antibiotics may be found in the fish
- The fish tanks may be dirty and polluted from too much feed, excrement and other waste
- Nutritional value of the fish may be lower than that of those which live in the wild

Other correct responses may be accepted.

**COPYRIGHT
PROTECTED**



5) ●

Factor	
Lack of carbohydrates and fats / lack of macronutrients	Can lead to loss of b
Chronic lack of protein	Can cause kwashiorkor
Calcium and vitamin D deficiency	Can lead to poor bo

5) ■

- i) Causes of food poverty in Wales could include:
- lack of paid employment
 - low wages which cause even employed people to live in poverty
 - increasing prices of food
 - high costs of other goods such as fuel and electricity (the need to cook or heating)
 - cuts to benefits
- Accept other suitable answers.
- ii) Health effects of food poverty include:
- hunger and uncontrollable loss of body mass
 - loss of muscle tissue, weakness
 - loss of immunity
 - vitamin and mineral deficiencies
 - protein deficiency, often leading to kwashiorkor
 - inability to focus and learn
 - poor bone and dental health
 - increased risk of heart disease, obesity, type 2 diabetes, as low-quality
 - stress and social exclusion
 - depression
- or any other relevant answer.

Exam-style Question

- Any two from: (1 mark for each correct, max 2 marks)
- Buy food locally to reduce food miles and the amount of greenhouse transportation
 - Choose organic food to reduce the amount of fertilisers used
 - Buy food in bulk to reduce the amount of resources used to produce food
 - Reduce the use of packaging to reduce the need to use resources to produce packaging
- or any other suitable answer.

■

- Any three from: (1 mark for each factor and 1 mark for a relevant description)
- **Global warming and climate change**, leading to droughts and floods and
 - **Less land available to grow food** leading to less food being produced
 - **Growing population** means more food is needed to feed everybody
 - **Fewer resources are available** (water, good-quality soil or fossil fuels)
 - **Environmental damage from pollution and human activities** leading to being able to pollinate plants and decrease in birds which could eat pests
 - **Extreme weather conditions** (flooding and drought) which affect the ground and limit the land area suitable for grazing, leading to less food production
 - **Wars and conflicts** which consume resources (e.g. money) needed to produce food which otherwise could be used for growing crops / grazing animals
 - **Ability to transport foods to distant countries** as some foods are imported with expiry dates, or lack of money to pay for transport, or lack of petrol to fuel transport
 - **Lack of money (low income)** which makes the food unaffordable for people
 - **Distance to the nearest shop/farmer**, e.g. in Africa this can be measured in days for people to go and buy the food even if they have the money
 - **Climate change failures** caused by weather conditions, overexploitation of soil, pests
- Other relevant answers may be accepted.

**COPYRIGHT
PROTECTED**



16. Food manufacturing: British and international cuisines

- | | | |
|------|--------------------------------|------------------------|
| 1) ● | Fish and chips – Great Britain | Paella – Spain |
| | Sushi – Japan | Quiche – France |
| | Eton mess – Great Britain | Scones – Great Britain |
| | Pizza – Italy | Naan bread – India |
| | Dumplings – Poland | Tacos – Mexico |
| | Croissant – France | Froggnuts – USA |

- | | | |
|------|--------------------------------|-----------------------|
| 1) ■ | Fish and chips – Great Britain | Naan bread – India |
| | Sushi – Japan | Spring rolls – China |
| | Pizza – Italy | Tacos – Mexico |
| | Dumplings – Poland | Donuts – USA |
| | Croissant – France | Tagine – Morocco |
| | | Empanadas – Argentina |

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet

Cuisine is a style of cooking characteristic of a particular **country** or **region**, with its own preparation and **cooking** methods, and presentation or serving techniques are also characteristic.

- 3) ●■ Higher ability to provide similar answer to lower-ability worksheet

Features of British cuisine include **traditional foods** such as lamb, cheeses and bread. Popular cooking methods. **Breakfast** is usually very **substantial**. Breakfast is often eaten as a **brunch**. **Afternoon tea** is a meal specific to the country. **Pies and pudding** are traditional.

Or any other relevant answer.

- 4) ●■ Higher ability to provide similar answer to lower-ability worksheet

- Wales: bara brith, cawl, rarebit, Glamorgan sausage
 - England: Cumberland sausage, Cornish pasty, clotted cream
 - N. Ireland: boxty, Ulster fry, champ, soda bread
 - Scotland: kippers, Dundee cake, Dundee cheese, oatcakes
- or any other relevant answer

Exam-style Question

- 1) ● Any one from: (1 mark for each correct, max. 2 marks)
- swap white bread for wholemeal bread (to increase the amount of dietary fibre)
 - use low-fat cheese (to limit the amount of saturated fats)
 - swap butter for vegetable fat spread in the cheese sauce (to limit the amount of saturated fats)
- Other suitable answers can be accepted.

- 2) ■
- a) Any one from: (1 mark for each correct, max. 1 mark)
- swap cheddar cheese for a vegan cheese, tofu, TVP or vegan (egg-free) cheese
 - use soy milk or creamy tofu to coat the sausages instead of the egg
 - swap butter for a vegetable fat spread
- b) Any one from: (1 mark for each correct max. 1 mark)
- choose low-fat cheese instead of the full-fat variety
 - use wholemeal breadcrumbs
 - lower the amount of butter used
 - bake the sausages rather than fry them
- Accept other suitable answers.

**COPYRIGHT
PROTECTED**



17. Food manufacturing: Primary and secondary processing of food

- 1) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Primary processing: sorting, trimming, washing, waxing, milling, skinning
 - Secondary processing: fermenting, adding colourants, freezing, smoking
- For higher ability, other relevant responses may be accepted.

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet

Homogenisation	Process in which fresh milk is forced through tiny holes to prevent it from separating
Pasteurisation	Process in which milk is heated to 72 °C for 15 seconds to kill pathogenic bacteria
Sterilisation	Heating the milk to over 110 °C for 30 minutes to kill all bacteria
Milk ultrafiltration	Pressing the milk through very fine membranes to remove water

- 3) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Sugar and acid are necessary in jam production. **Acid** helps to release **pectin** in the gelling process. **Sugar** acts as a **preservative** and protects the jam from bacteria.

- 4) ●■ Higher ability to provide similar answer to lower-ability worksheet

Sterilisation of milk	Denatures the proteins in milk, damages vitamins of the milk
Baking bread	Adding yeast increases the amount of B group vitamins; the amount decreases; the protein in flour creates gluten, making it springy and soft; the polysaccharides in flour develop flavour
Drying milk	During drying, little amounts of water-soluble vitamins are lost so their amount in the milk powder may be decreased
Turning milk into cheese	During fermentation, lactose is turned into lactic acid; lower pH leads to denaturation of proteins; cheese is not affected
Simmering jam	During simmering, high temperature is applied, which has a lower amount of vitamins than fresh fruit
Juicing	During juicing, the juice is separated from the pulp, so the amount of dietary fibre in the juice. Many juices cause a minor decrease in vitamin content (especially C).

For higher ability, other relevant answers may be accepted (e.g. curing of meat).

Exam-style Question

- Any two from: (1 mark for each correct, max. 2 marks)
 - taste – the meat becomes salty
 - colour – the colour stays bright red / pink (not grey)
 - the aroma of the meat changes (usually depending on the spices and herbs used)
 - the texture of meat may become affected, e.g. the meat becomes softer and easier to chew

Accept other suitable answers.

Do NOT accept answers referring to the nutritional value of meat.

**COPYRIGHT
PROTECTED**



Band	A01	
3		Award 5 marks The answer shows excellent knowledge and understanding of the function of flour in bread. The explanation of the changes to bread if different types of flour were used, including a reference to 3–4 points from the list.
2	Award 2 marks The answer shows very good knowledge and understanding of the function of flour in bread. Subject-specific vocabulary is used throughout.	Award 3–4 marks The answer shows good application of knowledge and understanding of the function of flour in bread. The answer explains the changes to bread if different types of flour were used, including a reference to 3–4 points from the list.
1	Award 1 mark The answer shows some knowledge and understanding of the function of flour in bread. The language used may be generic and simplistic.	Award 1–2 marks The answer shows limited application of knowledge and understanding of the function of flour in bread. The answer explains some of the changes to bread if different types of flour were used, including a reference to 1–2 points from the list.
0	Award 0 marks No answer given or answer incorrect.	Award 0 marks No answer given or answer incorrect.

Indicative content:**Function of flour in bread:**

- providing bulk, as flour is the main ingredient in bread
- providing nutritional value, as flour is a source of complex carbohydrates (starch), B vitamins (group B vitamins such as B1 (thiamine), B2 (riboflavin) and B9 (folic acid))
- source of proteins which, after mixing with water, form an elastic gluten network. Carbon dioxide produced by the yeast and provides the bread with its open, sponge-like texture.
- strong bread flour helps to obtain an elastic dough to produce a loaf which is not crumbly.

Changes to bread if different types of flour were used:

- strong wheat flour – is rich in protein and will produce a strong gluten network
- plain soft flour / cake flour – has less protein, so less gluten may be formed, producing a crumbly bread
- all-purpose flour – has less protein than strong flour, but more than plain soft flour, producing a loaf of medium quality (not as crumbly as the one made with plain soft flour, but also not as strong as the one made with strong flour)
- wholemeal flour – may contain pieces of unmilled bran or cereals, which may produce a less open loaf, possibly with uneven texture (some small and some large holes). The gluten network has been disturbed
- rye flour – as it is very nutrient-dense, it will produce a dark, heavy loaf (may be crumbly)
- corn flour – is gluten free, so will produce a very crumbly loaf with no volume, unless leavened (similar effects will be obtained with other gluten-free flours such as rice flour)

Other suitable answers may be accepted.

18. Food manufacturing: Technological developments that claim to support

- 1) ●■ Higher ability to also provide the substances which foods have been fortified with.
 - Wheat flour – iron, vitamin B1 (thiamine), vitamin B3 (niacin), calcium
 - Margarine – vitamin A and vitamin D
 - Skimmed and semi-skimmed milk – vitamin A
- 2) ●■ Higher ability to provide a similar answer to lower-ability worksheet.
 - The addition of plant sterols to margarine helps lower blood cholesterol.
 - The addition of iron to cereals helps prevent anaemia.
 - The addition of folic acid to bread prevents spina bifida in newborns.
 - Fortification with vitamin B1 helps prevent beriberi disease.
 - The addition of vitamin D helps prevent osteoporosis.
 - The addition of vitamin B12 to soy milk helps prevent anaemia in vegans.

Higher-ability students may provide other relevant examples.

**COPYRIGHT
PROTECTED**



3) Higher ability to provide similar answer to lower-ability worksheet

Group	Advantages	Disadvantages
Colourants	Enhance the colour Change the colour Make food more appealing Make food more appetising Improve appearance of food Some of them are natural	Can be used to hide poor quality ingredients Can increase consumption, leading to obesity Tartrazine is linked to lethal effects and other allergic reactions such as skin rashes, thyroid issues and ADHD Some of them are artificial
Emulsifiers, preservatives and thickeners	Prevent mixtures from separating Keep emulsions and other mixtures stable Prevent crystallisation of mixtures	Can be used to hide poor quality ingredients Can damage the lining of the stomach and cause bloating and flatulence Some emulsifiers are linked to leaky gut syndrome
Flavour enhancers and sweeteners	Substitute for sugar Have a lower calorific value than sugar Enhance the flavour Change the flavour Add new flavour to a food Make food more appealing and appetising	May increase consumption, leading to obesity MSG can cause allergic symptoms such as itching or sweating Aspartame is a source of phenylalanine, so can't be eaten by people suffering from phenylketonuria
Preservatives and antioxidants	Enhance shelf life Prevent bacterial growth Prevent growth of moulds and yeast Prevent food spoilage Lower food waste	Sulfites can cause allergic reactions including anaphylactic shock Nitrates used in cold cuts can cause stomach cancer Nitrites can cause asthma attacks and other allergic reactions Sorbates can cause dermatitis (inflammation)

or any other relevant answer.

4)

Step	Process	How CAM helps
Step 1	Milk is transported to the factory	Using CAM, the factory worker can monitor the acidity (pH), fat content and temperature of the milk. It can also be used to quickly identify any issues and note the time of delivery.
Step 2	Milk is pasteurised	CAM helps to control the temperature of the milk.
Step 3	Milk is cooled down	CAM helps to control the temperature of the milk to ensure microbiological safety.
Step 4	Starter cultures are added	CAM helps to control the amount of starter cultures that they are spread evenly.
Step 5	Milk is incubated at 32°C	CAM controls the temperature of the process, to that rennet can be added.
Step 6	Rennet is added	CAM controls the amount of rennet that is spread evenly throughout the milk.
Step 7	Curd is cut and heated to 38°C	CAM controls the temperature of the curd.
Step 8	Whey is drained off	CAM helps to control how much cheese curd is left.
Step 9	The cheese is aged (the curds are periodically flipped over)	CAM can help to control the temperature of the room; it also helps to monitor when the cheese is last flipped over.
Step 10	The cheese is immersed in brine	CAM helps to control the amount of brine concentration.
Step 11	The cheese is formed into blocks	CAM helps to ensure that each block is the same size.
Step 12	The cheese is stored and aged	CAM helps to control storage temperature.

or any other relevant answer.

COPYRIGHT
PROTECTED



4)

Step	Process	How CAM
1.	Raw ingredients (water and flour, and sometimes other ingredients, such as food colourants) are measured	CAM helps to measure the exact amount of ingredients. CAM can also help to measure and adjust the amount of water added.
2.	The ingredients are combined together and kneaded	CAM controls the speed and time.
3.	Dough is left to rest	CAM can be used to control the temperature.
4.	Dough is rolled out	CAM helps to control how thick the dough is rolled.
5.	Pasta is cut into shapes	CAM helps to control whether the pasta is cut into the right shape; it also identifies faulty pieces on the production line.
	Pasta is dried	CAM helps to control the moisture content so the pasta is safe to store in ambient conditions.
7.	Pasta is cooked	CAM helps to control the temperature of the water to ensure the pasta is cooked correctly.

Or any other relevant answer.

5)

- i) Any two from:
modified waxy corn starch, monoglycerides of fatty acids, diglycerides of fatty acids, potassium sorbate, citric acid, carotenes
Do NOT accept generic answers such as 'preservatives', 'flavours' or 'colourants'.
- ii) Any two from:
plant sterol esters, vitamin A, vitamin D

5)

- i) Buttermilk is used to:
improve the flavour of the product
increase attractiveness of the product to consumers
make the product more palatable
add flavour to butter
- ii) Since the product is made mainly of water and vegetable oils, emulsifiers help to keep the mixture stable and prevent the oil and water from separating.

Exam-style Question

- Any two from: (1 mark for each correct, max. 2 marks)
 - because during milling the bran is separated from flour, decreasing the fibre content
 - to help prevent conditions and diseases caused by deficiency of micronutrients such as calcium and iron
 - to ensure the correct intake of chosen micronutrients within the diet
 - to help prevent deficiencies in certain groups of people, e.g. those who do not eat a balanced diet
 - Accept other suitable answers.

INSPECTION COPY

COPYRIGHT
PROTECTED



1)

Band	A01	
3	Award 3 marks The answer shows excellent knowledge and understanding of the advantages and disadvantages of using food additives. Subject-specific vocabulary is used throughout.	Award 4 marks The answer shows excellent knowledge and ability to analyse, explain and evaluate the advantages and disadvantages of using food additives. It includes a reference to relevant scientific and/or indicative content, including advantages and disadvantages.
2	Award 2 marks The answer shows good knowledge and understanding of the advantages and disadvantages of using food additives. Subject-specific vocabulary is used throughout, with few mistakes.	Award 2–3 marks The answer shows good knowledge and ability to analyse, explain and evaluate the advantages and disadvantages of using food additives. It includes a reference to relevant scientific and/or indicative content, including a reference to advantages and disadvantages.
1	Award 1 mark The answer shows limited knowledge and understanding of the advantages and disadvantages of using food additives. The language used may be generic and simplistic.	Award 1 mark The answer shows limited knowledge and ability to analyse, explain and evaluate the advantages and disadvantages of using food additives. It includes a reference to relevant scientific and/or indicative content, including a reference to advantages and disadvantages.
0	Award 0 marks No answer given or answer incorrect.	Award 0 marks No answer given or answer incorrect.

Indicative content:

Advantages:

- Colourings are used to alter the colour of the food, either to enhance or to make it more appealing and appetising.
- Emulsifiers and stabilisers are used to obtain a desired texture and prevent separation.
- Flavourings – help to obtain or enhance the flavour and aroma of the food, making it more appetising.
- Preservatives – help to extend the shelf life of the product and prevent spoilage, thereby protecting customers.
- Sweeteners – help to obtain the desired level of sweetness, help lower calorie content, and are preferred by people on a low-calorie diet. May be used to help tackle the obesity problem. Currently (after introducing the sugar tax) beverages containing sweeteners are more appealing to the customer than those containing sugar, which may make them more appealing to the customer and encourage producers to use them.

Disadvantages:

- Colourings may be used to hide low quality of food, e.g. curcumin is used to give a yellow colour to hide the fact that it's mostly made of water, not vegetables.
- Emulsifiers may be used to hide low quality of food and lower the cost of production. e.g. xanthan is used to thicken a product instead of using proper amounts of more expensive ingredients.
- Flavourings may be used to hide low quality of ingredients used and low quality of food. e.g. artificial vanilla is used instead of real vanilla extract.
- Preservatives may cause allergic reactions, skin rashes or swelling, e.g. sulphites.
- Sweeteners may have a laxative effect, e.g. xylitol, maltitol, sorbitol, and partame.
- Some food additives, e.g. colourings, are known to cause hyperactivity in children.
- Some food additives may cause various adverse reactions, thereby limiting the use of the food product that uses them.

Other relevant answers may be accepted.

INSPECTION COPY

**COPYRIGHT
PROTECTED**



19. Factors affecting food choice: Sensory testing

- 1) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Touch, taste, hearing, smell, sight
 - Controlled conditions are necessary **to obtain reliable results**. For that all the food samples are the same size, and that the testers are not distracted or being influenced. Or any other relevant answer.
 - The taste panel has to be set in controlled conditions in order to obtain reliable results. The room should be isolated from other noise to avoid distraction, and all other smells should be removed. The lighting has to be adjusted, and the food sample carrier (e.g. spoon) has to be neutral in flavour. Water should be provided for the testers. Testers should receive sheets of paper on which they can write their answers. Or any other relevant answer.

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet
- honey – sweet
 - pretzels – salty
 - lemon – sour
 - coffee – bitter
 - parmesan cheese – umami (and salty)
- For higher-ability students other relevant responses may be accepted.

- 3) ●
- Some descriptive words could include:
- Aroma: floral, scented, pungent, rotten, acrid, bland, tart, rancid, citrus, spicy
 - Taste: sweet, bitter, savoury, salty, tangy, sour, rich, sharp, bland, tart, rancid
 - Appearance: stringy, heavy, flat, fizzy, wet, crystalline, firm, flaky, crisp, lustrous
 - Texture: bubbly, tacky, close, brittle, rubbery, soft, firm, flaky, crisp
- Other suitable answers may be accepted.

- 3) ■ (exemplary answers)
- glass of soda – bubbly, fizzy, cold, refreshing, aromatic, sweet, sour
 - potato chips – crunchy, hard, fresh, oily, salty, yellow, bland
 - ice cream – sweet, bitter, soft, melt in the mouth, aromatic, chocolatey, dairy
 - lemons – sweet, sour, juicy, soft, aromatic, zesty, citrus, tangy, fresh
- Other suitable answers can be accepted.

- 4) ●
- This is because the nose (olfactory system) and the mouth (taste buds) work together to detect the aromas (flavours) of foods. For this reason a person with a blocked nose is not able to taste food properly. Therefore, a person with a blocked nose is not able to taste food properly and therefore, would not provide valuable results in a taste panel.

- 4) ■
- The olfactory system is the sense of smell, which is localised in the nose. When food is heated, the molecules evaporate, they fill the air and are inhaled into the nose cavity. There they are detected by the olfactory system and send signals to the brain, which 'recognises' and 'names' the aroma for us.

Exam-style Question

-
- Any two from:
- rich, crumbly, buttery, short, tender, crisp, sandy, golden
- Other suitable answers may be accepted.
- Do NOT accept 'well risen' which is unusual for shortcrust, e.g. well risen (typical for scones).

**COPYRIGHT
PROTECTED**



■

- a) Preference test (1 mark)
- b) Any three from: (1 mark for each correct, max. 3 marks)
 - the samples must be served hot
 - the samples should be served in small cups or bowls
 - the lightening should be adjusted so that the colour of the soup does not look too dark
 - the temperature of the room should be comfortable (not too cold or too hot)
 - each tester should perform the test individually (either in turns or in pairs)
 - the testers can be both trained and untrained
 - the samples must be numbered with random numbers or letters
 - the samples must be similar in size and shape
 - each tester should taste all three samples
 - a clean glass of water should be provided to each tester
 - clear instructions must be given to each tester
 - a suitable answer may be accepted.



20. Factors affecting food choices: The range of factors that influence food choices

- 1) ● Time available for cooking or eating (clock), lifestyle and healthy eating (up), health conditions (doctor measuring blood pressure), celebrations/ activity level (PAL)(man jumping), money – income (purse), money – price (trolley), season (time of the year)(snowman)
- 1) ■ **Money – a family's budget, income** and the **price** of food determines whether an individual or not, and how much a person can buy
Time – depending on the **time of the day**, people will tend to choose different food and a sandwich for lunch; if the **time for cooking** is limited, a person will choose something easy to cook, or a fast food rather than cooking something more complicated. It will be faster than making a stew
Season – some people may choose to eat only seasonal foods; also, the season affects what is available in the shops
Occasion – on big celebrations such as birthdays and anniversaries, people often eat more which results in them eating more sugars and fats than usual
PAL – physical activity level is important for judging how much food a person needs. It helps a person to maintain a healthy weight, while eating too much can lead to being overweight, and eating too little may lead to losing weight and associated health problems.
 Correct answers are possible.



- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet

i)

Product	Price per pack
Olive oil	£6.50 / 1 litre
Salmon, fresh fillet	£15.00 / 1 kg
Arborio rice	£4.50 / 1 kg
White wine	£15.00 / 1 litre
Fresh thyme	£1.25 / 70 g
Pink Himalayan salt	£35.00 / 1 kg
Manuka honey	£50.00 / 1 kg

ii)

- Olive oil can be exchanged for rapeseed oil or sunflower oil
 - Salmon can be exchanged for a cheaper fish, like cod or trout
 - Arborio rice can be exchanged for long-grain rice
 - White wine can be exchanged for cheaper wine or white wine vinegar
 - Fresh thyme can be exchanged for dried thyme
 - Pink Himalayan salt can be exchanged for kitchen salt
 - Manuka honey can be exchanged for mixed honey or even artificial honey
- Or any other relevant answer.



- ii) ■ Students to indicate that the meal would be too costly for the family to eat, and suggest a cheaper meal, along with possible substitutes (as in point ii) ●)

COPYRIGHT
PROTECTED



- 3) ●■ Higher ability to provide similar answer to lower-ability worksheet
- Nut allergy
 - Wheat allergy
 - Milk allergy
 - Egg allergy
 - Fish and shellfish allergy

Higher-ability students can also provide other answers from: cereals contain soya, tree nuts, peanuts, molluscs, crustaceans, sulphur dioxide, celery,

- 4) ●■ Higher ability to also provide definition or description

- i) ● **animal welfare** – a view in which animal rearing is conducted in a way that ensures the **well-being**, including **proper treatment** and **living conditions**
- **fair trade** – an ethically positive way of trading in which **fair prices** are paid to **workers**, especially in the **third world** and **developing** countries
- **local produce** – products which are produced by the nearby farmer or grower. This helps **decrease carbon footprint**, lower prices and better quality for the consumer
- **organic** – a way of growing or rearing foods where **no chemicals**, herbicides or **GM** components are used, either in the form of fertiliser, or in the food itself
- Or any other relevant answer.

ii)

Advantages	
More food can be produced	Unknown long-term effects
The use of pesticides or herbicides is lower	May be responsible for obesity , overweight and obesity
Nutritional value of foods can be increased	May cause other diseases
High-yield crops and industrial farming are possible, because immunity of plants and animals is increased	No long-term studies on the outcomes of eating

Or any other relevant answer.

Exam-style Question

- 1) ●
- Any two from: (1 mark each correct, max. 2 marks)
- All people are biologically programmed to prefer a sweet taste as this is a natural preference for more savoury foods, e.g. salty, sour or spicy (**genetic reasons**)
 - The way the taste is perceived by a person will determine what kind of food they like. People with low threshold for salt will not like very salty foods (**perception**)
 - It is important to eat a varied diet from early childhood as that's when taste buds develop. People end up liking more foods (rather than just a few) (**exposition**)
 - The more new tastes/foods a person tries, the more possible that he or she will like them in the future (**novelty**)
 - People will more often choose foods which they like or which make them happy. They associate with childhood or enjoyment (**safety**)
 - It is important not to treat sweets or snacks as a prize as it may create a habit. People may choose these foods more often than healthier options (**psychological factors**)
 - Living in a partnership or family may lead to choosing foods preferred by others. People may choose the healthiest option (**external influences**)
 - Food preferences may also be affected by expectations – if something looks good, people may try it, even if the taste is good (**expectations**)

Accept other suitable answers.

**COPYRIGHT
PROTECTED**



- 2) ● Any two from: (1 mark for each correct, max. 2 marks)
- ability to produce food (e.g. method of farming, quality of soil, weather conditions)
 - ability to use GM seeds and feed (as they have the potential to produce high yields)
 - availability of transport modes (either to import food from other countries or to get to the shopping home)
 - prices of food and income (if prices are too high, the food becomes unaffordable)
 - ability to cook (if someone doesn't know how to cook they won't be able to prepare a sufficient amount to themselves or their family)
 - availability of fuel (e.g. petrol) as high prices of scarce resources may limit availability
 - availability of water and other resources (as lack of water will decrease the ability to grow animals)
 - climate change (as higher temperatures will affect the ability of plants to grow)

Accept other suitable answers.

1)

Band	A02
3	Award 5 marks The answer shows excellent knowledge and understanding of the factors affecting food choices. The answer explains in detail how at least three different factors affect food choices. Subject-specific vocabulary is used throughout.
2	Award 3–4 marks The answer shows good knowledge and understanding of the factors affecting food choices. The answer explains how at least two different lifestyle factors affect food choices. Specific vocabulary is used throughout, with few mistakes.
1	Award 1–2 marks The answer shows limited knowledge and understanding of the factors affecting food choices. The answer includes a reference to at least one of the factors affecting food choices. The language used is generic and simplified.
0	Award 0 marks No answer given or answer is incorrect.

Indicative content

- **short working hours** – will limit the time available to cook, which means that people may prefer to eat out;
- **working long hours** – will limit the time available for shopping, which may mean that people have to eat out more often; people may be poor;
- **shift working** will affect the ability to cook and eat at home, or to eat with family, so people may prefer to eat out or buy ready-to-eat foods;
- **high levels of physical activity** will require larger amounts of energy and therefore more food to be consumed; some people may also choose to buy specific foods to boost their energy, such as protein, foods low in fats, energy drinks, etc.
- **working long hours** may cause people to buy more takeaway food, or to eat out more often, as they have no time for cooking;
- some people may choose to lead a **vegan lifestyle**, so their food choices may be limited to plant-based foods only (e.g. food outlets);
- people may choose to **eat out more often** either with family or friends, or to eat out more often as they will be influenced by the group and limited by the menu on offer in a given food outlet;
- **business meetings and brunches** will cause people to eat out more often, as they have no time to cook; people may be dependent on what's on offer in a given food outlet.

Accept other suitable answers.

**COPYRIGHT
PROTECTED**



21. Factors affecting food choice: Food labelling and marketing

- 1) ● i) 1. Name of the product
2. Volume / net weight
3. Date marks (use by or best before date)
4. Nutritional value per portion
- ii) Any four from:
- quantity/amount
 - list of ingredients
 - allergens
 - name and contact details of the manufacturer/importer
 - lot number
 - storage conditions
 - cooking instructions
 - country of origin (where required)
 - warnings (e.g. that a food has been made with the use of GM crops or packaged in a protective atmosphere)

- 1) ■ Students should draw/write information on the food box and then indicate which given is important.

Information	Why it is important
Date marks	To check freshness of the product and avoid food poisoning
List of ingredients	To check what it is made from and avoid foods that are not suitable for people with allergies
List of allergens	To warn that the product is not suitable for people with allergies
Name of the product	To indicate what the given product is and avoid confusion. For example, to avoid buying margarine that is not at least 80% of milk fat, and spreads that contain less than 10% of butter
Nutritional information	To indicate the product's impact on the daily diet
Country of origin	To indicate where the food comes from, and make sure it is safe to eat
Address of the producer	In case of food poisoning or a physical/chemical hazard, it is easier to trace the whole series by contacting the producer and identify the batch
Quantity of product	To be able to compare the prices of various products
Lot number	To be able to identify products coming from the same batch, e.g. finding pieces of glass in a jar of pickles
Storage conditions	To help maintain the quality of the food and prevent food poisoning
Cooking instructions	To help people use the product in the way it should be used, getting the best quality and nutritional value of the product
Warnings	To help people make choices about food

Or any other relevant answer.

- 2) ● i) **Milk** from butter, **wheat** from flour, **egg** whole and dried, **soya** lecithin
- ii) **Yes**, the cakes are suitable for vegetarians because they contain no meat. Ingredients include butter and eggs, eaten by most vegetarians.
- iii) The cakes are **not** suitable for children due to the high sugar content of sugars in these cakes. One cake provides 10g of sugars, which is 20% of the World Health Organization's recommendation. High consumption of sugar may cause tooth decay.
- 2) ■ i) The allergens in the list include milk, wheat, egg and soy. The cakes are not suitable for people with a milk intolerance and wheat allergy, people with lactose intolerance and people with egg or soy allergies.
- ii) The product is **not** suitable for vegans because it contains milk and eggs, both of animal origin.
- iii) The ingredients on the list are in **descending order**, from those used in the largest amounts to those used in the smallest amounts only.

INSPECTION COPY

COPYRIGHT
PROTECTED



- 3) ● i) Buy one, get one free (BOGOF); meal deals; special offers; point of sale displays
- ii) Pester power is the ability of children to pressurise parents into buying products
- 3) ■ i) Pester power is the ability of children to pressurise parents into buying products
- ii) Students to indicate **three** from: buy one, get one free, meal deals; special offers; advertisements; tastings; media influence; product placement; or any other marketing technique

Exam-style Question

●

Any three from:

- cereals containing gluten (to include wheat, barley, rye and oats)
- crustaceans (e.g. prawns, crab, lobster)
- molluscs (e.g. squid, mussels, cockles, snails)
- fish
- milk
- eggs
- celery
- lupin
- mustard
- tree nuts (e.g. almonds, hazelnuts, walnuts, Brazil nuts, cashew nuts, pistachio nuts)
- peanuts
- sesame
- soya
- sulfur dioxide / sulfites

■

Any three from: (1 mark for each marketing technique and 1 mark for a relevant evaluation)

- buy one, get one free – prompts people to buy more products than they need; (if people end up eating all the extra food) can lead to food waste (if they don't manage to eat it)
- special offers – may prompt people to buy foods which they normally wouldn't buy, leading to less healthy choices
- free gifts – encourage people to buy products which they normally wouldn't buy, leading to less healthy choices
- meal deals – may prompt people to eat more balanced meals as they usually include a variety of food groups, but may lead to less healthy choices as foods included in meal deals are often high in fat, sugar and salt
- product placement / celebrity endorsement – makes food more desirable/encourages people to buy promoted foods (of certain brands) or new foods
- points of sale – encourage impulse buying; these are usually placed next to the tills, so people may end up buying (and eating) more sugar than they have planned to
- billboards, leaflets, brochures – may encourage people to try new things if the foods (if these are on offer) leading to less-balanced food choices (e.g. people may buy more of the cheaper and less of the other, even if they didn't plan to initially)
- mailing, newsletters – may introduce new foods to people and encourage them to try them
- packaging design – draws attention to certain food products, e.g. those high in sugar, leading to more purchases; often aimed at children, who may be influenced by these products, ending up eating more sweets and consuming more energy than they need, leading to obesity, tooth decay
- vouchers – may prompt people to try new foods (e.g. advertising new products) by offering a discount for it
- marketing terms (e.g. pure, natural, fresh) – may prompt people to buy foods which are less processed, leading to more balanced diets

Accept other marketing techniques.

**COPYRIGHT
PROTECTED**

