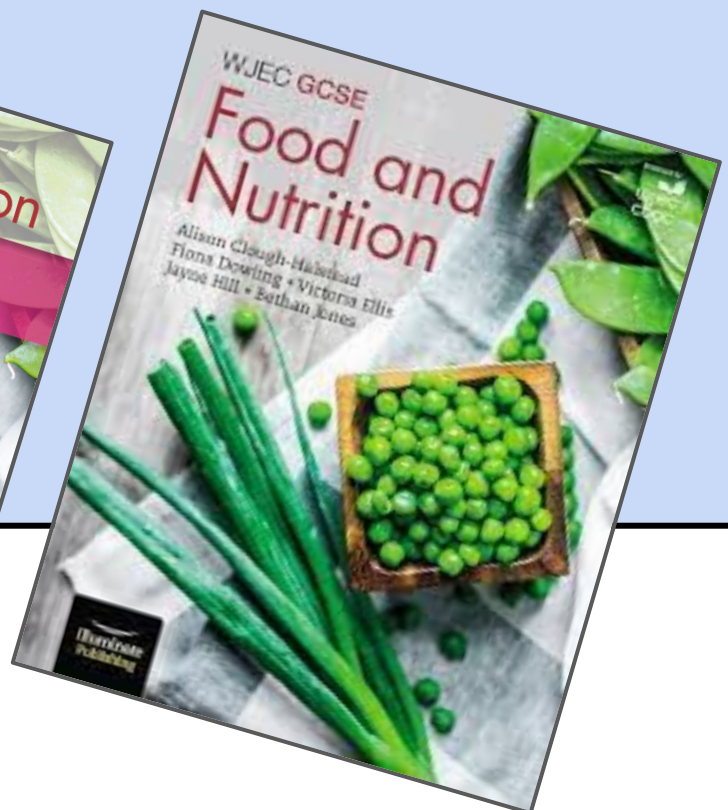
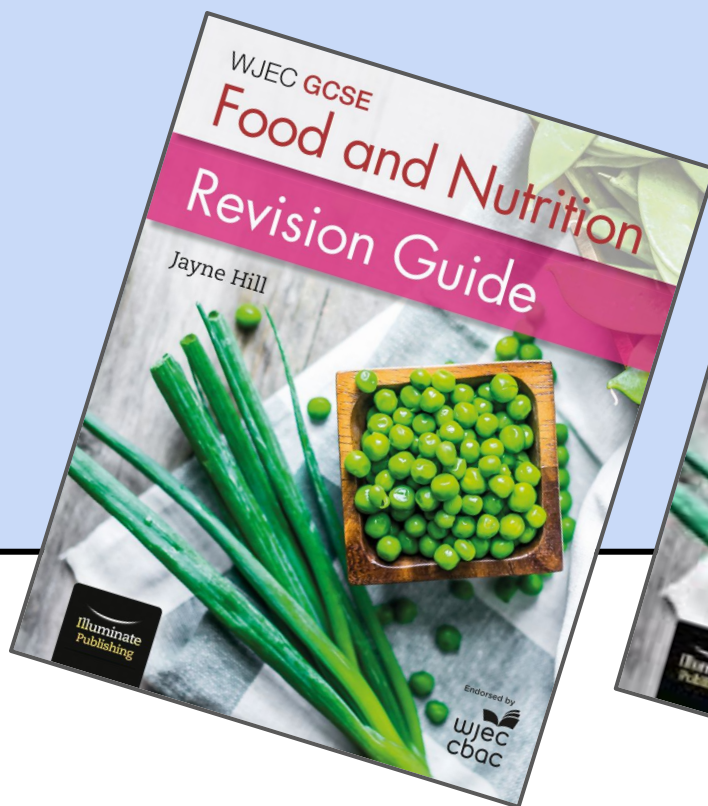


# Food and Nutrition WJEC Revision Booklet

Contents:

1. Principles of nutrition
2. Diet and good health
3. The science of cooking food
4. Food spoilage
5. Food Packaging & labelling
6. Food provenance and food waste
7. Cultures and cuisines
8. Technological developments
9. Factors affecting food choice

**Textbooks to support your learning and revision:**



<https://www.wjec.co.uk/qualifications/food-and-nutrition-gcse/>

**Name:** \_\_\_\_\_ **Target:** \_\_\_\_\_

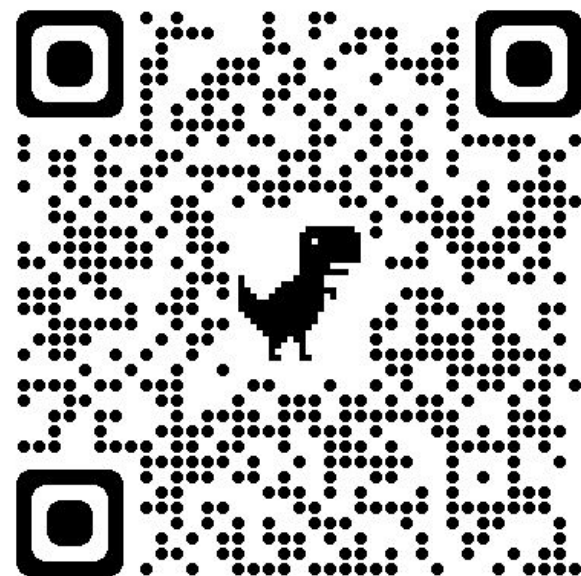
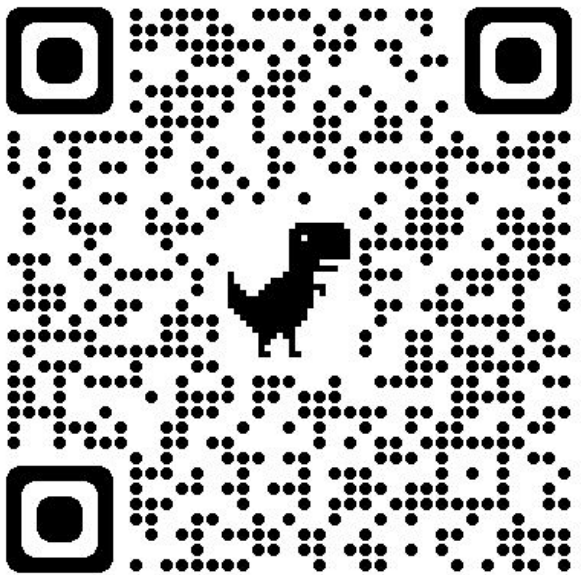
# What are Revision Techniques?

@<https://www.bbc.co.uk/bitesize/articles/zgc3w6f>

Revision techniques sound complicated but they are just ideas, tips and strategies that help you revise.

There is no such thing as the 'right technique' or even the 'best technique'. What works brilliantly for your friend might not suit you. It's a case of **trying a few out** and seeing which ones work best for you.

Watch the QR codes for useful videos about strategies and top tips about getting started.:



Mindmapping:

<https://www.mindtools.com/ahlezc4/mind-maps>

## Revision Top Tips

- Start Early
- Make a Timetable for your exams
- Make a realistic revision timetable - schedule in study sessions of no longer than 45 minutes at a time and put in breaks.
- Make sure you have someone to test you back on what you are revising.
- What revision strategy works best for you? You need to work this out or you could be spending a lot of time on something that doesn't work. Starting to find out during the beginning of year 10 is the best way to find out.
- Get 8 hours of sleep every night and eat a proper diet with your fruit and vegetables. You need to take care of your body and manage the stress. Take regular exercise and listen to music. Walking is a great way to reduce stress and allow your brain to relax after all the revising.
- Reward yourself... if you have been revising a lot you need to plan in reward time. Go bowling, or the cinema? Watch your favourite film. You need to have balance and maintain a healthy relationship with your revision.

# Food & Nutrition - Revision videos

\*Videos\*

\*Videos\*

Title	Video
The Eatwell guide	<a href="https://www.youtube.com/watch?v=m4f7mZug_s4">https://www.youtube.com/watch?v=m4f7mZug_s4</a>
Macronutrients	<a href="https://www.youtube.com/watch?v=724AXGqQj6k">https://www.youtube.com/watch?v=724AXGqQj6k</a>
Micronutrients	<a href="https://www.youtube.com/watch?v=-3rD7BvmZzU">https://www.youtube.com/watch?v=-3rD7BvmZzU</a>
Emulsification	<a href="https://www.youtube.com/watch?v=v28rxrAhP0k">https://www.youtube.com/watch?v=v28rxrAhP0k</a>
Coagulation	<a href="https://www.youtube.com/watch?v=bJ7uXScRTWw">https://www.youtube.com/watch?v=bJ7uXScRTWw</a>
Heat transfer	<a href="https://www.youtube.com/watch?v=e9H2DDKqnr4">https://www.youtube.com/watch?v=e9H2DDKqnr4</a>
Heat transfer - Conduction	<a href="https://www.youtube.com/watch?v=vq5k6t6uZwE">https://www.youtube.com/watch?v=vq5k6t6uZwE</a>
Heat transfer and sauce making methods	<a href="https://www.youtube.com/watch?v=zjyhMzjDaVl">https://www.youtube.com/watch?v=zjyhMzjDaVl</a>
Caramelisation	<a href="https://www.youtube.com/watch?v=8OonKbQo3Z4">https://www.youtube.com/watch?v=8OonKbQo3Z4</a>
Plasticity	<a href="https://www.youtube.com/watch?v=7Dh34r3fPJ8">https://www.youtube.com/watch?v=7Dh34r3fPJ8</a>
How raising agents work & examples	<a href="https://www.youtube.com/watch?v=0USi4DbRVVQ&amp;t=33s">https://www.youtube.com/watch?v=0USi4DbRVVQ&amp;t=33s</a> <a href="http://www.youtube.com/watch?v=apnA9cM5iOw&amp;feature=related">http://www.youtube.com/watch?v=apnA9cM5iOw&amp;feature=related</a> <a href="http://www.youtube.com/watch?v=i2CuYNE1Hp8&amp;feature=related">http://www.youtube.com/watch?v=i2CuYNE1Hp8&amp;feature=related</a> <a href="http://www.youtube.com/watch?v=sXXHPcCz0ds&amp;feature=related">http://www.youtube.com/watch?v=sXXHPcCz0ds&amp;feature=related</a> <a href="http://www.youtube.com/watch?v=cjuJfkxoATA&amp;feature=related">http://www.youtube.com/watch?v=cjuJfkxoATA&amp;feature=related</a>
Food packaging	<a href="https://www.youtube.com/watch?v=8i02ODoM71l&amp;t=3s">https://www.youtube.com/watch?v=8i02ODoM71l&amp;t=3s</a>
Food labelling	<a href="https://www.youtube.com/watch?v=OZOIEYQ0axo">https://www.youtube.com/watch?v=OZOIEYQ0axo</a>
Food Safety	<a href="https://www.youtube.com/watch?v=flxmB8NKMzE&amp;t=27s">https://www.youtube.com/watch?v=flxmB8NKMzE&amp;t=27s</a>

\*Videos\*

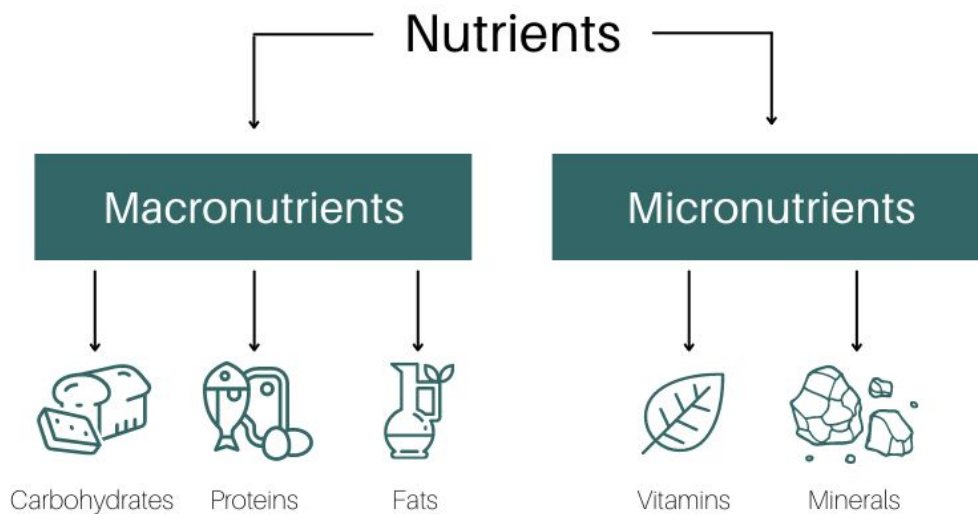
The "Video" labels are identified in your learning, where some of these video clips might help with your revision.

★ Principles of nutrition

\*Videos\*

Nutrition is the study of \_\_\_\_\_, which are \_\_\_\_\_ found in foods vital for correct bodily functioning. A lack of nutrients causes \_\_\_\_\_ and malnourishment in people, resulting in \_\_\_\_\_ problems. Nutrients are grouped into Macronutrients and \_\_\_\_\_.

Nutrients    health    micronutrients    chemicals    deficiencies



	Overview & Summary
Macronutrients (g)	
Micronutrients (ug)	

★ Principles of nutrition - Macronutrients

\*Videos\*

Nutrient	Function in the body	Food Sources
Protein		HBV  LBV
Carbohydrate		
Fat		

**Complementary proteins:** LBV + LBV = HBV

Explain:

Protein deficiency: very rare in the developed world and is more likely to be seen in famine or starvation such as the developing world and children in starvation. Children will develop Kwashiokor.

Kwashiokor - failure to grow, brittle hair and pot bellies due to oedema.

Protein reference nutrient intake (RNI):

Adults:

Children:



★ Principles of nutrition - Macronutrients

\*Videos\*

**Carbohydrates** - The main source of \_\_\_\_\_. During \_\_\_\_\_ they are broken down into glucose which is then absorbed into the \_\_\_\_\_. The \_\_\_\_\_ produces insulin, allowing glucose to enter the body cells and \_\_\_\_\_ energy. Some carbohydrates help the body to get rid of \_\_\_\_\_ materials (poo!)

Produce    digestion    waste    energy    pancreas    blood

Types of Carbohydrate	How is energy released?	Food sources?
Starch - polysaccharides		
Sugar Monosaccharides  Disaccharides		
Dietary Fibre - Insoluble fibre		
Dietary Fibre - Soluble fibre		

Carbohydrate reference nutrient intake (RNI):

Adults:

Children:

**Fat is needed for....**

- Insulation and body warmth
- Protecting vital organs
- Acting as a carrier for fat soluble vitamins (A,D,E,K)
- Hormone production
- Supplying essential fatty acids, which the body is unable to make for itself.

Types of Fat	Summary	Food sources?
Saturated		
Monounsaturated		
Polyunsaturated		

Fat reference nutrient intake (RNI):

Adults:

Children:

Cholesterol is a \_\_\_\_\_ substance that is \_\_\_\_\_ occurring in the blood. It is made in the body and \_\_\_\_\_ from fatty foods. Raised cholesterol levels in the bloodstream can cause arteries to \_\_\_\_\_.

LDL cholesterol is \_\_\_\_\_ and the intake of it should be reduced. HDL cholesterol is a healthier type of fat that helps to \_\_\_\_\_ the risk of heart attacks and \_\_\_\_\_.

fatty    obtained    unhealthy    block    naturally    reduce    strokes

Visible fat	Invisible fat

**Mindmap: Health problems linked to too much Fat**

## ★ Principles of nutrition - Micronutrients

\*Videos\*

Micronutrients are needed in very \_\_\_\_\_ quantities. They are \_\_\_\_\_ in milligrams (mg) or even smaller micrograms (ug). The body needs a \_\_\_\_\_ range of vitamins to \_\_\_\_\_ properly and for good health. Each vitamin has \_\_\_\_\_ jobs but in general they help the \_\_\_\_\_ to:

- Release energy
- Prevent some diseases
- Assist in cell function and repair

small specific function body wide measured

Fat Soluble vitamins	Water soluble vitamins

### Nutrients that work together - Complementary Nutrients

Some nutrients work together or rely on each other to improve absorption.

Vitamin C + Iron

Example:

Vitamin D + Calcium

Example:

★ Principles of nutrition - Micronutrients - **Fat soluble vitamins**

\*Videos\*

	Why is it needed?	Where is it found?	Not enough can cause?	Too much can cause?
Vitamin A			Night Blindness -	
Vitamin D (connected to calcium absorption)			Rickets -  Osteomalacia-  Osteoporosis -  Heart failure	
Vitamin E			Unlikely - why is this?	
Vitamin K			Unlikely - why is this?	

★ Principles of nutrition - Micronutrients - **Water soluble vitamins**

\*Videos\*

	Why is it needed?	Where is it found?	Not enough can cause?	Too much can cause?
Group B vitamins			Anaemias	
Vitamin C Ascorbic Acid (connected to iron absorption)	Collagen formation		Scurvy  Anaemia	

Key points about water soluble vitamins: **Can it build up?**

★ Principles of nutrition - Micronutrients - **Minerals**

\*Videos\*

	Why is it needed?	Where is it found?	Not enough can cause?	Too much can cause?
Calcium			<p><b>Rickets -</b></p> <p><b>Osteomalacia-</b></p> <p><b>Osteoporosis -</b></p>	
Iron			<p><b>Anaemia -</b></p>	
Sodium				

Minerals are micronutrients essential to the body in very small quantities and are measured in units of milligrams and micrograms. They are found in most foods. The three which you need to understand are: Calcium, iron, sodium.

The RNI for each mineral depends on a persons age, gender and general health. A deficiency can cause serious health problems. Excessive amounts of Sodium (salt) can cause major health issues and is linked to increased blood pressure because people are eating above the recommended 6g per day. High blood pressure can lead to stroke, angina and a weakened heart.

Other minerals:

Potassium - needed for blood pressure and to help balance body fluids and prevent cramps. Found in fruit, vegetables, beans, nuts and seeds.

Phosphorus - works with calcium to form strong bones and teeth. Found in red meat, dairy and bread.

Magnesium - helps with health bone development and the nervous system. Found in meat, fish and dairy foods.

# ★ Diet and good health - Eatwell guide & Healthy eating guidelines

**Analyse** the Eatwell guide and create a mindmap - What does it show us? How does it help people? Who produced it? Who can use it? What % of each food group?



You need a balance of nutrients and it is important to eat a variety of different food. Eating the rainbow is encouraged. There are 8 top tips for healthy eating, the most important healthy eating messages include:

- ★ Eat at least 5 fruit and vegetables every day
- ★ Increase our fibre/NSP foods, vegetables
- ★ Have oily fish once a week
- ★ Reduce intake of fat, sugar and salt



★ Diet and good health - Special Dietary needs

Special Dietary needs	Description	Food to include or avoid
<b>Coeliac disease</b>		
<b>Anaemia</b>		
<b>Cardiovascular disease</b>		
<b>Obesity</b>		
<b>Bone &amp; Dental Health</b>		
<b>Type 2 diabetes</b>		
<b>Food Allergies and Intolerances</b>	<p><b>Food allergy -</b></p> <p><b>Food intolerance</b></p> <p><b>Lactose</b></p> <p><b>Gluten - discussed above in coeliac disease</b></p>	

Our individual dietary needs change according to our:  
**Age, gender, activity levels and overall health.**

Example - An office worker who sits down all day and does no exercise will have different requirements to a hard working food and nutrition teacher who doesn't sit down and frequently takes part in exercise classes!

## ★ Diet and good health - Vegetarianism & Religious beliefs

**Lacto-ovo vegetarians**

**Lacto vegetarians**

**Vegans**

**Reasons for being vegetarian / vegan:**

**Potential nutritional risks for vegans?**

Hint: (low iron, B12, high fat - imbalance. Essential amino acids must be obtained through a variety of LBV+LBV=HBV)

	Beef	Pork	Poultry & Goat	Fish / Shelfish	Eggs	Milk	Alcohol
<b>Buddhism</b>	X	X	X	Some	Yes	Yes	
<b>Hinduism</b>	X	X	Restricted / avoided		X		X
<b>Judaism</b>	Kosher	X	Kosher	X	Kosher	Not with Meat	
<b>Islam</b>	Halal	X	Halal	X			X
<b>Rastafarianism</b>	X	X	X	No fish over 3cm			X
<b>Seventh day adventist</b>	X	X	X	X	Yes		X
<b>Sikh</b>	In some sects Halal or Kosher						X

Halal - Animals killed according to Muslim Law.

Kosher - meat from animals with a split hoof and chew the cud and slaughtered according to strict laws.

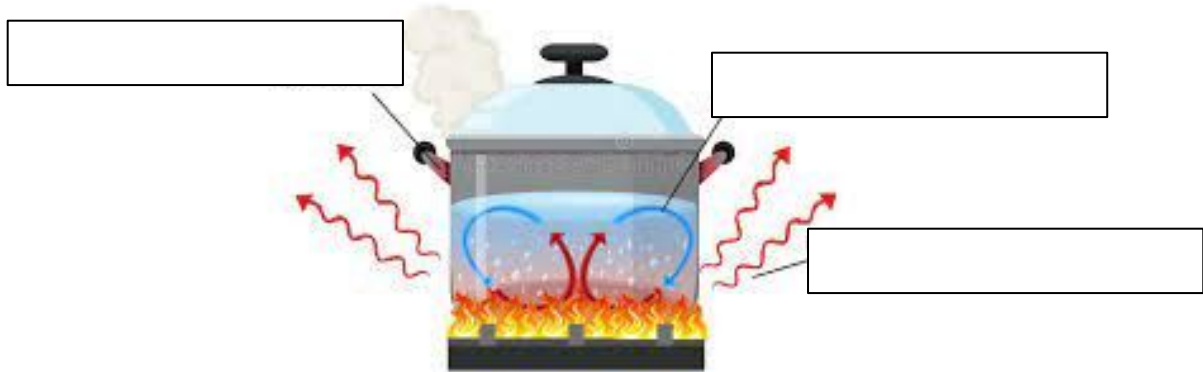
# ★ The science of cooking food - Heat transfer & Protein



The 4 reasons we cook food?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

## HEAT TRANSFER METHODS

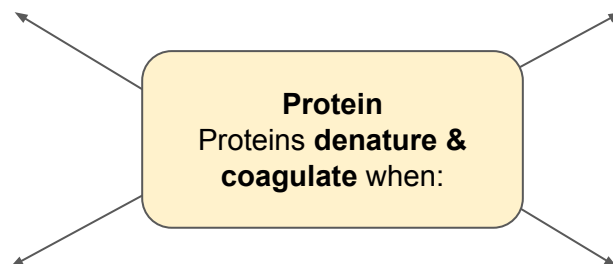


Food is \_\_\_\_\_ using heat, which is \_\_\_\_\_ using conduction, convection and/or radiation (infrared or microwave) through dry heat, \_\_\_\_\_ heat, radiant heat or microwave \_\_\_\_\_. The types of foods cooked determines which \_\_\_\_\_ of heat transference is needed and whether the food should be cooked using a dry or moist method.

Transferred    method    energy    moist    cooked

## The Science behind prepared and cooked food.

The size/density and appearance of all protein fat and carbohydrate foods are affected when beaten, heated or the pH value is changed. **The changes are permanent and cannot be undone.**



# ★ The Science of cooking food - Fat

Maillard Reaction:



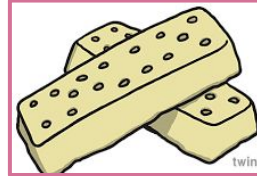
Add Flavour & Texture:



Shortertening:

Plasticity

Fat



\*Videos\*

\*Videos\*

## Emulsification

An emulsion is where oil and water join together in a \_\_\_\_\_ (so they don't separate out). To emulsify oil and water an \_\_\_\_\_ is needed such as adding an \_\_\_\_\_ to the mixture. Vegans can have \_\_\_\_\_ emulsifiers which do the same role but are not from an \_\_\_\_\_.

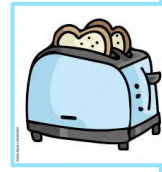
emulsifier    egg yolk    synthetic    egg    suspension



# ★ The Science of cooking food - Carbohydrate & Oxygen

## Caramelisation

## Dextrinisation



Carbohydrate (CHO)

\*Videos\*

## Gelatinisation

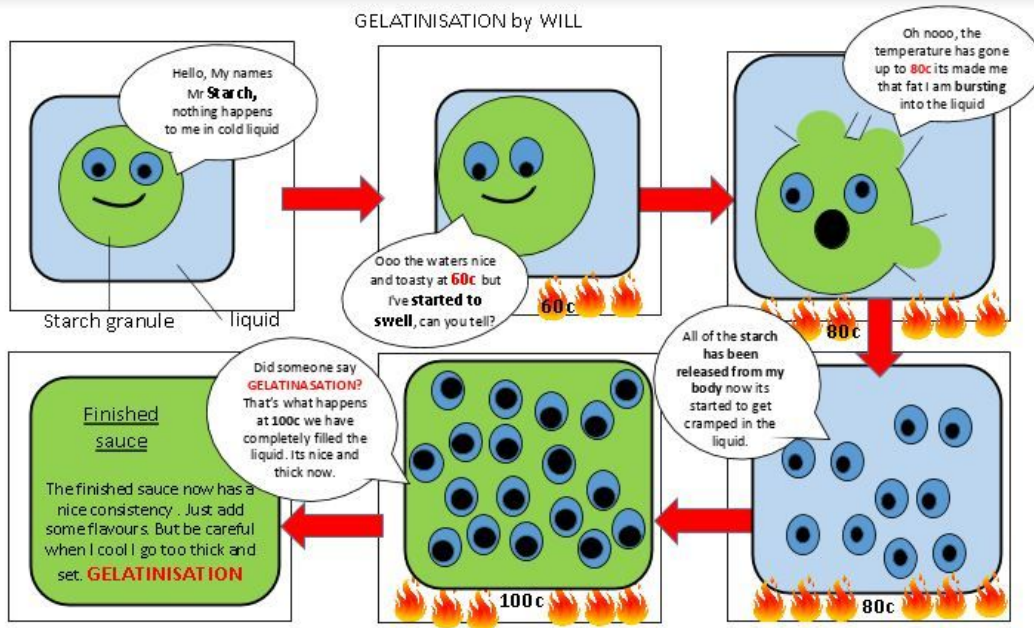
Starch granules do not dissolve in liquid. Instead they form a **suspension**

Suspension – a solid held in a liquid

When heated at **60°C**, the starch granules begin to absorb the liquid and swell.

At 80°C the particles will have absorbed about 5 times their volume of water until they burst open and release starch, thickening the liquid.

Gelatinisation is complete when the liquid reaches boiling point, **100°C**



Fruit & Veg (enzymic browning)

Fish (enzymes)

**Oxygen**  
O<sub>2</sub> can have a negative impact on many foods:

Meat (myoglobin)

Fats & oils (rancid)

# ★ The Science of cooking food - Raising Agents



## How do raising agents work? (fill in the blanks)

The action of moisture, heat or acidity or a combination of all three triggers a reaction with the raising agent to produce a ..... The gas then ..... when heated. The gas is ..... as it bubbles up through the mixture. The cake sets and the tiny bubbles of gas form a ....., this is why bread and cakes have a soft sponge-like texture.

**Air:** Air is a mixture of gases and is added into mixtures using mechanical methods such as ..... or whisking and beating, when making meringues or .....

**Steam:** Water turns to steam when it is heated to ..... Steam can expand 1600 times its volume. Steam only works in mixtures with have a high volume of ..... such as milk in a Yorkshire pudding. Steam can also be combined with other raising agents such as air and carbon dioxide.

**Carbon dioxide:** ..... is added into mixtures through two ways, chemical raising agents or biological raising agents.

· **Chemical raising agents** require liquid and heat to produce carbon dioxide gas. They must be ..... measured and are only required in ..... quantities as they have a strong ..... Examples include baking powder and bicarbonate of soda.

· **Biological raising agents** are living organisms such as ..... which require warmth, liquid, food and time to release carbon dioxide. This process is called ..... and ..... dough during bread making.

**Accurately gas fermentation firm 100C expands CO2 sieving trapped liquid Swiss-roll small aerates structure flavour yeast**

Mechanical	Manually _____ air into food products using _____.	The processes of sieving, whisking, folding, rolling, creaming all mechanically add in air during food production
Chemical	Adding a chemical which causes a chemical reaction producing _____ . In an oven the CO2 gas expands and _____ the mixture. Some of the gas escapes but some is _____ in the mixture as it cooks and sets	Examples in food production include: <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul> Bicarbonate of soda is used to make soda bread, the bread which does not use yeast as the raising agent.  Bicarbonate of soda + _____ = baking powder
Biological	A biological raising agent is added which produces CO2 gas.	The _____ is activated during bread production when yeast is combined with _____ in a warm moist condition. When the fermented yeast is added to the flour and warm liquid it increases in size during the " _____ " stage.  Example: Bread

# ★ Food Spoilage



Moving bacteria from one place to another is called... \_\_\_\_\_ and it makes food unsafe to eat.

Microorganisms

Insects & Rodents



Enzymes



Time

**Causes of Food Spoilage**



Chemical Reactions

Environmental Factors



\_\_\_\_\_ - responsible for monitoring all food businesses to check that food safety legislation is being adhered to. If poor practices are found then business can be given warning, fines or Jail with business being at risk of being closed completely depending on how serious the problem is.

## Pathogenic bacteria

Eating or drinking food contaminated with pathogenic bacteria can cause mild to severe illness and could result in death. Those most at risk - young (0-5), elderly, pregnant and reduced immunity.

Pathogenic bacteria	Where it is found	Typical symptoms	Average onset time
Campylobacter	Raw poultry, meat, milk, sewage	Abdominal pain, diarrhoea (bloody), nausea, fever	48-60 hours
Salmonella	Intestines of humans and animals, raw poultry and meat, eggs, milk	Abdominal pain, diarrhoea, nausea, vomiting	12-36 hours
Staphylococcus A	Humans - skins, hair, nose, mouth, throat, cuts, spots	Abdominal pain/cramps, vomiting, chills	1-6 hours
E.Coli 0157	Human and animal sewage, water, raw meat, muddy vegetables	Abdominal pain, fever, diarrhoea, vomiting, kidney damage/failure	12-24 hours

Food can be contaminated in 3 ways:

Physical - A foreign object is dropped into the food such as hair, jewellery, finger nails, plasters etc These could cause choking, broken teeth and internal cuts/bleeding.

Chemical - Cleaning products and pesticides which can cause liver damage, internal burns and nerve damage

Biological - bacteria, viruses, moulds, fungi which can cause food poisoning

# ★ Food Spoilage

Condition	How to control bacterial growth	Examples
Food	Bacteria will use the nutrients from the food on which it lives. _____ _____ food have high protein and high moisture.	Protein based foods
Moisture	_____ the food will remove water and moisture content	Milk, noodles, soup, gravy
Warmth	Food must be kept out of the _____ zone (8-63C) Store chilled foods at 8C and below and _____ food at -18C or colder Food heated to a _____ of 75C Reheated food to a core temperature of 75C for 2 minutes at its core. Foods that are hot held should not drop below _____.	All high risk and hot buffet and carvery foods
Time	If left in the danger zone bacteria will _____ every 10-20 mins At the end of cooking time, cooked foods must be cooled to 8C within 90 mins and stored in the _____	All prepared meals
Oxygen	Remove _____ air from food	Vacuum packing, MAP, canning
pH	_____ the acidity/alkalinity levels	Pickling, jam making, chutneys

High risk frozen surrounding drying core temperature  
alter 63C refrigerator reproduce danger

74C	
63C	
8-63C	
0-5C	
-18C	



Complete the Thermometer of temperatures and what is going on at each stage with bacteria. What methods of storage are used (if any)

# ★ Food Spoilage

Task: Create a list of requirements for how to prepare food safely to minimise the risk of cross contamination and keep everyone safe.

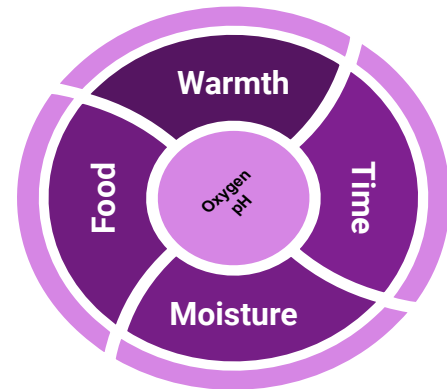
- 1.
- 2.
- 3.
- 4.
- 5.



Purple chopping boards are used for...

Given ideal conditions, Bacteria will reproduce through binary fission every 10-20 minutes. This will happen in warm foods and high risk foods left in warm areas. Some anaerobic bacteria are able to reproduce without the presence of oxygen.

If one or more of the conditions is removed, bacteria cannot grow. Once that condition is reintroduced the bacteria will be able to start reproducing again Eg: Dried foods have moisture removed and are ambient products that can be stored for up to a year, when liquid is added, they are then treated as fresh and must be quickly consumed. EG: Dried milk, SMASH mashed potato powder, pot noodles, custard powder



**Bacteria are just like us... to grow they need oxygen, moisture, warmth, food & time.**

High risk food are...

Food poisoning symptoms include..

The Food poisoning bacteria are..

# ★ Food Spoilage - Food Preservation Methods

Method	Description	Food examples
Heat		<p>Examples: All cooked foods, canned food and pasteurised milk.</p> 
Freezing	<p>Microorganisms inactive (dormant) when frozen.</p> 	
Drying		<p>Gravies, pot noodles, stock cubes, coffee, milk powder, soups, pulses</p> 
Removing Air	<p>Most microorganisms need oxygen to reproduce. Food items are sealed in cans, jars, MAP, Vacuum packaging.</p> 	
Chemicals - Salt, sugar, vinegar, smoke	<p>The pH levels needed for bacterial growth and enzymic action are changed.</p> 	
Irradiation	<p>Food is exposed to low levels of radiation which kills all microorganisms</p> 	

## ★ Food Spoilage - HACCP

This is a process that is designed to help look at how you handle food and to put procedures in place to ensure that the food you produce is safe to eat. Every business that produces, sells or serves food is required to have a HACCP plan in place with a written **food safety plan**. It is the responsibility of the owner of the business to develop an appropriate food safety management system based on HACCP. What is a hazard? In food products, a hazard is anything that can cause harm to a customer....

<p align="center"><b>Biological</b> Salmonella or campylobacter found in a chicken</p>	<p align="center"><b>Chemical</b> Cleaning products that have found their way into food products</p>	<p align="center"><b>Physical</b> Pieces of glass or a fingernail found in food</p>
--	--	---

**HACCP** systems should apply the following principles:

1. Create a flow chart or table showing each step in the \_\_\_\_\_, making, serving and \_\_\_\_\_ of each dish.
2. Each step should be analysed to identify the \_\_\_\_\_.
3. Identify what can be done to control (prevent) the hazard.
4. Set guidelines on how to ensure food is going to be safe to eat- these are known as \_\_\_\_\_ limits- and keep a record of this.
5. When new dishes are made, there needs to be a HACCP review to ensure that they are safe to eat.
6. All the documentation relating to the HACCP needs to be kept \_\_\_\_\_ (it can get checked at the EHO at any time!!)

\*\*Environmental health officer\*\*

Preparation hazards safe critical storing

Stage	Potential <u>Hazard</u>	<u>Control</u> to put in place
Accepting Delivery of fresh and frozen fish		
Storing the fresh and frozen fish		
Preparing the fish		
Cooking the fish		

# ★ Food Packaging

## Why do we package food?

### Protection

Packaging protects food cross contamination

- Physical - Hair, nails, plasters etc
- Chemical - Bleach, cleaning liquids etc
- Biological - pathogenic bacteria found in food such as salmonella or E.Coli Etc

Tamper proof packaging stops anyone from tampering or harming the food before we get to eat it. Examples of this include: Plastic seals on bottles, plastic seals on jars of food, clicker buttons on jars.



### Product Recognition

We often recognise a food product by the shape or colour of its packaging. It also contains important information for the consumer.



### Preservation

Some packaging can help to extend the shelf-life of products.

Example:

How long would a fresh mango usually last? A tinned mango's will last for 3 years!



### Portability

Packaging is made easier to transport and store when it is packaged carefully.

Apples packaged:



Eggs:



Food Packaging Materials	What are they used to package?	What are the positives and negatives of them?
Paper, paperboard, cardboard		
Plastic		
Cans and foil		
Glass		
Modified atmosphere packaging	Contains controlled amounts of O <sub>2</sub> , Co <sub>2</sub> and nitrogen to slow down food spoilage. It is used to package cooked and raw meats/fish and some fresh fruits.	



**Food Standards Agency (food.gov.uk): All prepacked food requires a food label that displays certain mandatory information. All food is subject to general food labelling requirements and any labelling provided must be accurate and not misleading**

Each serving (150g) contains

Energy 1046kJ 250kcal	Fat <b>3.0g</b> LOW	Saturates <b>1.3g</b> LOW	Sugars <b>34g</b> HIGH	Salt <b>0.9g</b> MED
13%	4%	7%	38%	15%

of an adult's reference intake  
Typical values (as sold) per 100g:697kJ/167kcal

**What should you see on your food label?**

**Exam Questions:**

Can you explain how modified atmosphere packaging(MAP) works?

What does binary fission mean?

State suitable packaging for the following food items, giving reasons for your answers:

Chicken kebab and rice -

Halloumi wrap -

# ★ Food Provenance and Food waste

**Food provenance** refers to where food comes from, where is it **grown, raised or reared: its point of origin**. Understanding the **origin** of products is important, especially when making choices about food. Whilst we buy most of our food from supermarkets, smaller food shops or markets, all of the food we eat must be **grown, reared or caught**. Some people also grow or rear food at home or on allotments.

Key word	Definition
Traceability	
Origin	
Carbon footprint	
Food miles	
Biodegradable packaging	

1.

4.

5.


6.

2.

7.

8.

3.



**8 ways to reduce Food miles**

## Food Waste

**Reduce:**

**Reuse:**

**Recycle:**

## ★ Cultures and cuisines

Factors influencing different cuisines include: climate, geography, migration, religion/faith/culture.

Climate	The climate or weather is a controlling factor for what farmers can grow. In the UK we have a seasonal calendar of fruit and vegetables that grow and are harvested at certain times of the year. Because of our colder climate we cannot grow exotic fruits and are limited by what we can grow.
Geography	The landscape of the region governs what is grown and where. Flat land is used for cereal production because the combine harvesters can only work on this area. Livestock live quite happily on hilly areas, hence why we have lots of sheep in Wales!
Religion / faith / culture	<p>People eat or avoid certain food according to their religious beliefs, culture and traditions. Please go back to the table in diet and good health to remind yourself.</p> <p>Examples: Christians eat Fish on Friday, especially on Good Friday. Most Hindus follow a vegetarian diet and the cow is a sacred animal. Buddhists are vegan/strict vegetarian with no alcohol.</p>
Migration	The movement of people from country to country around the world has meant that different recipes and styles of cooking have been continually shared through communities, the internet and new restaurants. We have a wide range of dishes available to use which have been influenced from all around the world.

Cuisine is...

Typical cuisine from this specific country:

Italy	
America	
France	
Greece	
Spain	
Japan	
Thailand	
Australia	
Germany	

## ★ Technological developments

There are 11 factors that push forward changes in food technology. Explain each in a couple of sentences.

1. Population

2. Transport

3. Preservation

4. TV, radio and social media

5. Apps & Barcodes



6. Environmental awareness



7. Science

8. Economics

9. Consumer Demands

10. Robots / automation

11. Work / leisure time



# ★ Technological developments - Food ingredient development

Food scientists can adapt the genetic composition of foods to:

- ★ Increase crop yields
- ★ Improve the nutrition of food
- ★ Increase the shelf life of fresh produce.



**Genetically modified or genetically engineered foods:**

**“New Foods”**



**Functional Foods**

**Fortified Foods**



## Exam Questions:

Why are convenience foods increasing in popularity?

What does the Change4life initiative teach us?

# ★ Factors affecting food choice

Availability & Seasonality

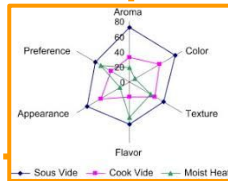


Marketing & advertising

Food Costs



Sensory analysis



Medical Conditions

Factors Affecting Food Choice

Ethical Choices



Genetically modified food (GMF)

Culture & religion



Labelling

GMO



NON-GMO



b

## ★ Exam question practice

1. Discuss how food businesses can act to reduce waste from food, non-food and packaging waste (6 marks)

2. Describe the process and what happens when making heating starch to make a white sauce (4 marks)

3. How can you ensure that a vegetarian diet is balanced? (6 marks)

4. Discuss how an adult could reduce their salt intake (3 marks)

5. What are "hidden fats" (2 marks)

★ Exam question practice

6. How should a person with type 2 diabetes adapt their diet? (4 marks)

7. Describe the different factors which affect a person's energy requirements (4 marks)

8. Describe how convection and conduction transfer heat when cooking food (6 marks)

9. What is the difference between an intolerance and an allergy? (4 marks)

10. What is food fortification? (4 marks)

## ★ Key Terms

Accompaniments	Colourful vegetables and sauces as an addition to a meal is an example
Additive	Substances added to food in small amounts to perform a function such as to preserve, colour, flavour or sweeten a product.
Aeration	Process of adding air to a mixture e.g. whisking egg whites.
Aesthetic	The appreciation of good taste or appearance. The product appeals to your senses.
Allergies	An immune system reaction that occurs soon after eating a certain food; it can cause severe symptoms.
Ambient temperature	Normal room temperature 20 - 25°C.
Anaemia	Diet related health condition caused by lack of iron in the body. The body lacks enough healthy red blood cells (haemoglobin).
Anaerobic	Not needing oxygen.
Antioxidant	A substance that stops fat in food going rancid.
Antibacterial	Working against or prohibiting the growth of bacteria.
Attributes	Particular characteristics of a food.
Bacteria	Small microscopic organisms found all about us. They multiply by splitting in two every 20 minutes. (Binary fission).
Bain-marie	A container of water to keep foods hot without fear of burning.
Balanced diet	A diet which provides satisfactory amounts of nutrients and energy.
Best before date	Date on food products after which a non-high-risk food will be safe to eat, but not be at its best.
Biodegradable	Broken down totally by bacteria.
Blanching	A method of cooking where food is cooked very quickly for a short time in boiling water. It stops enzyme actions which can cause loss of flavour, colour and texture.
Bland	Lack of flavour/taste.
Blast chilling	Quick freezing – small ice crystals form and there is less damage to the food than in slow freezing.
Calorie	A unit of energy which is used to give the energy yield of foods and the energy expenditure by the body.
Carbon footprint	Used to measure the amount of CO <sub>2</sub> and other greenhouse gases that are released throughout the whole process of producing and consuming food.
Catalyst	A substance that speeds up the rate of a chemical reaction.
Campylobacter	Found in dirty water, raw poultry and meat. Milk. Incubation 48–60 hours. Diarrhoea, abdominal pain, nausea, fever.
Caramelisation	Process of changing the colour of sugar from white to brown when heated.
Carbohydrate	The major source of energy for the body.
Cholesterol	This is carried in the blood attached to proteins called lipoproteins. There are two main forms: low density lipoprotein (LDL) and high density lipoprotein (HDL).
Clostridium	A form of bacterial food poisoning.
Coagulation	The change in the structure of protein brought about by heat, mechanical action or acids.
Coeliac disease	Caused by an intolerance of the protein gluten present in the cereals wheat, barley and rye.
Cook-Chill	A method of food preparation in which the food is cooked then rapidly chilled and stored below 5°C thus increasing the keeping quality of the product for a short time.
Colloid	Formed when one substance is dispersed through another.
Conduction	When heat travels through solid materials such as metals and food e.g. dry frying.
Convection	When heat travels through air or water e.g. baking, roasting.
Radiation	When heat rays travel directly heat and cook food e.g. infra-red, microwave.
Consistency	How thin or how thick.
Consistent	The same quality each time a product is made.
Consumer	A person who buys or uses products and service.
Contaminate	Making a food unsafe to eat by allowing it to come into contact with micro-organisms that will grow and multiply.
Cook chill	Food that has been cooked, fast chilled and then stored at low temperatures.
Core temperature	This is the internal temperature food must be heated to which to ensure it is cooked properly. A minimum core temperature of 70°C for 2 minutes (or an immediate reading of 75°C).
Cold holding	Chilled foods displayed for service : 0-5°C.

## ★ Key Terms

Critical Control Point (CCP)	When a food safety hazard can be prevented/reduced to an acceptable level.
Cross contamination	The transfer of harmful bacteria from one area to another.
Cryogenic freezing	Food is immersed or sprayed with liquid nitrogen.
Danger zone	The temperature range (5 to 63°C) in which bacteria grow.
Date marking	Of manufactured foods. 'Best Before' is the date up until the food will remain in peak condition. Perishable foods have a 'Use By' date up to which the food can be kept if stored appropriately.
Descriptors	A word describing a sensory characteristic, e.g. spicy.
Decoration	Used on sweet dishes, e.g. chocolate leaves, fresh fruit.
Deficiencies	State of lacking/incompleteness. E.g. deficiencies in the consumption of certain vitamins can cause health issues.
Denaturation	Chemical bonds in the protein food have broken, causing the protein molecule to unfold and change shape.
Dextrinisation	The process involving the browning of starch foods when subjected to dry heat, e.g. toast (when starch converts into a sugar).
Dietary fibre	Complex carbohydrate (non-starch polysaccharide), e.g. whole grain cereals and cereal products.
Dietary Guidelines	Advice from the Government on recommended food intake in order to achieve dietary goals.
Dietary Reference Values (DRVs)	Scientifically calculated estimates of the amounts of nutrients needed for good health.
Difference test	A method of finding out if there are any differences between product samples.
Disaccharide	Carbohydrate made from two sugar molecules.
Diverticular Disease	A disease caused by a lack of Non starch polysaccharide (NSP) in the diet.
Diabetes	Diabetes is a lifelong condition that causes a person's blood sugar level to become too high. There are 2 main types of diabetes, type 1 where the body's immune system attacks and destroys the cells that produce insulin and type 2 where the body does not produce enough insulin, or the body's cells do not react to insulin.
Dovetail	When making two or more dishes by splitting the tasks within the recipes to make the best use of your time, e.g. if making a cake and soup, the sponge mix for the cake could be made while the vegetables for the soup are sautéing.
Due diligence	In food preparation this means that the company has set up systems to help avoid contamination of food products.
E numbers	The classification system of permitted additives produced by the European Union.
E.coli	Beef (minced), raw milk, dirty water. Incubation = 12–24 hours. Diarrhoea, abdominal pain, vomit, fever and kidney damage.
Eatwell guide	A healthy eating model, to encourage people to eat the correct proportions of food to achieve a balanced diet.
Emulsifier	A substance that stops oil and water from separating.
Emulsifying agent	A substance that will allow two immiscible liquids (substances that do not mix) to be held together, e.g. lecithin in egg yolk.
Emulsion	A mixture of two liquids is called an emulsion.
Enzymes	Enzymes are natural substances (mostly proteins) found in foods and all living things. Called biological catalysts, which means they have the ability to speed up chemical reactions.
Enzymic browning	Reaction between a food product and oxygen resulting in a brown colour, e.g. sliced potato has brown patches when sliced and left in the air.
Environmental Health Officer	The enforcement officer at local government level who covers public health such as the hygiene of food premises and food safety.
Environmental issues	The impact of human activities on the natural environment.
Estimated Average Requirement (EARs)	The average need for a nutrient. Values calculated for energy requirements of groups of people. They represent the needs of most people in a particular group and decisions.
Fairtrade	Partnership between producers and consumers; selling on Fairtrade terms provides farmers with a better deal and more income. This allows the opportunity to improve lives and plan for the future.
Fats	Macronutrient which supplies the body with energy.
Fat soluble vitamins	Vitamins (A, D, E and K groups) that dissolve in fat.
Fermentation	The process in which yeast produces the gas carbon dioxide.
Fibre	Indigestible parts of food – usually cellulose, which remains in the intestine after digestion.

## ★ Key Terms

Flavour	E.g. salty, sweet, sour, bitter, well-seasoned.
Flavour enhancers	Tasteless substances used to enhance the taste of savoury foods.
Foams	A mixture of gas and liquid is called a foam, e.g. air whisked into egg white creates a foam.
Foam formation	Foams are formed when gases (mainly air) are trapped inside a liquid, e.g. meringue, whisked sponge.
Folic acid	Works with vitamin B12 to make red blood cells; found in leafy green vegetables, whole grains and some fruit.
Food additive	A substance added to a food product to improve its quality.
Food spoilage	Caused by the natural decay of food or by contamination by micro-organisms.
Food intolerance	A long-term condition, which after some time may cause the consumer to feel unwell and have a range of symptoms.
Food poisoning	Illness caused by pathogenic bacteria/toxins, e.g. e-coli, salmonella, listeria, staphylococcus aureus.
Food provenance	Place where food originates. Where it is grown, reared or raised.
Garnish	Used on savoury dishes, e.g. parsley, basil leaves, tomatoes.
Gelatinisation	Heated starch granules absorb liquid and swell, and burst to thicken liquid.
Gels	A small amount of a solid mixed in a large amount of liquid that then sets e.g. jam.
Genetically modified (GM)	Scientific technique that enables a particular characteristic from one plant/animal to be inserted into the genes of another.
Gluten	Protein found in flour.
Gluten formation	Formed from the two wheat proteins gliadin and glutenin, in presence of water. Gluten is developed by kneading.
Guideline Daily Amounts (GDAs)	Guide to the amounts of calories, sugar, fat, saturated fat and salt a person should try not to exceed so as to have a healthy balanced diet.
HACCP	Hazard analysis and critical control point.
Hazard	Anything that can cause harm to the consumer.
Halal	Food which is selected and prepared according to Islamic dietary law.
High-risk food	Foods that are high in moisture and nutrients, especially protein (perishable foods: meat, shellfish, cooked rice, eggs, milk, cream). They support the growth of pathogenic microorganisms, such as bacteria.
Hinduism	An Eastern religion. Many Hindus are vegetarian and many practice fasting; in Hinduism, the cow is sacred and not eaten.
Hygienically	To prepare food in a clean environment to stop food spoilage or poisoning occurring.
Hot holding	Keeping cooked food hot for service. Core temperature minimum 63°C.
Irradiation	A process used to reduce spoilage in some foods.
Islam	Semitic religion. Muslim dietary laws require that poultry/meat is slaughtered in a special ritual called Zibah. Certain foods are forbidden.
Judaism	Semitic religion which has a number of food laws called the Kashrut. Kashrut food is called Kosher.
Joule	A unit of energy. Used to show the energy content of foods.
Julienne	Thin, matchstick-size strips of vegetables.
Kosher	Food which is selected and prepared in accordance with Jewish dietary law.
Knead	To manipulate dough by pushing it across a work surface and pulling it back. This is essential to develop the gluten.
Lactose	A natural sugar found in milk/dairy products.
Lactose intolerant	Condition which means you cannot digest the disaccharide sugar lactose.
Landfill sites	Large holes in the ground where bags of household waste are buried.
Lard	Saturated animal fat produced from pigs.
Lecithin	Present in egg yolk and soya and used as an emulsifier in manufactured foods.
Listeria monocytogenes	Common food-poisoning bacteria soft cheese + made from unpasteurised milk; salad veg., pates. 1—70 days. Flu-like symptoms.
Low biological value (LBV)	Protein foods that are missing one or more essential amino acids.
Macronutrient	A type of food, e.g. fat, protein, carbohydrate, that is required in large amounts in the diet.

## ★ Key Terms

Modified atmosphere packaging (MAP)	Removing the air and flushing the packet with a gas.
Micro-organisms	Tiny microscopic forms of life both plant and animal. Types of microorganism that can spoil foods: Bacteria, moulds, yeasts.
Mise en place	Basic preparation in the kitchen prior to assembling produce.
Modification	Simple changes which have little effect on the structure and composition.
Modified Atmosphere Packaging (MAP)	Used to extend the shelf life of food. The packs are gas flashed to reduce the amount of oxygen and replace it with carbon dioxide or nitrogen.
Modified starches	Starches that have been altered to perform additional functions.
Monitoring	Keeping constant watch.
Monosaccharide	Simple carbohydrate. Mono = one. Saccharide = sugar.
Moral and ethical beliefs	Relate to what people believe are right or wrong, may be concerned how food is produced.
Moulds	Moulds are air borne spores.
Non starch polysaccharide	The part of food that is not digested by the body.
Nutrient	The part of a food that performs a particular function in the body.
Nutrients	The properties found in food and drinks that give nourishment which is vital for growth and the maintenance of life. The main nutrients needed by the human body are carbohydrates, proteins, fats, vitamins and minerals.
Nutritional analysis	Using resources to find out the nutritional content of a product.
Nutritional content	The type and quantity of nutrients which the product supplies.
Nutritional labelling	The information relating to nutrients and energy in the food which is stated on packaging.
Obesity	Diet-related disease where the body contains too much stored fat.
Organic food	Plants grown without the use of synthetic pesticides fungicides or organic fertilisers. They must have been prepared without preservatives.
Organoleptic	Sensory qualities (texture, flavour, aroma, appearance) of a food product.
Palatability	Reward provided by foods or fluids that are agreeable with respect to the satisfaction of nutritional, water or energy needs.
Paired preference	People given two similar samples of food and they have to state which one they prefer.
Pasteurisation	The process of prolonging the keeping quality of products such as milk by heating to destroy harmful bacteria.
Pathogenic	Capable of causing illness e.g. Campylobacter, E. coli, Salmonella, Listeria.
Pathogens	Bacteria which cause disease.
pH	A measure of acidity or alkalinity.
Physical Activity Level (PAL)	Energy balance (% of energy from nutrients), the amount of energy the body uses for movement and physical activity daily.
Plasticity	The ability of fat to soften over a range of temperatures to hold its shape, or be shaped and spread.
polysaccharide	Complex carbohydrate. Many sugar molecules joined together, they do not taste sweet.
Polyunsaturated fats	Fats that contain several double or even triple bonds in the molecule.
Portion	A portion for one is the amount of food that satisfies the need for one person.
Preservatives	Used to prevent food from spoilage by microorganisms; increases the shelf life of commodities.
Preservation	The protection of perishable foods from deterioration by removing the conditions necessary for the growth of micro-organisms.
Primary processing	The conversion of raw materials into food commodities, e.g. milling of wheat grain into flour.
Prior knowledge	Knowledge you already have which does not require research.
Profiling test	Sensory evaluation test to identify individual specific characteristics of product.
Proportion	Relative quantities of ingredients in a recipe, expressed in numbers.

## ★ Key Terms

Protein	A macronutrient that is essential to building muscle mass.
Protein alternatives	Manufactured protein food products consumed instead of meat or fish.
Protein complementation	Eating a combination of low biological value foods together to provide all the essential amino acids the body requires.
Provenance	Place of origin of something.
Pulses	Peas, beans and lentils. They provide a good source of protein and B vitamins.
Quality Assurance	A system that is set up before a product is made and which lays down procedures for making a safe, quality product.
Quality Control	The steps in the process of making a product to make sure that it meets the standards; faulty products are removed.
Questionnaire	Questions asked to a range of people. Results can be used to inform ideas.
Radiation	Heating process that does not require physical contact between the heat source and the food being cooked. Instead, energy is transferred by waves of heat/light striking the food. Two kinds are used in the kitchen: infra-red and microwave.
Raising agent	Increases the volume of doughs, batters and mixtures by promoting gas release (aeration).
Ranking test	A method of putting in order the intensity of particular characteristic of a product.
Rating test	A method of rating a particular attribute or preference for a product on a word or numbered scale.
Recycled	To make into something else.
Reference Nutrient Intake (RNI)	The amount of a nutrient that is enough for most people in a group.
Rickets	Deficiency of calcium in the bones which reduces peak bone mass.
Salmonella	A type of bacterial food poisoning: raw + undercooked poultry, eggs + meat, raw milk. 12–36 hours. Diarrhoea, abdominal pain, vomiting, fever.
Sample	Small amount of the product.
Scientific principles	Demonstrates how science of the ingredients are at work in producing, processing, preparing, preserving and metabolising food.
Seasonal foods	Foods that are at the stage of their natural life cycle when they are ready for harvest or to be caught.
Seasoning	E.g. use of salt, pepper, herbs and spices.
Secondary processing	Primary processed foods into other food products, e.g. flour into biscuits.
Standard component	A ready prepared part of something e.g. a ready-made pizza base.
Sensory analysis	Identifying the sensory characteristics of products, i.e. taste, texture, appearance, mouth-feel, colour.
Sensory evaluation	Using the range of senses to assess a food product – appearance, smell, taste.
Sensory qualities	The look, smell, taste, feel and sound of food products.
Shelf life	The length of time a food product can be kept and be safe to eat. How long a food product can be kept, making sure it is safe to eat and good quality.
Shortening	The ability for fat to shorten the length of the gluten molecules in pastry or shortbread, e.g. butter, lard or other fat that remains solid at room temperature.
Sikhism	Eastern religion in which many are vegetarian and do not drink alcohol, tea or coffee.
Solution	When a solid dissolves in a liquid, e.g. salt in water.
Specification	Details which describe the desired characteristics of a product.
Stabilizers	Substances which absorb water and are often used as thickening agents; many can produce gels and also act as emulsifiers.
Standard component	Pre-prepared ingredient that is used in the production of another product.
Staple food	A food that forms the basis of a traditional diet – wheat, barley, rye, maize or rice.
Staphylococcus aureus	People hands, nose, mouth, skin. 1–6 hours. Abdominal pain, vomiting, low body temperature.
Sterilisation	A method of increasing the keeping quality of products by destroying all micro-organisms by heating to a high temperature.
Suspensions	A solid held in a liquid.
Sustainability	Human activity that is not harmful to the environment and does not deplete natural resources, thereby supporting long-term ecological balance, e.g. sustainable fishing.
Symptoms	A sign of something. Symptoms of an illness give indications as to what the illness could be eg: nausea, high temperature, vomiting.

## ★ Key Terms

Syneresis	Usually refers to eggs; if overcooked, the proteins shrink as they coagulate and separate from the watery liquid.
Target Group	The specific group of people at which you are aiming the product.
Temperature probes	Give an accurate reading of the core temperature (centre) of the food. They must be used correctly.
Textured vegetable protein	Vegetable protein, especially from soya beans, that is used as a substitute for meat, or is added to it.
Tofu	High protein food made by coagulation soya milk and pressing the resulting curds into soft white blocks.
Traceability	Tracing a fault back to the point at which it occurred in order to remedy the fault and avoid it.
Triangle test	People given 3 samples of a food product to try. 2 are identical, the third is something different; they need to discriminate between the examples.
Trend	The likelihood of something happening. e.g. there is a trend for more meat free products available in supermarkets.
Type 2 diabetes	Person with this has insulin resistance, meaning their pancreas doesn't produce enough insulin or the body doesn't react properly to insulin.
Ultra Heat Treatment (UHT)	Heated very quickly in a heat exchange to 72°C for 15 seconds cooked rapidly to below 10°C (normally 4°C).
Unsaturated fats	Fats that contain a high ratio of fatty acid molecules with at least one double bond. Normally liquid oil.
Vacuum packaging	A method of preserving food by removing air.
Vegan	People who do not eat flesh or any animal products. They can eat plant protein soya, TVP, tofu.
Vegetarian	A lacto-vegetarian diet includes dairy products and eggs and plants, and an lacto-ovo vegetarian diet includes both eggs and dairy products, nuts.
Vitamin B2 (Riboflavin)	Enables energy to be released from carbohydrate, fat and protein in the body. Found in many foods, e.g. milk, eggs, rice. Deficiency is rare.
Vitamin B3 (Niacin)	Enables release of Vitamin C (ascorbic acid) needed for the absorption of iron, to maintain body cells. Found in citrus fruits, green vegetables.
Vitamin B12	Works with folic acid, found in meat, fish and fortified cereals.
Viscosity	The thickness of a liquid or a mixture, such as a sauce.
Water soluble vitamins	Water Soluble vitamins (B group and Vitamin C) in water or energy in the body. Found in wheat flour, eggs, milk, some meats. Deficiency in vitamin B is called pellagra. Must be regularly replaced in the body through the diet.