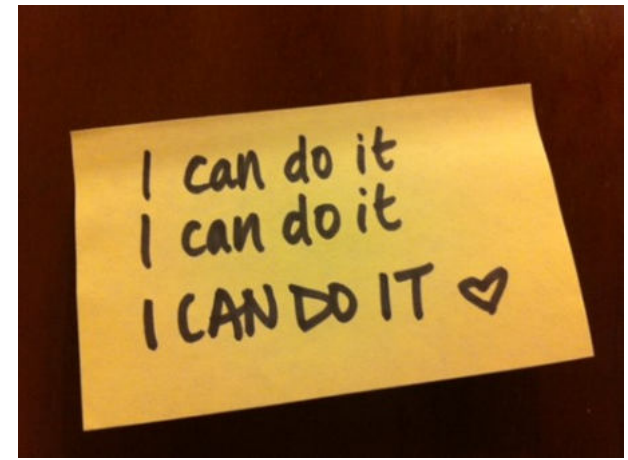


EXAM BASICS

- 1hr 45mins (50% of your overall grade)
- You need to **know everything** from the course
- 80 marks (20 are multiple choice)
- Less than one minute per mark
- Answer ALL questions (have a go)
- PEE



Exam Technique

- Read the question at least twice –WHAT is it asking? Look for command words
- How many marks is it worth? (don't spend 10 minutes on a 4 mark question)
- If a question is worth 4 marks have you made 4 comments/answers?
- Do not leave any BLANKS – have a go! Use common sense, you know more than you think you do!
- Relate back to the question
- Answer the question not what you *think* the question is!
- Check at the end – have you given enough info/detail/points to get the marks



PEE



- Point; your answer
- Explain; justify/explain your answer
- Example; give examples of how your answer works in the kitchen

E.g, Why is rice a versatile commodity?

Rice is versatile as it can be used in many different dishes. Rice can be used in breakfast, lunch, dinner and desserts, it can be used as a sweet or a savoury dish as it takes on flavours well. Rice could be used in kedgeree for breakfast, rice salad for lunch, as an accompaniment for curry or even as a rice pudding.

Command Words

Evaluate: judge from available evidence

- To write about and assess the importance, quality or value of a topic, activity or item.
- **Evaluate** the importance of the following when preparing and cooking food:
 - a) Personal hygiene
 - b) Correct storage of foods and ingredients
 - c) Cooking foods thoroughlyInclude examples in your answers.

Discuss: present key points about different ideas or the strengths and weaknesses of an idea.

- To write about a topic in a way that provides a balanced argument and gives unbiased reasons both for and against
- *According to recent statistics for the UK, the number of children who are developing obesity is increasing. In 2014, 9.5% of 4-5 year olds and 19.1% of 10-11 year olds were classified as obese.*
- **Discuss** the reasons why obesity statistics are increasing and suggest ways to reduce obesity levels in children today.

Describe: set out characteristics

- To write in detail about the features and characteristics of a topic, activity, item or person.
- *Self-raising flour, caster sugar, eggs and butter are the main ingredients in cake.*
- **Describe** what happens to each ingredient when preparing and cooking an all-in-one cake mixture.

Explain: Set out purposes or reasons

- To write about something in a very clear way, **giving examples** to illustrate your answer.
- **Explain** why someone with coeliac disease cannot eat bread or other products made from wheat, and what would happen to them if they did.

Define: specify meaning

- To write down a clear and correct meaning of a word, term or phrase.
- **Define** the terms conduction, convection and radiation in terms of cooking food.

State: express clearly and briefly

- To give a short, accurate and clear list
- **State** the functions in the body of the following vitamins and minerals:
 - a) vitamin A
 - b) Vitamin C
 - c) Iron
 - d) Iodine

Outline: set out main characteristics

- To be able to write about and explain the main features of a topic.
- **Outline** the stages of:
 - a) Coagulation in a boiled egg
 - b) Gelatinisation of a Béchamel Sauce
 - c) Plasticity of fat in the preparation of puff pastry
 - d) Caramelisation of sugar in cakes

Food Preparation and Nutrition - Topics

Food, Nutrition and Health – from slide 6

Food Science- from slide 20

Food safety – from slide 28

Food Provenance- from slide 34



Section one – Food, Nutrition and Health

Proteins



- A macronutrient (made up of amino acids)
- Needed for growth, repair and maintenance
- Food sources: meat, fish, dairy, nuts, seeds, beans
- Biological values:
 - **HBV** these foods contain all of the essential amino acids we need
 - Animal sources and soya beans and quinoa
 - **LBV** are missing one or more amino acid, these foods are only found in plants (peas, lentils, nuts, seeds, beans)
- Protein complementation is needed if we don't get enough HBV (ie: a vegan). Hummus and pitta or beans on toast.
- Different amounts needed: if you are a child or do lots of exercise or are pregnant you will need more protein



Section one – Food, Nutrition and Health

Proteins

- **Too much** protein = pressure and strain on the liver and kidneys (they help to process proteins)
- **Too little** = slows down growth and development, poor hair, nails and skin, wounds don't heal well, poor immune system, cannot digest food properly so some nutrients aren't absorbed, oedema (build up of fluid, swollen feet), swelling of the stomach (kwashiorkor)
- **Alternative** proteins include: soya beans (HBV) which can be processed to make milk and tofu, TVP. Mycoprotein (made from fungus and yeast) 'quorn'.
- These absorb flavours for added taste, bland without



Section one – Food, Nutrition and Health

Fats

- **Provide:** energy, nutrients, insulation (keep us warm and protect organs)
- A source of vitamin A, D, E, K
- We use fat to make cholesterol which makes up cell membranes
- Made up of fatty acids (glycerol and triglycerides)
- Too much **saturated fats** are bad for us (solid at room temperature, found in meat, cheese, butter, lard). Can increase **cholesterol...heart disease and type 2 diabetes, weight gain, high blood pressure, obesity, stroke, heart attack**
- **Unsaturated fats** are healthier (liquid at room temp, vegetable sources)
- Too little fat = less vitamins (A, D, E, K), weight loss, less insulation



Section one – Food, Nutrition and Health

Carbohydrates




- **Provide:** energy
- Split into: starch and sugar (glucose, fructose)
- Starchy foods are good for us (cereals, bread, potatoes, rice), contain B vitamins, iron and calcium. Go for wholegrain
- Starch and sugars are broken down when eaten into glucose which is absorbed and used for energy
- Simple and complex carbohydrates
- **Excess** carbs (sugar) can convert to fat = weight gain
- Tooth decay
- Rapid blood sugar increase from simple carbs = type 2 diabetes
- **Too little (deficiency)** = low blood sugar, dizziness, tiredness, hunger, use up fat sources then protein = loss of muscle mass and we become weak


Section one – Food, Nutrition and Health

Vitamins

- **Micronutrient** needed in small amounts
- Come from plants and animals
- Used in processes that keep us well and alive
- Vitamins A, D, E and K (fat-soluble)
- For **each vitamin you need to know:**
 - What it's needed for
 - Main source
 - Too much and
 - Too little
- Water soluble (B1, B2, B3, B9, B12 and C) lost in urine. B12 is lacking in a vegan diet and some take supplements/injections
- Try to retain vitamins when cooking food



Vitamin A	Beneficial in treating eye disorders, skin infections
Vitamin B9	Reduces risk of neural tube defects during pregnancy
Vitamin B12	Provides relief from symptoms of anemia, kidney and liver disorders
Vitamin C	Helps treat scurvy, cancer and common cold
Vitamin D	Aids in treating arthritis, tooth decay, diabetes and rickets
Vitamin E	Improves blood circulation and slows down aging process
Vitamin K	Reduces risk of menstrual pain and internal bleeding



Section one – Food, Nutrition and Health

Minerals

- **Calcium, iron, sodium (salt) and phosphorus**
- **Calcium** for bones, teeth, nerves, muscles and blood clotting.
 - Too little (brittle bones, osteoporosis)
- **Iron** for blood. Forms part of the haemoglobin (the red colour in blood). Found in leafy green veg and meat.
 - Too little (anaemia)
- **Sodium** controls the body's water content.
 - Too much (high blood pressure)
- **Phosphorus** for bones and teeth and helps to absorb calcium
- **Fluoride** (strengthens teeth) and **Iodine** (to make some hormones)

DIETARY SOURCES OF MINERALS



Section one – Food, Nutrition and Health

Fibre

- Is not digested
- NSP (non-starch polysaccharides)
- Roughage
- Carbohydrate from plant based foods (vegetables, fruit, wholegrain foods, lentils and beans)
- Prevents constipations, diarrhoea, bowel and colon cancer, heart disease and blood pressure
- Keeps you fuller for longer
- Keeps food moving through your body properly



Section one – Food, Nutrition and Health

Water

- 60% of your body is water
- Needed to eliminate waste, control body temperature and aid digestion
- Found in food and drinks
- May become dehydrated if deficient
 - Brain won't function as well
 - Blood thickens (harder to pump round)
 - Body temp rises
- 2 litres a day
- Too much water drunk too quickly can be fatal (ie: after a marathon)



Section one – Food, Nutrition and Health

Healthy Eating Guidelines

- The Eatwell Guide
- Portions recommended
- Additional info about water intake
- Modified recently to remove cakes/biscuits etc
- **8 guidelines** also are:

Eat less salt, fat and sugar

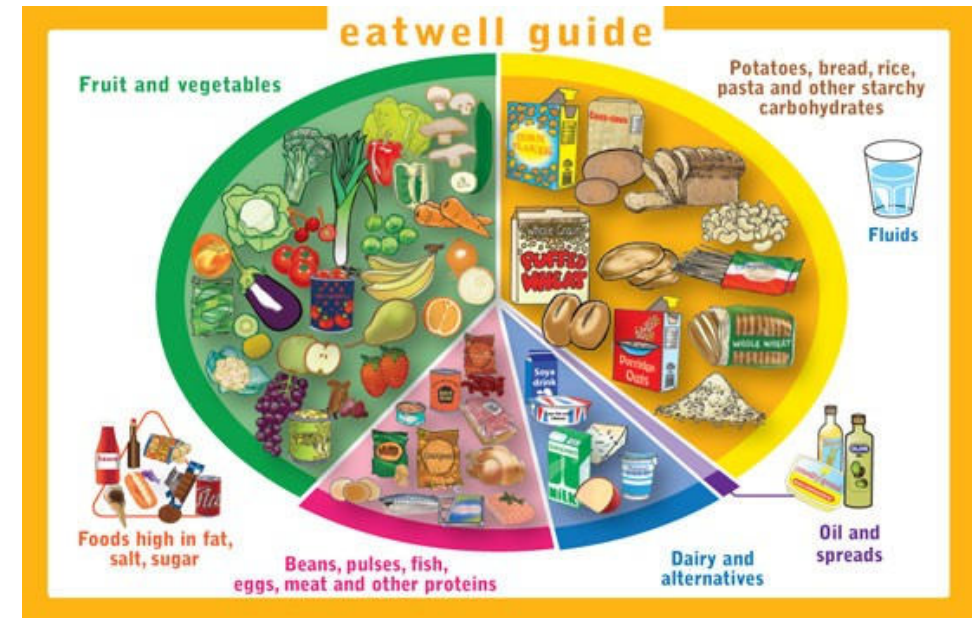
Base meals on starchy foods

Eat more fish

Drink more water

Do more exercise

Eat more fruit and vegetable



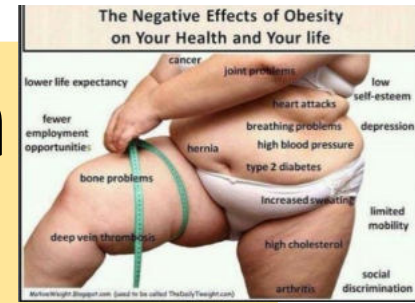
Section one – Food, Nutrition and Health

Nutritional Needs

- Three main age groups of people and the different nutritional needs they have
- **Young Children** (2-5 yrs) small, frequent meals, plenty of milk, variety of foods, different food groups
- **Children** (5-12 yrs) growing quickly, active, more energy, fewer foods high in sugar, healthy eating habits to be adopted
- **Teenagers** balanced diet, growth spurts, hormones change, stress, poor eating habits, anorexia, overeating or obesity
- **Adults** healthy lifestyle, iron needed for women, calcium and vit D for bones, possible pregnancy in women
- **Elderly** less energy needed, cut down on sat fats, similar dietary intake to young adults, vitamin supplements, risk of osteoporosis

Section one – Food, Nutrition and Health

Diet-related health problems



- **Obesity** affects 1 in 4 adults, BMI between 30 and 35 caused by too much energy and a sedentary lifestyle. Can lead to many health problems including cancer.
- **Coronary Heart Disease** caused by clogged arteries filled with fatty deposits. Too many fatty foods, lack of exercise, smoking and high blood pressure. Can lead to blood clots and heart attack.
- **Anaemia** from a lack of iron leading to a reduction in red blood cells caused by not eating enough red meat or leafy green veg. lost during menstruation and pregnancy. Can cause tiredness, headaches, pale complexion.
- **Diabetes** glucose levels are too high caused by being overweight or having too much sugar in your diet. Can lead to poor eyesight and loss of limbs
- **Skeleton (rickets, osteoporosis, tooth decay)**

Section one – Food, Nutrition and Health

Energy Needs

- **BMR** basal metabolic rate (smallest amount of energy needed to stay alive – breathing and heart beating) 75% of our energy intake is needed for this
- **Factors** affecting your BMR (age, gender, weight, amount of exercise done)
- **PAL** physical activity level (if you do more then your PAL will be higher)
- **PAL + BMR = your daily energy requirement kcal**
- More energy than needed = weight gain
- Less = weight loss
- 50% should come from carbohydrates
- 35% from fat
- 15% from protein



$$\text{Your daily Calorie Intake} = \text{Your BMR} \times \text{Your PAL value}$$

Section one – Food, Nutrition and Health

Nutritional Analysis

- The working out of the nutritional content of foods
- Energy expresses in kj (kilojoules) or kcal (kilocalories)
- In the exam you may be asked to modify a recipe to reduce the fat, sugar or salt
- Consider alternatives or foods that have more fibre or are more healthy
- Key changes for a healthier recipe
 - Less fat, sugar and salt
 - More fibre



The screenshot shows the 'explore FOOD' website interface. At the top, there are buttons for 'Home', 'Diet', 'Price', and 'Menu'. Below the header, the name 'Emily' is displayed. The main content is a table with columns for 'Unit', 'Breakfast', 'Lunch', 'Evening Meal', 'Snacks & Drinks', and 'Total'. The table lists various nutrients and their values across these categories.

	Unit	Breakfast	Lunch	Evening Meal	Snacks & Drinks	Total
Energy	kJ	1017.46	2055	1641	1310.03	6790
Energy	kcal	241	492	400.50	318.40	1688.39
Fat	g	6.36	23.16	35.15	11.12	65.79
Saturated	g	3.02	8.84	4.30	8.37	22.33
Monounsaturated	g	1.90	9.68	9.05	3.75	25.48
Polysaturated	g	1.12	1.55	1.35	0.39	10.38
Carbohydrate	g	34.20	23.40	5.13	52.74	189
Sugar	g	23.96	8.10	2.25	21.08	55.39
Protein	g	5.24	22	59.40	1.80	96.12

Below the table, there are three colored bars representing 'Energy & macronutrients' (orange), 'Vitamins' (purple), and 'Minerals' (green). At the bottom, there are buttons for 'Print' and 'Compare with DRI', and a copyright notice '© 2014 Health Food Store Ltd'.

Section one – Food, Nutrition and Health

Planning meals for different groups

- Factors to consider (cost, portion size, dietary requirements, age)
- Costing of recipes (taste test to approve cheaper alternatives)
- Portion size (scoops, cutters/dividers, size of palm, size of fist...)
- Meal planning to include dietary requirements for that age group
- Plan for variety and interest for each course
- **Lactose intolerance** avoid milk based products
- **Nut allergy** cross-contamination, traces of nuts, remove
- **Coeliac Disease** avoid gluten, wheat, barley, rye, check labels
- **Vegetarians** personal or religious reasons, also vegans, pescatarians, lacto-ovo, lacto (see alternatives to meat)

Section two – Food Science

Why is food cooked

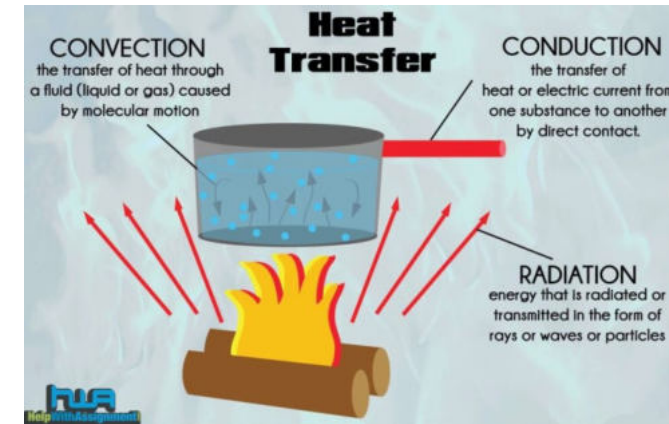
- To change the appearance, texture, flavour, smell and nutritive value
- To make it safe to eat - meat, poultry, eggs, kidney beans
- To improve shelf life – make it last longer (preserving, pasteurising)
- To develop flavours (caramelisation, roasting)
- To improve texture – vegetables, meat coagulation of eggs, tenderising meat
- Variety – alternative ways to cook meat



Section two – Food Science

Heat Transfer

- Three different ways (moving heat from one place to another)
 1. Conduction (pan on a hob) vibration of particles which bump into each other and pass energy on. Heat transfers from hob to pan to food. Need a metal pan to conduct heat
 2. Convection (sauce cooking in a pan or circulation of heat in an oven) gases in air or liquid. Warm air or liquid rises. Circulation of heat rising and falling.
 3. Radiation (a grill or toaster, waves are absorbed by the food) waves of radiation, no direct contact to the heat source. Microwaves heat up fat, sugar or water molecules in food.



Section two – Food Science

Cooking Methods – water based

- Boiling – boiling food in liquid, meat, veg, rice, pasta. Harsh method which can make food too soft, no fat is added, some vitamins are lost
- Steaming – fish, rice, vegetables, healthier method, gentle method
- Blanching – part cooking in boiling water then cooled quickly in iced water to prevent further cooking
- Poaching – in milk or water (eggs, fish)
- Braising – casserole in a stock or gravy, good for tough joints of meat



Section two – Food Science

Cooking Methods – fat based

- Stir-frying – using a wok, small amount of water, foods are cooked quickly, a healthy option
- Shallow frying – uses more fat for eggs, meat, fish and gives a crispy texture



Section two – Food Science

Cooking Methods – dry methods

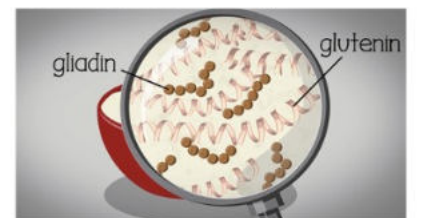
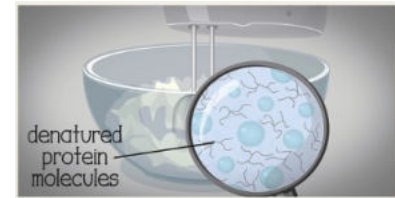
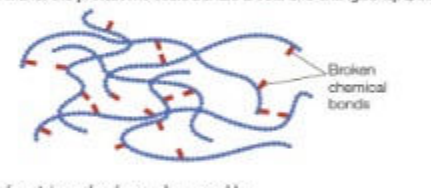
- Baking – in an oven with various advantages and disadvantages
- Grilling – higher temperature, fat can drip away, bbq, tasty method, can burn or be raw inside.
- Roasting – fat is added to add moisture, meat, potatoes. Takes a long time and lots of energy.
- Dry frying – minced meat or spices (healthier as no extra fat is added). Takes longer and a lower heat is needed to prevent burning.



Section two – Food Science

Changing Properties – Protein

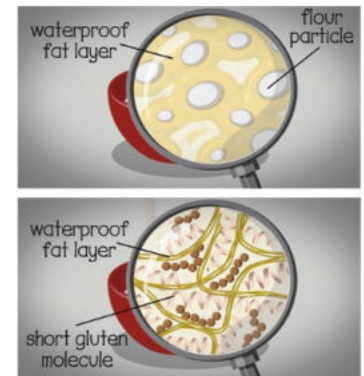
- **Denature** during cooking (chemical bonds break down)
 - Physical (whisking, beating, kneading bread)
 - Temperature (cooking eggs)
 - Acid (marinating meat to soften it)
- Then they **coagulate** (cooking eggs until solid)
- **Foams** (trapping of air such as a mousse or cream) overbeating can cause the foam to collapse. Egg white foams become solid when cooked – meringue
- **Gluten** (protein found in wheat flour, gives elasticity) gluten is formed from 2 proteins glutenin and gliadin when water is added



Section two – Food Science

Changing Properties – Fats & Oils

- **Aeration** incorporating air, when beaten with sugar in a cake (creaming) or eggs can be aerated by whisking
- **Shortening** to give foods a crumbly texture – rubbing fat into flour for scones, pastry, biscuits (coating of flour to protect it from water to prevent gluten stretching)
- **Plasticity** of fats to be able to spread or shape them. Fats melt at different temperatures. More plasticity the easier it is to spread.
- Emulsification keeps oil and water stable such as milk, mayo and marg. Hydrophilic and hydrophobic molecules bond together when an emulsifier is added. Egg yolk can be used as an emulsifier.



Section two – Food Science

Raising Agents

- Some produce carbon dioxide (chemical or biological)
- Some add steam or air (steam or mechanical)
- **Chemical** – bicarbonate of soda or baking powder which produce carbon dioxide bubbles to expand a mixture
- **Biological** – yeast in bread which causes fermentation releasing alcohol (which evaporates) and carbon dioxide
- Puff pastry or choux pastry contain water which leaves as **steam** during cooking helping the pastry to rise. As the steam rises it raises the mixture up
- Air can be **mechanically** added. Folding in mixtures, whisking or beating, creaming and sieving.

Section three – food safety

food spoilage

- Micro-organisms (bacteria, yeast, moulds)
- Most are harmless. Pathogenic ones are not
- They need five conditions to grow and multiply, change one to slow the growth of bacteria
- High risk foods – ideal conditions for bacteria (moist and protein, ready-to-eat foods)
- Raw meat is not a high risk food (because you cook it to kill the bacteria)
- Enzymes – speed up chemical reactions (causing fruit to ripen), can be slowed down using acid to prevent enzymic browning
- Moulds and yeasts spoil fruit, bread, cheese and can produce



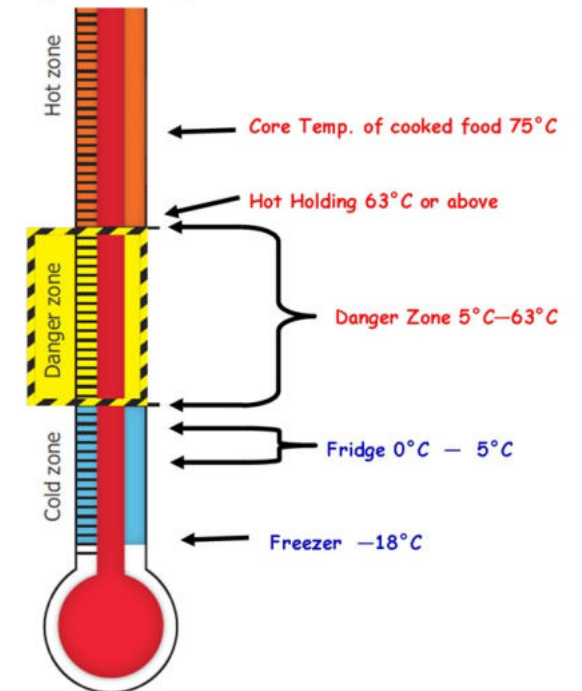
Section three – food safety

Storing Food Safely

- Reheating food only once to 75°C
 - Cooking food 75°C
 - Use a temperature/food probe
-
- The Danger Zone 5°C – 63°C where bacteria multiply rapidly
 - Hot food holding at 63°C above
 - Body temperature 37°C perfect for bacteria
 - Chilling 0°C – 5°C slows down growth and keeps food fresher for longer
 - Freezing -18°C stops bacterial growth
 - Store food covered, labelled, within date, on the correct shelf.



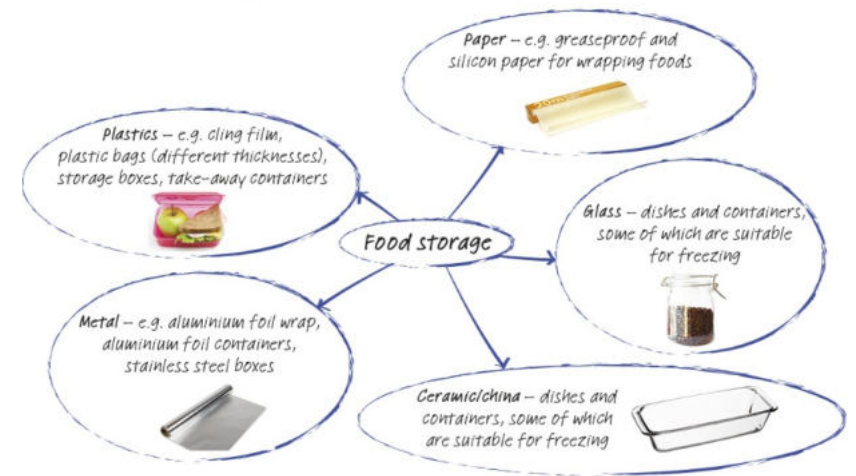
Key Temperatures



Section three – food safety

Storing Food Safely

- Ambient foods – can be kept at room temperature (pasta, cereal, tinned foods)
- Food preservation (freeze drying coffee, canning, vacuum packed, chemicals such as vinegar for pickles)
- Check use-by dates and best-before dates.



Section three – food safety

Preparing food safely

- Avoiding cross-contamination (preventing bacteria from raw food passing to work surfaces, equipment or hands). It can be done via pests, people, utensils, equipment, dirty surfaces, other contaminated food
- Safety and hygiene rules to be followed
- Preparing (personal hygiene rules, separating raw and cooked foods, washing vegetables, using clean equipment, defrosting food carefully)
- Cooking (at the right temperatures, testing the temperature of foods)
- Serving (food hot straight away, cooling food within 90mins to store, keeping food covered)
- **3 C's – keep food COLD, CLEAN & COVERED**

Section three – food safety

Food Poisoning

- Symptoms – similar for most food poisoning bacteria are sickness, diarrhoea, cramps, fever
- Types
 - **Campylobacter** – most common, in raw poultry or meat can happen 2-5 days after eating (onset period)
 - **E.Coli 0157** – live in the intestines of animals, can cause kidney damage/death, raw beef, unwashed veg/salad, found in untreated milk/water, onset 1-3 days
 - **Staphylococcus Aureus** – the face/hair/nose/ears. 1-6 hours. Us...us people
 - **Salmonella** – raw poultry, untreated milk, eggs. 6-72hrs.
 - **Listeria** – soft cheese, pate, shellfish, grow in fridge temps, pregnant women to avoid. Up to 70 days.
- Controls – all milk sold in supermarkets is pasteurised. Hens are vaccinated against salmonella.

Section three – food safety

Uses of Microorganisms

- **Moulds** are added to blue cheese – these are safe moulds, adds a creamy, tangy taste, gorgonzola, stilton
- **Yeasts** are used to make bread rise
- **Bacteria** are used in yoghurt production – non-pathogenic bacteria.

Turn milk into yoghurt or cheese. Non-pathogenic bacteria are added to milk to ferment lactose to produce lactic acid. The lactic acid thickens the milk proteins and adds a sour/tangy taste.

- Probiotics (live bacteria) are added to some yoghurts to add health benefits.

Section Four – Food Choice Influences on Food Choice

- **Reasons** why we choose the food we buy, eat, cook
- **PAL** – foods to boost muscle development, may be able to have more/less
- **Healthy Eating** – avoiding foods high in fat, sugar, salt... allergies/intolerance
- **Cost of Food** – cheaper options, better quality, special offers, make your own
- **Income** – shop in more expensive places, cheaper/processed foods, lower income = poorer diet
- **Culinary skills** – confidence and skills to cook proper meals, wasting money when a ready-made alternative is available
- **Lifestyle** – stress, boredom, comfort food, busy, bad habits, skipping breakfast, eating patterns
- **Seasonality** – environmental impact of food miles, buying local to avoid imports.
- **Availability** – rural areas limited to local shops, online shopping, delivery of food, accessibility
- **Special Occasions** – larger meals, celebrations, feasts, more likely to eat unhealthy foods
- **Enjoyment** – choose foods you enjoy which is often unhealthy, sweet and fatty over bitter

Section Four – Food Choice

Cultural, religious and moral food choices

- Different **customs** around what they do/don't eat
- **Christianity** – no strict rules, lent (giving up foods), hot cross buns, pancakes..
- **Islam** – **halal**, cannot eat/consume pork or alcohol, fast during Ramadan
- **Hinduism** – many are vegetarian, avoid garlic, mushrooms, onions, do not eat beef (cow is a sacred animal)
- **Judaism** – **kosher**, no shellfish, no pig, rabbit, hare or camel. Dairy and meat must not be eaten together (lasagne)
- **Sikhism** – cannot eat **kosher or halal** meat, many are vegetarians, avoid overindulging
- **Buddhism** – many are vegetarian, avoid alcohol, some fast from noon until sunrise
- **Rastafarian** – do not eat pork, clean and natural diet, avoid processed food, do not drink alcohol

Kosher and Halal refer to the way the animal has been killed.

Section Four – Food Choice

Cultural, religious and moral food choices

- Moral and ethical (what we think is right or wrong)
- Animal welfare – people choose higher welfare meats or eggs (free-range) and may avoid meats altogether
- Working conditions – Fairtrade products ensure farmers get a fair price for their produce
- Environmental impact – buying local or British to support the local economy and reduce food miles. Fish caught using sustainable fishing methods
- Eating naturally – organic foods, natural fertilisers and pesticides, avoid GM foods



Section Four – Food Choice Food Labelling

- Help us to make informed choices
- EU countries must follow the rules in the Food Information for Consumers regulations 2014.
- Labels must not be misleading, must be clear, allergies and ingredients highlighted
- From 2016 nutritional info must be included
- **Information included** – storage, name, name and address of manufacturer, weight, volume, quantity, genetically modification, use by/best-before, country, cooking instructions, list of ingredients, additives, common allergens.
- Traffic light labelling
- Suitability for vegans, muslims, coeliac...



Nutrition Facts	
2 servings per container	
Serving size 1 1/2 cup (208g)	
Amount per serving	
Calories	240
% Daily Value*	
Total Fat 4g	5%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 430mg	19%
Total Carbohydrate 46g	17%
Dietary Fiber 7g	25%
Total Sugars 4g	
Includes 2g Added Sugars	4%
Protein 11g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 6mg	35%
Potassium 240mg	6%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Section Four – Food Choice Influences of Marketing

Adverts (tv, social media, billboards, magazines, posters)

- Tricks include:
 - Special offers (feels like a bargain)
 - Loyalty card schemes (points for shopping or stamps)
 - Point of sale marketing (sweets near the till)
 - Celebrity endorsements (chefs, cartoons, tv brands, films)
 - Sponsorship (energy drink for an F1 driver)
 - Health claims (high in vitamin C or 1 of your 5 a day)
 - Low sugar, fat...
 - Gluten-free
 - Higher price for fairtrade
 - Organic or using biodegradable materials
 - Labels such as natural/fresh



Section Five – Food Provenance

Grown Food

Food is either grown, reared or caught

- **Grown food** – fruits, vegetables, cereals (intensive farming or organic farming)
- **Intensive farming** – uses chemicals to produce the highest amounts of crops, large-scale, uses large mechanical equipment, uses artificial fertilisers to supply nutrients, pesticides are used to protect crops, can be harmful to wildlife, rivers and human health
- **Organic farming** – crops grown without artificial fertilisers and pesticides. Use organic matter, manure and compost. Use natural predators or spray with hot water. Advantages and disadvantages of these.



A crop of lettuces being grown hydroponically



Intensively farmed chickens (called broiler chickens) – produced for meat

Section Five – Food Provenance

Grown Food GM Crops

Genes have been altered to give it useful characteristics

- Improving the food's growth or
- Changing its colour
- A desirable gene from another plant, animal or crop is added
- Examples: maize that is pest-resistant, weed killer resistant crops
- Doesn't happen in the UK
- USA grow GM maize, cotton and soya beans
- There are many **advantages**: quicker growing crops, higher yields, cheaper food, longer shelf life, foods ripen quicker, have extra nutrients added
- There are **disadvantages**: long term health effects aren't known, EU restricts the import of GM foods
- Some consumers believe it isn't natural, foods must be clearly labelled



Section Five – Food Provenance

Reared Food

Animals raised by humans for their meat/products

- Factory-farmed – little room, caged, intensive farming, maximum food production, growth hormones often given or force-fed food to speed up growth, cheap and efficient but unethical, can't behave naturally, standards could be better
- Free-range (higher welfare) – more space, free to roam, nicer lives, higher standard of welfare, take longer to grow, more expensive meat/eggs
- RSPCA assured logo added to show that the standards are better
- Red tractor logo shows that the meat meets higher standards



Section Five – Food Provenance

Caught Food - Fish

Trawling and fish farming are the two main methods

- **Trawling** – dragging a net through the open sea or the surface, using fishing boats
- **Farming** – fish are raised in tanks or enclosures in rivers/lakes, salmon, carp and trout, overcrowding and possibility of diseases
- Fish are then washed, gutted, on the boats, chilled to prevent spoilage then taken to the shop/supermarket
- **Sustainable fishing**: doesn't damage the environment or use up finite resources (long line, quotas – limited amount to be caught, net hole size)

Environmental concerns with fishing with regards to destruction of the sea-bed, catching unwanted animals in nets, over-fishing leading to risk of extinction



A fish farm in Thailand showing lots of fish in the tanks

Section Five – Food Provenance

Waste Food

Too much packaging is thrown from households, retailers and food producers – lots of publicity about this at the moment

- Foods are often thrown out when they are still good to eat
- There are many other reasons why food is thrown away (burnt, not stored correctly, gone off, past use-by-date, too much food prepared, prepared incorrectly)
- **Shops** often reject food that doesn't meet certain standards, unsold stock gets binned, offer encourage you to buy more which then doesn't get used
- **Reduce:** plan meals, portion sizes, correct storage, look at use-by-dates, use up contents of fridge, use leftovers, use peelings and bones for stock, donate to food banks



Section Five – Food Provenance Packaging

Uses: protects food from damage during transport, display and storage (cereal box/can for beans), shows information, preserves food and prevents contamination from bacteria or pests

Materials: glass, plastic, metal, paper each with a purpose and benefit

Bad for the environment: the making of it uses lots of energy, take up space in land fill sites, take a long time to biodegrade, and due to the weight of the product, litter is hazardous to animals

Reduce: recycle, buy products without packaging, choose products with biodegradable packaging, use fabric shopping bags

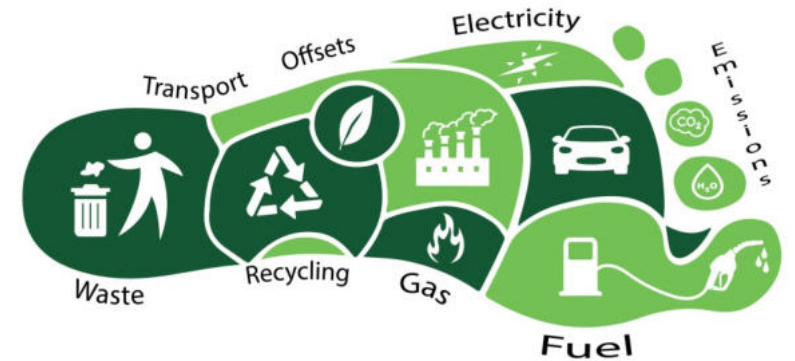


Packaging and its impact on the environment is a hot topic and there are many solutions to the problem already

Section Five – Food Provenance

Food Miles and Carbon Footprint

- Food travels thousands of miles to get to the supermarket
- Food comes from producers all over the world
- This is bad for the environment burning excess fuels contributing to global warming
- We selfishly expect food to be available all year round and some food cannot grow here at all (bananas)
- Imported foods can often be cheaper
- **Buy local foods:** fewer food miles, fresher, tastier, supports local businesses, may not be available if out of season, smaller selection, unpackaged/preserved, use up quickly, less packaging



Carbon Footprint

Measures the impact your lifestyle has on the environment. The amount of greenhouse gasses you produce from heat, electricity, transport per year. Foods have a carbon footprint when growing, processing, packaging and transporting foods.

Section Five – Food Provenance

Global Food Production

- Climate change is having an effect on the food available.
- Food production contributes to global warming
- Rising temperatures cause extreme weather
- Changes in temperature are affecting crops and food that we rely on
- Crops will have lower yields, pests can invade new regions that were too cold for them
- Extreme weather can cause **droughts** (failing crops, dried up lakes, wildfires destroying animals and crops) or **flooding** (damage to crops, soil washed away, sewage polluting fields, animals may drown)
- Food shortages are common (lack of food leads to malnutrition)
Ethiopia – droughts or Bangladesh – floods
- Climate, weather, land space, wealth, rising population all affect **food security**



Food Security

A person, community or country have enough food to eat and can produce enough food.

Eating less meat and eating the crops fed to animals. Reducing food waste. Using new technologies GM foods. Sustainable techniques.

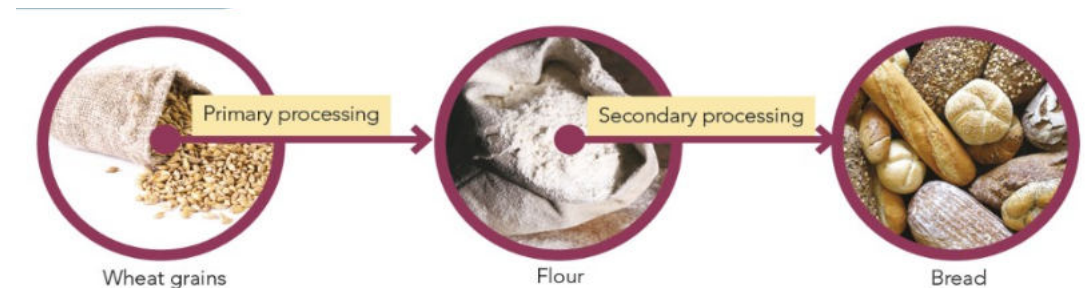
Solutions?

Section Five – Food Provenance

Primary Food Processing

p64

- Prepares raw food so they are ready to eat cooked or uses ingredients to make other food products
- **Fruits:** stones may be removed, fruits squeezed or dried
- **Vegetables:** washed, sorted and maybe peeled
- **Poultry:** feathers and internal organs removed, wings and legs tied
- **Meat:** hung and dried to tenderise, chopped, sliced or cut
- **Wheat:** milled to make flour
- **Milk:** heated to kill bacteria (pasteurisation) UHT, Sterilisation or microfiltration



Section Five – Food Provenance

Secondary Food Processing

- Uses primary processed foods
- Food is altered somehow or combined with other ingredients
- Flour turned into pasta or bread
- Fruit turned into jam to preserve the fruit
- Milk turned into cheese or yoghurt



A hand-operated
pasta machine



Industrial sized ravioli
pasta making machine



Die for making
pasta shapes

Section Five – Food Provenance

Food fortification and modification

- Foods can be modified by manufacturers to give health benefits
- **Fortification:** adding nutrients lost during processing or to add extra nutrients to make it healthier
- Iron, B1, B3 and calcium are added to **white flour** as these are lost during processing
- Iron, B1 and folic acid are added to breakfast **cereals**
- Vitamins A & D are added to **spreads and margarine**, these vitamins are naturally present in butter
- Plant sterols are added to some **vegetable spreads** which help to lower cholesterol.
- Vitamin supplements are useful if you don't get enough vitamins from your normal diet. They should never replace healthy food. Elderly adults and pregnant women benefit especially from them



Section Five – Food Provenance

Additives

- Change the properties of foods
- Some are natural and some are artificial
- **Preservatives:** prevent bacterial growth, make food last longer. Natural (vinegar, lemon, salt, sugar). Artificial (nitrates, sulphites)
- **Colourings:** make food more attractive, return food to it's natural colour after processing or enhance the colour. Caramel used in cola, tartrazine (artificial) used to add yellow colour to custard, syrups, sweets
- **Flavourings:** improve the taste. Herbs, spices (natural). Aspartame used for sugar (artificial). MSG (monosodium glutamate) used in savoury foods (artificial).
- **Emulsifiers and stabilisers:** preserve the shape and texture. Help mix together ingredients. Stabilisers prevent ingredients separating. Lecithin (natural) found in egg yolks. Pectin found in berries

Disadvantages

Sulphites used in bacon/salami can cause allergic reactions. Sugar and salt are bad if too much is eaten. Additives can disguise poor quality ingredients. There may be some long term health effects. Some colourings may cause hyperactivity in children.



What NOT to say.....

~~Germs~~
Say
BACTERIA

Wash
Say **CLEAN**

~~healthy~~
say
LOW FAT
LOW SUGAR
LOW SALT
HIGH FIBRE

~~No slang eg kids,
veg, carbs~~

~~Not fresh/gone off~~
Say
STALE
UNSAFE
SHORT SHELF LIFE
SPOILS

~~Meat/cook/texture etc~~
Use the exact terms eg
BAKE/FRY/GRILL/
CHICKEN/LAMB/BEEF
SMOOTH/CRUNCHY/SOFT
TEXTURE