

Food Preparation and Nutrition

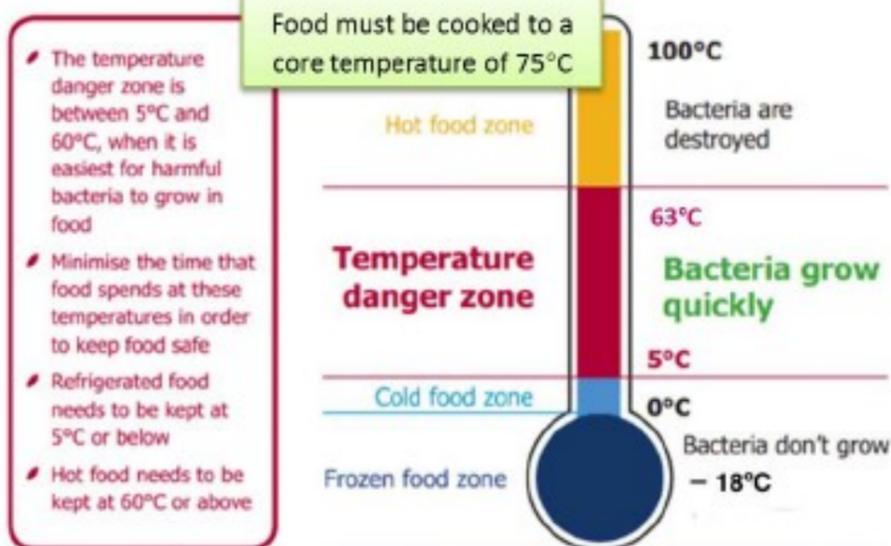


Year 10

Knowledge Organisers - Part 2

Microorganisms in Food Production

- ❖ Dairy Industry:
 - ❖ Cheese
 - ❖ Converts sugar lactose into lactic acid
 - ❖ Essential to choose the right amount of culture for high quality cheese
 - ❖ Some cheese production relies on mould e.g. blue cheese, soft cheese and rind-washed cheese
 - ❖ Yoghurt
 - ❖ The culture is responsible for taste and texture
 - ❖ Probiotic cultures have become more popular in recent years
 - ❖ Probiotic cultures are classified as a functional food
- ❖ Meat Industry:
 - ❖ Meat cultures are used to make dried, fermented products e.g.
 - ❖ Salami
 - ❖ Pepperoni
 - ❖ Chorizo
 - ❖ Dried ham
 - ❖ Lactic bacteria develop the flavour and colour of the products



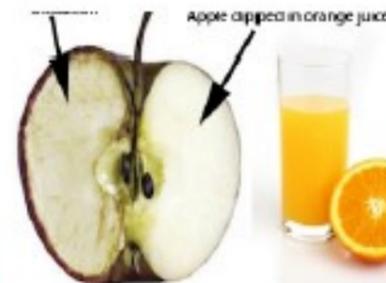
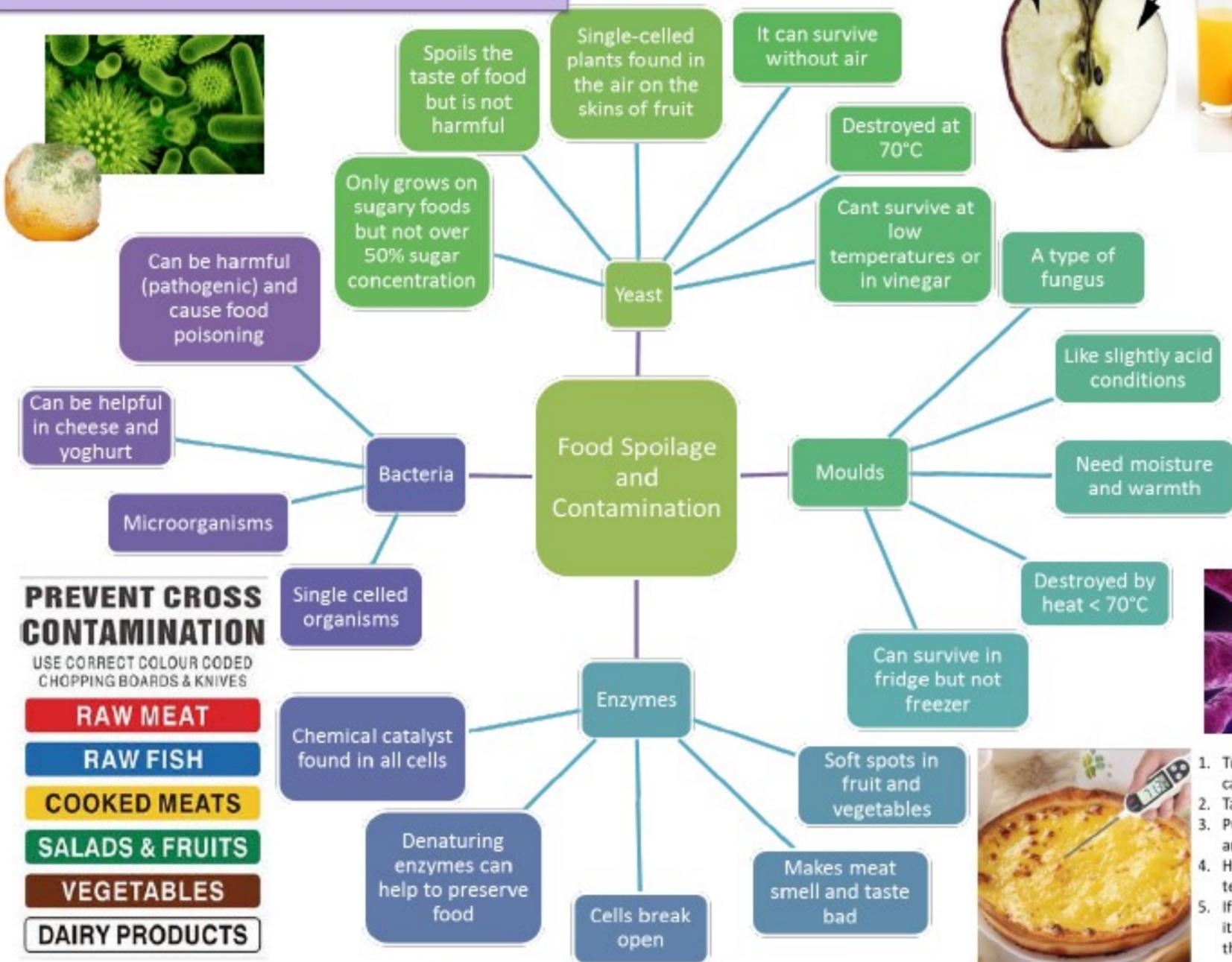
Bacteria: Conditions For Growth

Temperature	Moisture	Time	Nutrients	pH level
<ul style="list-style-type: none"> • Multiplies between 5°C and 63°C • Ideal temperature for rapid multiplication is 37°C (body) 	<ul style="list-style-type: none"> • Needs moisture to live and multiply 	<ul style="list-style-type: none"> • Under optimum conditions bacteria will multiply every 10-20 minutes • Cool down food within 90 minutes to store in fridge/freezer to prevent bacteria multiplication 	<ul style="list-style-type: none"> • Can multiply to large numbers on high-risk foods like meat, poultry, fish, eggs, milk 	<ul style="list-style-type: none"> • Grows best at neutral pH between 6.6 and 7.5 • Unable to survive below pH 4.5

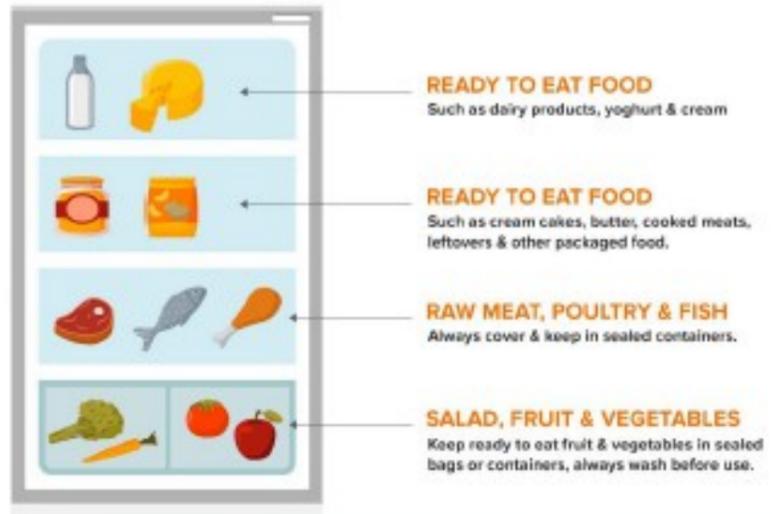
Pathogenic Bacteria	Food Affected	Symptoms	Onset
Salmonella	Raw meat, eggs, seafood, dairy products	Diarrhoea, Vomiting, Fever	12-36 hours (Can be fatal to elderly and babies)
Staphylococcus Aureus	Cooked slices meat, dairy products, anything touched by hand	Diarrhoea, Vomiting, Abdominal pain	1-6 hours (Associated with bad personal hygiene)
Clostridium Perfringens	Raw and cooked meat and meat products	Diarrhoea, Nausea, Abdominal pain	8-22 hours
Clostridium Botulinum	Incorrectly canned meat, fish or vegetables	Nausea, Vomiting, Paralysis, Difficulty breathing, Double vision	12-48 hours (Rare)
Bacillus cereus	Cooked rice, pasta and cereal foods	Diarrhoea, Nausea, Vomiting	1-6 hours

Food-borne Disease Pathogenic Microbe	Food Affected	Symptoms	Onset
Escherichia-Coli (E-Coli)	Raw meat, untreated milk and water	Blood in Diarrhoea, Vomiting, Kidney damage or failure	12-24 hours (Causes gastro-enteritis in humans)
Listeria Monocytogenes	Soft cheese, Pate, Unpasteurised milk, undercooked met, incorrectly heated cook-chill meals	Mild Flu-like symptoms, Septicaemia, Meningitis and Pneumonia	No specific time (Can also cause miscarriage or premature labour/birth)
Campylobacter	Meat, Shellfish, Untreated water, Washing raw poultry	Diarrhoea, Headache, Fever, Abdominal pain	1-11 days (Easily transmitted between humans)
Norovirus	Shellfish, Raw vegetables, Salads	Nausea, Vomiting, Fever, Abdominal pain, Diarrhoea	1-2 days (Can survive for several days if not cleaned up properly)

Food Safety



1. Turn on the probe, make sure it is calibrated (follow user Manual)
2. Take food out of the oven or off the heat
3. Put the probe into the middle at a slight angle
4. Hold the probe in the food until the temperature stabilises
5. If it is not at a core temperature of 75°C it needs to go back in the oven or into the heat and then re-test shortly



SOCIAL

- > Meal Patterns
- > Availability
- > Social Facilitation
- > Marketing
- > Culture
- > Religion



PSYCHOLOGICAL

- > Body Image
- > Weight Control
- > Hedonic Hunger



ECONOMIC

- > Cost
- > Income



PHYSIOLOGICAL AND BIOLOGICAL

- > Hunger and Appetite
- > Macronutrient Balance
- > Fat-Free Mass
- > Resting Metabolic Rate
- > Hunger
- > Taste
- > Food Preferences
- > Gastrointestinal Discomfort
- > Food allergies
- > Food intolerances
- > Allergic reaction



LIFESTYLE, BELIEFS AND KNOWLEDGE

- > Health Beliefs
- > Nutrition Knowledge
- > Motives for Participating in Sport



Understanding Influences on Food Choices

ETHICAL & MORAL FACTORS

RELIGION:

Food is an important part of many religions. Someone's religion might affect the food they eat. People eat different things depending on their religion. For example, Muslims do not eat pork.

This chart shows the type of meat eaten by different religious groups.

Religious Group	Pork	Beef	Lamb	Chicken	Fish
Hindu	x	x			
Muslim	x	Halal	Halal	Halal	
Sikh	x	x			
Jewish	x	Kosher	Kosher	Kosher	No Shellfish
Buddhist	x	x	x	x	x
Rastafarian	x	x	x	x	x



PROS AND CONS OF GENETICALLY MODIFIED FOODS

GENETICALLY MODIFIED FOODS (GMO)

GENETIC MODIFICATION is a scientific technique that enables a particular characteristic from one plant or animal to be inserted into the genes of another—this can be used to improve the sensory properties (colour, taste, aroma etc) of a food product, increase the shelf life of a food product, add nutrients to a product, make crops resistant to pests etc.

This affects food choice as people are very concerned about the effects on the environment/whether or not humans should be allowed to alter in this way.

Golden rice grown with a high Vitamin A content.



ORGANIC FOODS:

ORGANIC FOODS are grown without the use of artificial fertilisers and pesticides.

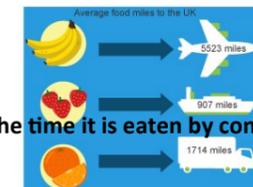
People choose to buy organic foods as they are better for the environment and soil.

Farmers develop healthy fertile soil by using manure as a natural fertiliser. Farmers rotate the crops they grow so that the soil does not have all the goodness taken out of it. Farmers leave a piece of land fallow (no crops growing in it) for a year to break the cycle of pests and allow the soil to become naturally fertile again. Farmers encourage wild natural predators such as ladybirds to kill pests



EAT LOCAL FOODS:

Many people are choosing to buy foods that are locally grown to avoid the environmental impact of FOOD MILES. Locally grown foods are fresher, more nutritious, cheaper, and help support local farmers and producers. Locally grown food is available in season when it is at its most abundant and freshest. It is often sold loose and unpackaged.



FOOD MILES are the distance a food travels from the time it is produced to the time it is eaten by consumers.



ANIMAL WELFARE:

How well animals are reared and looked after affects food choice.

Many consumers are vegetarian or vegan due to their abhorrence of animal suffering.

Foods that display the RSPCA assured or red tractor logo will have been checked to ensure that strict standards of animal welfare are in place and that the life of the animal is a happy one. The red tractor logo also indicates that the food is produced in Britain so that food miles have been kept to a minimum.



FAIRTRADE:

Consumers look for the Fairtrade logo to show that farmers in developing countries have been paid fairly for their crops (such as cocoa beans, bananas, coffee beans etc) and their workers live in good conditions.

The range of Fairtrade products is quite limited, and you do pay a higher price for Fairtrade food products, but in buying them you are promoting sustainability around the world.

Buying food



'USE BY'
informs you about...
FOOD SAFETY

USE BY:
13 March 2018

Mind the date!
Food can be eaten UP UNTIL THE END of this date but not after, even if it looks and smells fine.

'BEST BEFORE'
informs you about...
FOOD QUALITY

BEST BEFORE:
13 March 2018

Judge for yourself!
Food can be eaten AFTER this date but it may no longer be at its best quality.

OLI/Oex.com

RULES TO REMEMBER WHEN BUYING FOOD:

- ⇒ Cleanliness of the shop/market
- ⇒ How well the food is displayed—are raw foods kept separate from cooked foods.
- ⇒ Is the food package damaged? If so it could be a food safety risk.
- ⇒ Is the food stored at the correct temperature? (BELOW MINUS 18 DEG FOR FROZEN FOOD AND BELOW 5 DEG FOR CHILLED FOOD)
- ⇒ Do the food handlers display good hygiene practices? (see below)
- ⇒ The use-by date for high risk foods e.g. meat, fish etc.
- ⇒ The best-before date for low risk foods e.g. canned foods, biscuits, cereals etc.

PRINCIPLES OF FOOD SAFETY WHEN BUYING, STORING, PREPARING AND COOKING FOOD

STORING FOOD:

- ⇒ Store low risk foods at **AMBIENT** temperature (19–21 degrees C)
- ⇒ Chill foods in a fridge **BELOW 5 DEG.**
- ⇒ Freeze foods **BELOW MINUS 18 DEG.**
- ⇒ Hot hold cooked food **ABOVE 63 DEG.**
- ⇒ **Cook food ABOVE 75 DEG C** to kill the bacteria.
- ⇒ **DANGER ZONE = 5 to 63 DEG C** (this is when bacteria grow most rapidly).

PREPARING FOOD:

- ⇒ Use the correct coloured chopping board to prevent **CROSS CONTAMINATION.**
- ⇒ Wash hands before and after handling raw meat or fish.
- ⇒ Never wash chicken.

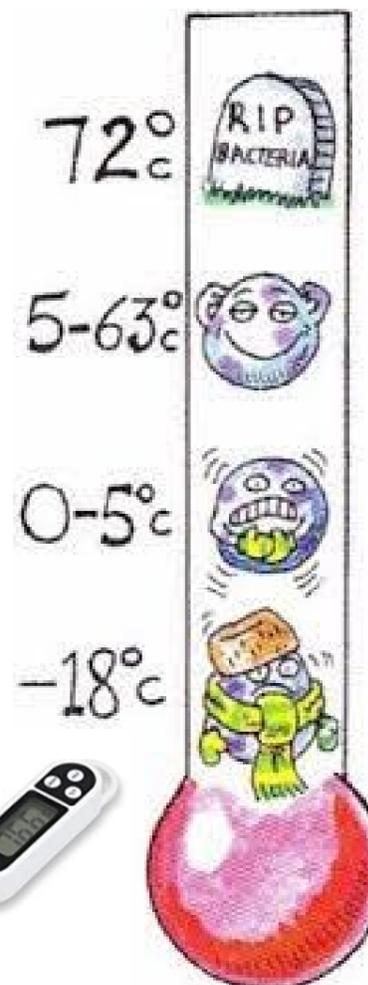
PREVENT CROSS CONTAMINATION

USE CORRECT COLOUR CODED CHOPPING BOARDS & KNIVES

- RAW MEAT**
- RAW FISH**
- COOKED MEATS**
- SALADS & FRUITS**
- VEGETABLES**
- DAIRY PRODUCTS**

RULES WHEN COOKING FOOD:

- ⇒ Cook to **75 DEG** or above to kill bacteria.
- ⇒ **DEFROST (THAW)** foods thoroughly before cooking.
- ⇒ Only **REHEAT ONCE.**
- ⇒ Reheat to above **75 DEG C.**
- ⇒ Use a **TEMPERATURE PROBE**
- ⇒ Cool **HIGH RISK** foods quickly (within 90 minutes) if the food is not being eaten straight away.
- ⇒ **NEVER** put hot food in a fridge.



COOKING ZONE

DANGER ZONE

COLD ZONE

- 100 °C Boiling Water**
bacteria will be destroyed
- 75 °C Cooking/Reheating**
- 63 °C Minimum Hot Holding**
- 37 °C Body Temperature**
ideal temperature for bacteria to grow
- 8 °C Food Storage**
store food at this temperature or below
- 5 °C Fridge Temperature**
- 18 °C Freezer Temperature**
bacteria won't grow but may not die

All the above temperatures are guidelines only

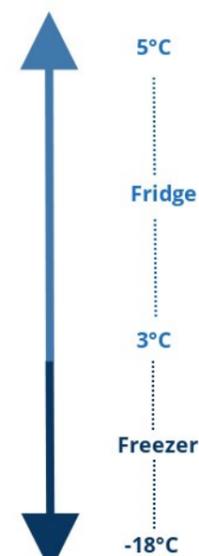
FOOD SAFETY Personal Hygiene

- ✓ Hair should be properly tucked inside the cap
- ✗ Hair coming outside the cap
- ✓ No earring or necklace/chains
- ✗ Earring and necklace/chains
- ✓ No outer pockets
- ✗ Outer pocket and contents
- ✓ Wear neat and clean clothes
- ✗ Dirty clothes
- ✓ No wrist watch/rings
- ✗ Wrist watch/rings
- ✓ Cover all wounds
- ✗ Open and bleeding wounds
- ✓ Nails should be short and clean
- ✗ Long and painted nails
- ✓ Torn clothes should be repaired or replaced
- ✗ Torn clothes
- ✓ Wear clogs and safety shoes
- ✗ Bare foot/slippers

HIGH RISK FOODS are foods that are **HIGH IN PROTEIN & MOIST.** Fish, meat, eggs are all examples.

Low risk **NON-PERISHABLE** foods can be stored at **AMBIENT TEMPERATURE** this means **ROOM TEMPERATURE—19 to 21 degrees C.** is the ambient temperature range.

What temperature should my Fridge Freezer be?



SHELF-LIFE means how long a food will last before it becomes **UNPALATABLE/UNSAFE** to eat.

HOW DO YOU KNOW WHAT YOU'VE GOT?

Are You Allergic or Intolerant?

Allergy

What age?

Developed from **INFANCY**



2% OF ADULTS
6-8% OF CHILDREN have an allergy

Intolerance

What age?

ANY AGE



45% OF THE POPULATION suffer from **food intolerance**

Reaction
Immediately
2 HOURS OR LESS

Reaction
Delayed reaction to a food
UP TO 72 HOURS
after eating the offending foods

Skin
Digestion
Airways



Bloating
Joint Pain
IBS
Tiredness
Eczema
Low Mood
Headache
Weight Gain

Is it deadly?
NO

Which foods?

the most common types of allergies



peanuts tree nuts eggs milk fish shellfish

How many foods?
Rarely more than **1 or 2** foods

the most common intolerances



wheat gluten milk fruit veg

How many foods?
Can be **MULTIPLE**

1 in 100 people in the UK have coeliac disease

3 in 4 people with coeliac disease don't know they have it

In people with **coeliac disease** gluten damages the lining of the gut, which means that you can't absorb nutrients from food very well.

Coeliac disease can be treated with a **gluten free diet**

Gluten is a protein found in wheat, barley, and rye

Coeliac disease can **increase the risk** of anaemia, osteoporosis, cancer, or infertility.

LACTOSE INTOLERANCE

90% of African and Asian populations have lactose intolerance

Treatment
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud

75% of people have various forms of lactose intolerance

Do not eat with lactose intolerance

milk, cheese, ice cream, bread, ketchup, mustard, mayonnaise, chocolate

Symptoms
flatulence, diarrhea, nausea, vomiting, stomach ache

Reasons
intestinal infections, antibiotics, heredity

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

KEY VOCABULARY:

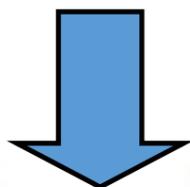
FOOD INTOLERANCE A LONG TERM condition where after several hours, or days, certain foods cause a person to feel unwell and have a range of symptoms, but it usually not life-threatening and does not involve the immune system.

FOOD ALLERGY this happens to some people when their immune system has a very sensitive reaction to specific foods, which causes severe and potentially life threatening symptoms that happen very quickly after the food is eaten (e.g. severe nut allergy)

HOW FOOD LABELLING AND MARKETING INFLUENCES FOOD CHOICE?

WHY IS FOOD LABELLING IMPORTANT?

- ⇒ They give consumers **information** so that they can make **informed choices**.
- ⇒ They are used to **attract** consumers to buy a product.
- ⇒ They are designed to be **eye-catching, colourful and have attention grabbing names** to attract different target groups.
- ⇒ Food labels **must be clear, easy to read and understand, and not mislead the consumer**.
- ⇒ They **protect** the consumer and manufacturer as certain information must appear on a food label **by law**:



What's on a food label?

Date Marking

This is the 'Use By', 'Sell By' and 'Best Use Before' date. It gives the date by which the food should be eaten.

Product Name

Usually beside the brand name. Tells you what the food is.

Net Weight

This gives the actual weight of the food excluding the packaging. For canned foods packed in liquid, the net weight is the weight of the drained food.



Ingredient List

This shows all the ingredients that make up the product. The ingredients are listed in descending order by weight.

Nutrition Information

This panel shows the nutrients found in one serving or in 100 g / 100 ml of the food.

Usage Instructions

These are instructions for storing or using the product.

Manufacturer's Details

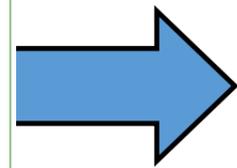
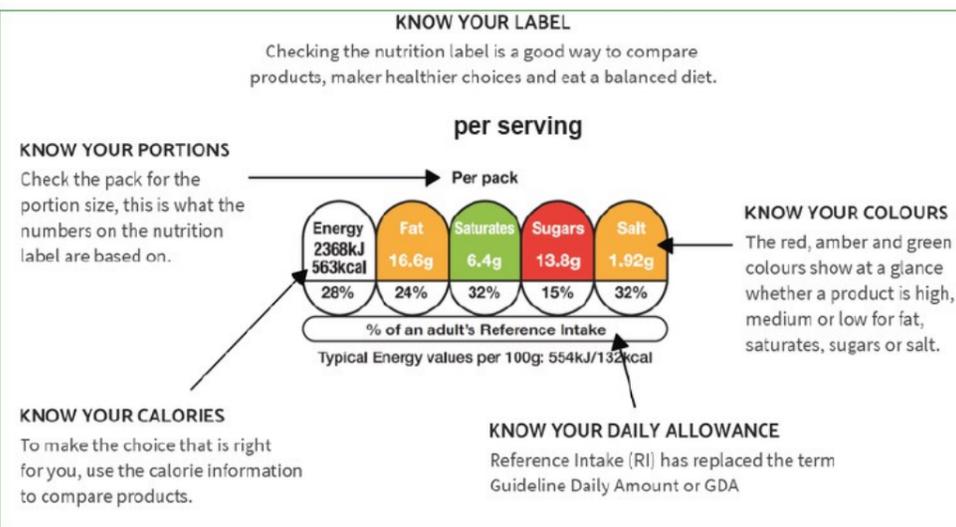
Every label includes the name and address of the manufacturer, importer or distributor.



MARKETING AND FOOD CHOICE:

Food **MARKETING** really influences what you buy. These are all marketing methods that are used to influence what you buy:

- **PRICE DEALS & SPECIAL OFFERS** (b-O-G-O-F AND PESTERPOWER).
- **PRICE BANDS** (e.g. economy/value brands, luxury brands.)
- **LOYALTY CARDS** to give consumers coupons and money off vouchers as a reward for shopping with them.
- **CELEBRITY ENDORCEMENT** Linking a product to a particular celebrity.
- **ETHICAL MARKETING** Products are marketed as **ORGANIC, FAIRTRADE, LOCAL, RECYCLABLE** etc.
- **TIME SAVING** Foods are marketed as being quick and easy to prepare to market convenience in our busy lifestyle schedules.



Text	LOW ⁸	MEDIUM	HIGH	
Colour code	Green	Amber	Red	
			>25% of RIs	>30% of RIs
Fat	3.0g/100g	> 3.0g to 17.5g/100g	> 17.5g/100g	> 21g/portion
Saturates	1.5g/100g	> 1.5g to 5.0g/100g	> 5.0g/100g	> 6.0g/portion
(Total) Sugars	5.0g/100g	> 5.0g to 22.5g/100g	> 22.5g/100g	> 27g/portion
Salt	0.3g/100g	> 0.3g to 1.5g/100g	> 1.5g/100g	> 1.8g/portion

Nutrition

Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ / 235kcal	435kJ / 105kcal	5%	8400kJ / 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings
*Reference intake of an average adult (8400kJ / 2000kcal)



Food manufacturers have been required **by law** to show the nutritional information since December 2016.

Nutrition labels must show:

- Energy value (in Kj or Kcal)
- Protein (g)
- Total fat (g)
- Saturated fat (g)
- Total carbohydrate (g)
- Sugars (g)
- Salt (g)



The **TRAFFIC LIGHT SYSTEM** was set up to show consumers "at-a-glance" whether a food product is **HIGH (RED)**, **MEDIUM (AMBER)** or **LOW (GREEN)** in terms of fat, saturated fat, sugars and salt.

Reading a Food Label



Recycling label.



This stands for FAIRLY PRODUCED and FAIRLY TRADED food products. The FAIRTRADE FOUNDATION ensures that farmers get paid a fair wage for their crop—e.g. cocoa beans, coffee beans, bananas, pineapples, sugar cane etc.



RSPCA Assured logo. RSPCA Assured is the RSPCA's farm assurance and food-labelling scheme, dedicated to improving the lives of farm animals. It gives consumers the option of choosing products that have come from animals that have been inspected to higher welfare standards.



The Red Tractor logo represents 20 years of driving world leading British food standards. Since 2000, we have worked closely with animal welfare experts, vets, agronomists and the entire supply chain to ensure that whenever you buy a product with the Red Tractor logo, it is traceable, safe and farmed with care.



The LEAF MARQUE is a global assurance system recognizing sustainably farmed products. This covers soil management, energy efficiency, animal welfare, pollution control and nature preservation.



The V-Label is an internationally recognized, registered symbol for labelling vegan and vegetarian products and services. For consumers, it is a simple and reliable guide to help them when they are shopping.



Fish and seafood with the blue label comes from a fishery that has been independently assessed on its impacts to wild fish populations and the ecosystems they're part of. When a stock is overfished it is unsustainable. This can cause ecosystems to collapse with negative consequences for



ADDITIVES are listed on food labels as E-NUMBERS. Additives have many advantages as they can IMPROVE THE COLOUR OF FOOD, IMPROVE THE TASTE OF FOOD, ADD NUTRIENTS TO FOOD, and MAKE FOOD LAST LONGER. They also have disadvantages though and must be avoided sometimes as they can lead to HYPERACTIVITY in children and take away from the naturalness of a food.

Food Preparation and Nutrition

Revision and Practice

British and International Cuisines - Sheet 1

1. Name a traditional British dish /1
 2. Name a traditional Spanish dish /1
 3. Name a traditional Japanese dish /1
 4. Give an example of a tradition international cuisine that Britain adopted and adapted to make into a now 'British dish' /1
 5. Explain why people eat less traditional British food now /6
- Total on this page: /10

Could you answer this?

British and international cuisines



British Food



What are staple foods?

What are the staple Foods of Britain?

Meat, fish, poultry, Potatoes, flour, butter, Eggs.

Many of our dishes are based on these foods.

Activity

Consider different countries well known for their food and particular ingredients. Research and produce a concept map of the country to include well-known ingredients, equipment and traditional recipes. Countries you could choose from include: China, Thailand, Japan, America, India, Jamaica, Spain, France, Denmark, etc.



Food Preparation and Nutrition

Revision and Practice

Sensory Evaluation - Sheet 1

1. There are 5 senses that are used to taste food and drink. For each of the 5 senses below give a short description of how it helps you to taste food and then an example of a word you might use when describing some crisps.

Sense	Description	Word to describe crisps
Taste		
Appearance		
Aroma		
Texture		
Sound		

2. Describe how you would carry out a controlled sensory analysis

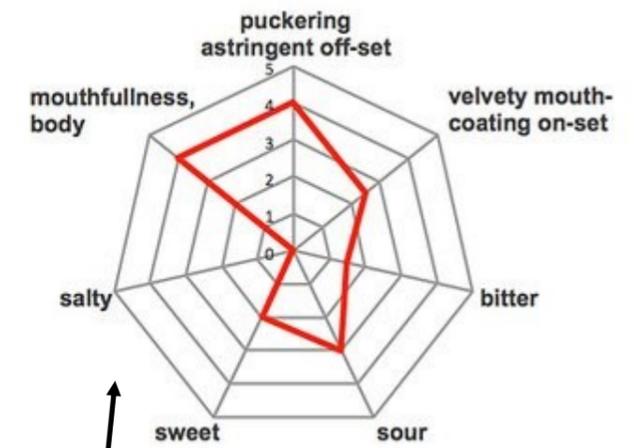
3. Explain what the difference is between a rating and ranking test.

Total on this page: /20

How Senses Affect Food Choices?



OLFACTORY RECEPTORS



Triangle Test



Which of the samples is different?

Ranking Test



Rank the samples from the sweetest one to the least sweet one.

Rating test

- Rating of food samples according to a scale to find out the degree of preference for each food sample

- 1 - dislike a lot
- 2 - dislike moderately
- 3 - neutral
- 4 - like moderately
- 5 - like a lot



Sample code	Degree of preference
315	5
837	3

There are many different types of SENSORY TEST:

- ⇒ RANKING TEST (best to worst)
- ⇒ RATING TEST (sweetest to least sweet)
- ⇒ TRIANGLE/DIFFERENCE TEST (odd one out)
- ⇒ SENSORY PROFILING (star profile)

Key words:

- Appetising:** food prepared, cooked and served so well that you want to eat it
- Bland:** Having no flavour (tasteless)
- Olfactory (smell) receptors:** Special cells in the nose that pick up smells (aromas).
- Senses:** the ability of the body to react to things through sight, taste, hearing, smell (aroma) and touch
- Sensory analysis:** the way of measuring the sensory qualities of food
- Sensory descriptors:** Words used to describe the characteristics of food
- Taste buds:** Special cells on the tongue to pick up flavour

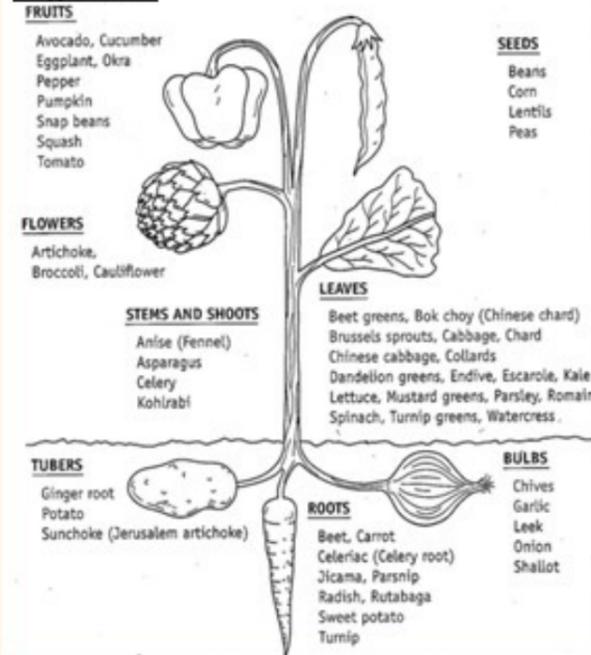


How to ensure a fair test when carrying out sensory analysis

- It should take place in a quiet area, away from where the food was prepared.
- Include a large sample of people to ensure valid results
- Check one variable at a time to produce accurate results
- To avoid food tasters being disturbed and influenced by other people's opinions, food tasters should work on their own
- Be done under hygienic conditions
- be accompanied by clear instructions so the tasters know how to carry out the test
- Use charts or computer software to record the results
- Have food samples coded with random letters, such as XYX, ZZY, XZZ, to avoid any bias
- Only the person setting up and carrying out the tasting panel should know which code applies to which food sample to ensure a fair test (blind testing).
- Small samples and same sized servings of food should be given.
- Samples should be presented or served at the same temperature, to prevent the flavours being affected
- Samples should be presented or served on the same coloured plates, usually black or white, to prevent the taster's senses from being distracted or influenced by background colour and appearance of the food samples.
- Be held in lighting booths so appearance is not affected by shadow or poor lighting conditions

Classification of foods

Vegetables



Fruits

Classification	Description	Examples
Pomes	Smooth skin. Large fleshy area that is around the core. Often have several seeds.	Apples, pears
Drupes	Contain a single seed, or pit, Surrounded by juicy flesh	Peach, mango, apricot, cherry, plum
Berries	Fragile Pulpy and juicy Tiny seeds in flesh.	Kiwi, Strawberry, Blueberry, raspberry
Melons	Hard outer surface that is smooth or netted. Juicy flesh. Seeds in the centre or in the flesh	Watermelon, winter melon, bitter melon
Citrus	Grow in warm places. Firm rind. Pulpy flesh. Rind often used for flavouring - zest	Lemon, lime, oranges
Tropical fruits	Grow in very warm places Many fit into the different categories above also.	Pineapple, banana, papaya

Food miles

Food miles are a way of attempting to measure how far food has travelled before it reaches the consumer. It is a good way of looking at the environmental impact of foods and their ingredients. It is the distance from the origin of where the food was grown/made right up until it reaches the consumers plate.

Why are food miles so bad? Transportation via plane, ships, trucks etc causes pollution which adds carbon dioxide to the atmosphere and adds to global warming. Foods with high food miles are damaging to the environment. If we are buying foods with high food miles, we have are increasing our carbon footprint. Also food requires ice to keep it fresh whilst it is in transit (travelling) so we are often taking water away from countries where there are water shortages and drought.

Carbon footprint: the measure of how much carbon dioxide is produced when an activity takes place, such as the making of food. This pint of milk says that 900g of carbon was produced making this product.

How can food miles be reduced?

1. Buy local! Support local farmers by shopping at farm stores rather than large super markets. The food will be fresher as it has not travelled so far and farmers/the local community will be provided with income.
2. Grow your own fruit, vegetables, herbs etc.
3. Check packaging and only buy British.
4. Buy seasonal foods which have more flavour and nutrition as they are at their best.

Seasonal foods: Foods which are available at a certain time of year in a country without being imported. They are at their freshest, tastiest and most nutritious because they are not imported over large distances.

Keywords:

Food miles: It is the distance from the origin of where the food was grown/made right up until it reaches the consumers plate.

Carbon footprint: the measure of how much carbon dioxide is produced when an activity takes place, such as the making of food.

Seasonal foods: Foods which are available at a certain time of year in a country without being imported. They are at their freshest, tastiest and most nutritious because they are not imported over large distances.

Ethical: Making choices which are caring.

Organic: When chemicals/artificial substances are not used in the farming process. Animal welfare standards are high.

Yield: the amount of produce. E.g. the amount of eggs, wheat, milk etc.

Intensive farming: Focussed on producing the maximum yield, at the minimum cost and space. Animals are kept indoors in cramped conditions and a large amount of land is needed. Chemical herbicides/pesticides and fertilisers are often used.

Food security: The ability to have access to a reliable and healthy food source.

Primary food processing: The process of changing a raw food material into something that can either be eaten immediately or made into a food product.

Secondary food processing: The process of changing a primary processed food into another type of food product.

Farming methods

Intensive farming:

- This type of farming focuses on producing the maximum yield, at the minimum cost and space. Large fields are used which use chemical herbicides, fertilisers and pesticides.
- Large numbers of animals and poultry being kept in limited space, e.g. caged hens.
- Animals being fed high nutrient feeds in a short period of time to maximise growth in a unnatural way. This can be seen as cruel.
- The use of antibiotics on healthy animals to artificially excel growth. (Antibiotics use on healthy animals is banned in the EU). If humans are eating traces of antibiotics, we can build up a resistance to them, meaning they will no longer work to fight infections when we are ill!
- Woodlands and animal habitats are destroyed to make way for large machinery.

Organic farming:

The word organic means natural and without anything artificial. Food which is farmed and sold as organic has to follow strict guidelines:

- The food must not have been grown/reared using chemicals (pesticides, herbicides, fertilisers).
- The welfare of animals is very important, farmers must ensure they are well looked after and are always free range. They cannot be kept in cramped conditions, they must have freedom to roam.
- The use of antibiotics or drugs for healthy animals is banned.
- Farmers must feed animals a 100% organic diet.
- Organic farms must be inspected by outside associations such as the Soil Association.

Genetically modified foods:

Genetically modified foods are foods produced from plants and animals which have had their genetic information changed by scientists. By doing this they can decide precisely, the characteristic they want a plant or animal to have.

Advantages: GM foods can help to fight malnutrition as foods can be developed to contain more nutrients (golden rice). They can help to improve food security as foods can be altered so that they are resistant to pests and diseases. They can also be developed to grow in extreme weather conditions whereas previously they would have been unable to survive. They can also be developed to stay fresh and ripe for longer, meaning that food waste would be reduced.

Disadvantages: We do not know how GM foods will impact our long term health, they could have serious negative consequences but are relatively new so this is not known. Some people do not believe in altering genetics and think that it is unnatural. GM seeds can be expensive. GM crops which are resistance to pests and weeds can cause problems if they grow in unwanted areas and can potentially become superweeds themselves.



Bee populations are suffering through use of pesticides and loss of their habitat. Bees can die if they are contaminated by the chemicals sprayed on plants. If there are no bees, then we have nothing to pollinate our plants, fruits and vegetables. 1/3 of all the food eaten by people relies on bees pollinating plants.



Organic farmers do not use chemical pesticides as these can damage the wildlife and soil. Chemicals leak into the soil and rain washes them into rivers and our drinking waters. Use natural predators such as ladybirds to kill any pests who eat crops. Slug traps are used instead of poison.

Food security: what factors can negatively impact it?

Food security: The ability to have access to a reliable and healthy food source.

How can we produce enough affordable and nutritious food to feed the world's growing population now and in the future?

This is becoming a bigger challenge as many parts of the world are experiencing the affects of climate change. Flooding and drought in particular are affecting people's ability to grow food.



Food security: how can it be improved?

1. New sustainable methods of farming can be introduced which benefit the farmers and the country.
2. Fair trade schemes can be used to support fair wages for farmers to buy food and support their families. Fair trade schemes also train local farmers and provide them with the education on how to develop their farms and income in a sustainable way.
3. GM foods are developed to make crops more resilient to extreme weather conditions and to contain more nutrition.
4. Reducing food miles by buying locally grown food helps to reduce pollution and carbon emissions. This helps to tackle climate change
5. Reducing food waste by using leftover food for other dishes (stews, curries etc) or freezing foods. This will also reduce landfill waste and benefit the environment.



Food processing

Food processing describes how a **raw product** is changed in order to make it useful. There are two types of processing.

Primary food processing: The process of changing a **raw food material** into something that can either be eaten immediately or made into a food product. Examples: **milling of wheat into flour, pasteurising milk, jointing and deboning raw meat.**

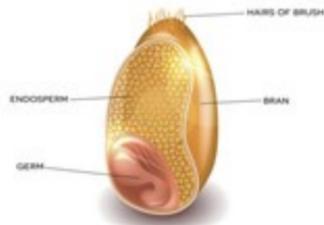
Secondary food processing: The process of changing a **primary processed** food into another type of food product. Examples: **using wheat flour to make bread, using milk to make cheese.**

Primary processing

Secondary processing

Wheat into flour

ANATOMY OF A GRAIN



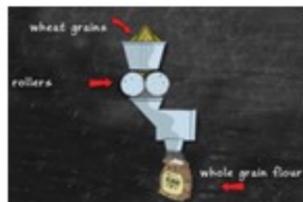
Bran: the protective outer layer - the skin.

Wheatgerm: this is the seed from which the new plant grows. In the avocado this is the big stone, and in the wheat seed it is called wheat germ.

Endosperm: this is the starchy food source. The endosperm is essentially just white flour sitting inside a wheat seed waiting to be removed.

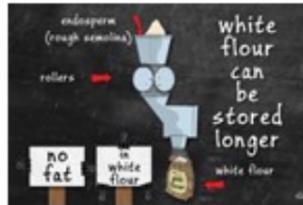
How is whole grain flour made?

The whole of the wheat grain is passed through rollers and the whole grain is used in the flour.



How is plain flour made?

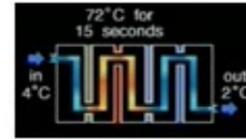
The whole grain flour is separated into **bran, wheatgerm** and **endosperm** (rough semolina). The rough semolina is then passed through rollers to and ground up more to make white plain flour.



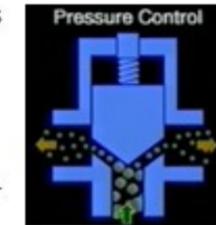
Milk heat treatments

Milk contains lots of bacteria and potentially very harmful pathogens. For this reason, milk is not sold to the public without some form of heat treatment.

Pasteurisation: The process of killing harmful bacteria in milk, whilst still preserving the quality of the flavour. It is **heated to 72°C for 15 seconds and then cooled quickly to 2°C.**



Homogenisation: This is the process of forcing milk at a high pressure through a small space. This breaks up the fat droplets and spreads them out evenly in the milk, preventing a layer of cream forming.



UHT: Milk is heated to **135°C for 1 second** and the cooled rapidly. The milk is then packed into **sterile containers**. UHT milk does not need to be kept in cool conditions if its is unopened. Lasts for 6 months if unopened. Has a slightly sour taste.



Using flour to make bread

The first step in understanding gluten.

What is gluten? Gluten is the general name the **protein** found in flour. Two proteins, **gliadin** and **glutenin** are particularly important for making gluten.



The types of flour used for making bread are high in gluten. (**Strong bread flour**).

1. Mixing

Flour, salt, fat, water and yeast (sometimes sugar) are mixed together. The yeast is activated by lukewarm temperatures.

2. Kneading

The gluten is developed by stretching the bread and ensuring gliadin and glutenin are thoroughly combined with water.

3. Proving and fermentation

The yeast digests the sugar and begins to ferment (release CO₂). The gas helps the bread rise and creates pockets in the dough.

4. Baking and cooling

The bread browns (Dextrinisation) and the protein sets (coagulates).



Using milk to make cheese

Starter culture

A starter culture of non-harmful bacteria is added to the milk. This causes the milk to coagulate (set to a solid) and sour.

Curds and whey

As the milk sets, it separated into curds and whey. The whey is then drained away to leave the curd.

Milling

The mixture is mixed thoroughly, sometimes by hand and sometimes by machines and salt is added. This gives the cheese flavour and also stops the bacteria from being active now that it has done its job.

Moulds

The milled cheese is placed into mould and stacked. This helps it to continue to drain off whey and to start taking the shape of the mould.

Maturing

The milled cheese is then left to mature. This allows the flavour to develop. Sometimes bacteria is sprayed onto the cheese to change the smell, flavour or appearance.

Food preservation

There are two keywords you need to be aware of:

Preserve = to maintain its condition and prevent decomposition.

Spoilage = when food 'spoils' loses its quality, meaning it is less desirable

Food waste

Don't over buy. Keep track of what you've bought and used. Only buy what is needed.

Check the use-by dates of fresh food when you buy it. These are the dates to take notice of, rather than the best-before dates. Only buy what you can use before it expires.

Plan ahead. Think about what you're going to cook and how you'll use the leftovers.

Love your freezer. Freeze foods you do not use.

Method	Process	Advantages/Disadvantages
UHT	Milk is heated to 135°C for 1 second and the cooled rapidly. The milk is then packed into sterile containers . UHT milk does not need to be kept in cool conditions if its is unopened. Lasts for 6 months if unopened.	Has a slightly sour taste. Must be kept refrigerated when opened. Unopened containers can be kept in room temperature conditions meaning that temperature controlled transportation is not needed for distribution.
Pasteurisation	The process of killing harmful bacteria in milk, whilst still preserving the quality of the flavour. It is heated to 72°C for 15 seconds and then cooled quickly to 2°C.	Has very little effect on taste, texture and appearance. Vitamin B2 is reduced through the process.
Canning	Foods are placed in liquids and heated to 121°C to increase their shelf life.	Canned food can be kept for 1-2 years unopened. Canned food can taste different as it is submerged in liquid. Canned food can have a lower vitamin content.
Freezing	Food can be preserved for up to one year by placing in temperatures of -18°C.	Frozen foods can be kept for 1 year. Has very little effect on nutrition, taste, texture and appearance.
Chilling	Food can be preserved for a short amount of time, sometimes a few days, in temperatures of 0-5°C.	Has very little effect on nutrition, taste, texture and appearance.

Method	Process	Advantages/Disadvantages
Drying	Drying	Food can be dried using a number of methods such as roller drying and sun drying. It intensified the flavour. It does change the appearance to make it wrinkled and smaller due to moisture loss.
	Smoking/curing	Smoking involves exposing food to smoke over a long period of time. This slowly cooks the foods and creates an unsuitable environment for bacteria. Curing involves rubbing salt into food to dehydrate it. Changed the appearance and taste. Gives quite a strong intense flavour.
Acids, salts and sugars	Making jams/preserves	Adding sugar to foods and boiling it. Changes the appearance and texture. Making food into jam also affects the way in which the food can be used. E.g. jam has to be spread onto foods whereas fruit can be used as a snack on its own. Increases the sugar content making it unhealthy.
	Pickling	Immersing foods in a vinegar or brine solution. Changes the taste of food quite drastically but does provide a much extended shelf life.
Packaging	Modified atmosphere packaging	Reducing the oxygen content of packaging and replacing it with nitrogen or carbon dioxide. This mix of gases prevents micro organisms from surviving and as a result prevents food from spoiling. Has no impact on taste/texture/appearance.
	Vacuum Packaging	Removing all air from the packaging. Has no impact on taste/texture/appearance.