2012 GCSE Food Technology Revision

Context: biscuit products, savoury and sweet

https://sites.google.com/site/foodrevision/

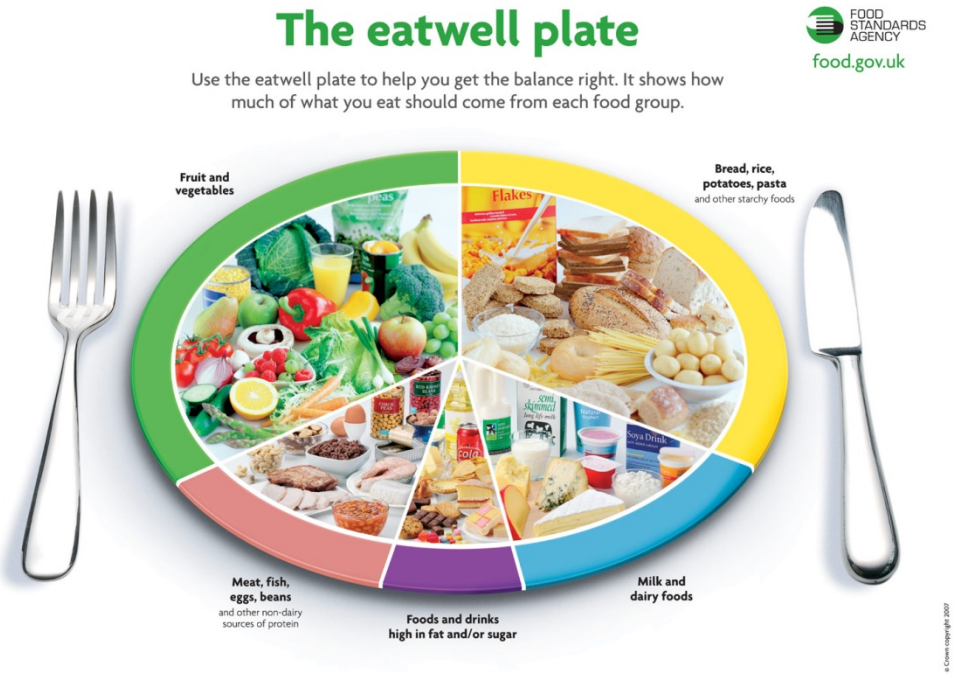
Name the following temperatures

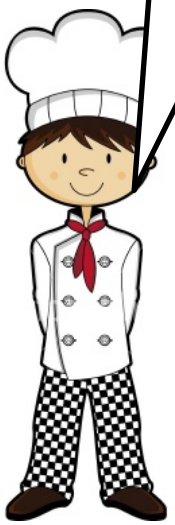
- Fridge
- Freezer
- Danger zone
- Boiling
- Safe reheating/cooking temperature

Name the following temperatures

- Fridge 5c
- Freezer -18c
- Danger zone 5-63c
- Boiling water 100c
- Safe reheating/cooking temperature 72c for 2 mins or 75c at core

You must have a good knowledge of the eat well plate. It is very useful to help with nutrients





Brushing your teeth is boring! Create nutrient cards and put them around your bathroom mirror to help you revise while brushing your teeth to keep your amused!

Nutrient:

Source:

Function:

•Carbohydrate for energy

•Fat for energy, warmth, protection

•Vitamin A for healthy eyesight, mucus membranes, healthy skin
issue, night vision

•Vitamin B for release energy, formation of red blood cells

•Vitamin C for general good health, iron absorption, healthy skin,
gums, builds immune system and fights infection

•Vitamin D for calcium absorption and growth and maintenance of
strong bones

•Iron for healthy blood and transfer of oxygen around body

•Calcium for healthy bones and teeth, healthy muscles and nerves

The Eatwell Plate

The British Nutrition Foundation has produced six free podcasts on the Eatwell Plate. Download the podcast through:

YouTube: http://www.youtube.com/britishnutrition

Yahoo!: http://uk.video.yahoo.com/video/play?vid=1957063&fr=yfp-t-501

VideoJug: http://www.videojug.com/film/the-eatwell-plate

iTunes: https://fflvideo.solidcasts.com/images/iTunes_btn.png

The Eatwell Plate

The Eatwell Plate is based on the Government's Eight Tips for Eating Well:

1. Base your meals on starchy foods
2. Eat lots of fruit and veg
3. Eat more fish
4. Cut down on saturated fat and sugar
5. Try to eat less salt – no more than 6g a day
6. Get active and try to be a healthy weight
7. Drink plenty of water
8. Don't skip breakfast

Design and Make Task

You have 10 minutes in pairs to design two dishes that fit the following brief:

- A biscuit product
- A filling or enrobed
- Decorative finish
- Appeals to people with special diets

Mark out of 5

Mark out of 5

How to make Biscuits

CREAMING METHOD – PRACTICAL 1

Cookies

75g Margarine

75g Brown sugar

1 Egg

Vanilla essence

150g Self-raising flour

100g Chocolate chips

Method

Cream the margarine and sugar until light and fluffy and add the egg and vanilla essence slowly.

Beat well.

Gradually mix in the flour and add chocolate chips.

Place teaspoonsfuls of the mixture onto a greased baking tray.

Bake at 170°C, Gas 3-4, for 10-15 mins.

MELTING METHOD - PRACTICAL 2

Flapjacks

200g Rolled oats

150g Margarine

100g Brown sugar

2tbsp Golden syrup

Vanilla essence

Method

Melt the syrup, fat and sugar over a low heat. Do not boil.

Remove from the heat and stir in the oats, making sure they are well coated.

Press into a greased baking tin and level out. Bake at 180°C for 15-20 mins until golden brown.

Mark into fingers and leave for 5 mins, before removing from the tin.

RUBBING IN METHOD – PRACTICAL 3

Shortbread

150g Plain flour

100g Margarine

50g Caster sugar

Method

Place all ingredients into a mixing bowl and rub in with fingertips.

Squeeze into a ball and knead until smooth.

Shape into a circle or cut into rounds or fingers.

Place on a greased baking tray.

Bake in an oven at 160°C for 15-20 minutes or until golden brown.

CREAMING METHOD

Shrewsbury Biscuits

225g Plain flour
100g Margarine
100g Sugar
1 Egg
2 tsp Lemon rind

Method

Cream the fat and sugar until light and fluffy, then add the egg slowly.

Stir in the flour and other ingredients to make a stiff dough.

Knead until smooth on a floured surface.

Roll out to 6mm thick, cut out and place on a greased baking tray.

Bake at 160°C for 15-20 minutes or until golden brown.

Decoration and Fillings

Buttercream

50g butter
100g icing sugar

Beat well together

Ganache

100g double cream
100g dark chocolate

Boil the cream, place broken chocolate in a bowl, pour over hot cream, stir very well, allow to cool

Glace

200g icing sugar

Mix with a little water to achieve a smooth paste

Gingernuts - Makes 16 **RUBBING IN METHOD**

(50 g) dark chocolate
1 rounded teaspoon ground ginger
(110 g) self-raising flour
(10 g) cocoa
1 level teaspoon bicarbonate of soda
(50 g) butter, cut into cubes
(40 g) granulated sugar
(50 g) golden syrup (about 2 tablespoons)

1. Pre-heat the oven to gas mark 4, (180°C).
2. Sieve the self-raising flour, cocoa, ginger and bicarbonate of soda into a mixing bowl.
3. Rub in the butter until breadcrumbs .
4. Stir in the sugar and chopped chocolate.
5. Warm and add the golden syrup, then mix everything with a wooden spoon squeeze the mixture together with your hands.
6. Divide the mixture into 16, roll into balls.
7. Place on the baking sheet, very well spaced out as they will spread out quite a bit during cooking, flatten each one slightly.
8. Bake on the centre shelf for 15-20 minutes, or until they have spread out and turned cracked and craggy.

Icing Practice Lesson

Bring 6 plain digestive biscuits

Halve the ingredients for the decoration and fillings (buttercream/ganache/glace)

Bring writing icing, piping bags, sprinkles etc if you wish

Critical and Quality Control

List 5 quality control points for making biscuits

1.

2.

3.

4.

5.

List 5 critical control points for making biscuits

1.

2.

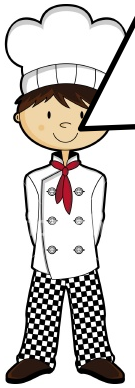
3.

4.

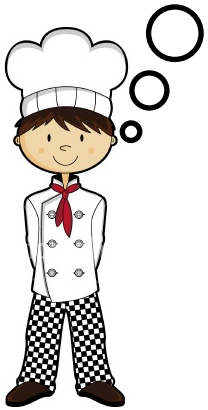
5.

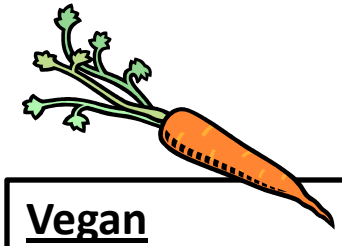
We know that the second section can be on the anything.
I have broken the next section down into sections to help you revise.

- Research Methods
- Data Analysis
- Sensory Analysis
- Healthy Eating
- Temperatures
- Developments
- Nutritional information
- Production (specifications)
- Control Checks
- Problems in production
- Standard components
- Environmental Issues
- CAM/CAD
- Additives



Think about how can I change the design to be suitable for people with special diets?



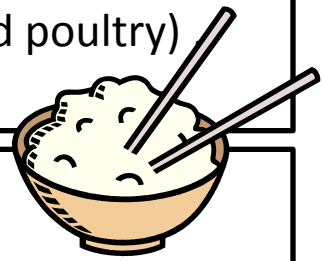


Vegan

People who eat no animal products including meat, dairy (from animals milk) eggs and fish. Many vegans avoid wearing animal products also.

Vegetarian / vegetarianism.

People who chose for a moral, religious or health reason to exclude meat from their diets. (this can include fish, shellfish, animal meats and poultry)



Lactose Intolerance

Is an allergy towards milk it can cause suffers to suffer from allergic reactions and in some cases this can cause convulsions.

Gluten

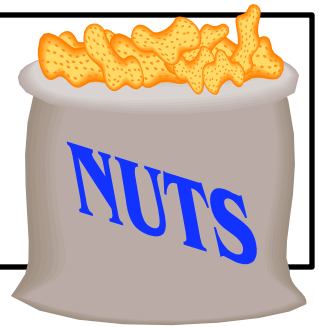
Is found in grass related grains, wheat, maize, rice ,rye and barley. People who have an allergy towards gluten should avoid these foods and or eat alternatives.

Coeliac disease

Is an intolerance to the protein gluten, which is found in wheat, barley and rye. Food such as bread, biscuits, cakes and pasta must be avoided.

Peanut allergy

This often effects small children and as a health warning children under 3 years due to the effects the allergy can cause.



Specific dietary groups

You will need to revise specific dietary groups such as:

- Diabetics
- Coeliacs (require gluten free diet)
- Low fat / Low salt – to reduce the risk of coronary heart disease (CHD high blood pressure / obesity
- Vegetarian - eat only dairy animal products (milk, eggs, cream etc.)
- Vegan – no animal products whatsoever
- Nut Allergy
- Lactose Intolerant (unable to have cow's milk / milk products)
- Calorie controlled
- Specific Religions e.g. Hindus eat no beef, Muslims eat no pork, Jews eat no pork or shellfish

Just Eat More
(fruit & veg)

Standard Components

- **Standard components are pre-prepared ingredients used during the manufacture of food products. They are made at a different time, and often at a different place by another company.** Common examples are:

- Pre-shaped pastry (e.g. flan case /tart case for savoury flan / tartlet / mini pasty / mini roll)
- Readymade pasta
- Ready mixes of ingredients (e.g. Cheese sauce, pasta sauce, pastry mixes, curry paste)
- Breadcrumbs – for breaded mushrooms / prawns/ chicken goujons
- Toppings
- Pre-prepared fruit & vegetables (for salads – e.g. Prawn coleslaw, pasta prawn salad, quiche fillings, sandwiches, readymade dips)
- Grated Cheese
- Batter mixes (e.g. For butterflied prawns, Yorkshire puddings)
- Readymade sponge flan cases / icings/ cake decorations e.g. Chocolate curls

Advantages of standard components:

Using **standard components** helps ensure a **consistent** final product because they are of a standard quality. For example:

- standard weight
- standard size (e.g. Tart case, pizza finger, bread roll)
- standard shape (e.g. pastry case) standard intensity of flavour (e.g. stock cube)
- and accurate in **ratio** (proportions) of ingredients (e.g. sauce mix / pastry/ sponge mix)
- Standard components are often used to save time and money. They also help **quality control** by guaranteeing a **consistent** and **reliable quality.** A specialist supplier can often make them cheaply because they can be manufactured in very large numbers on a dedicated production line.

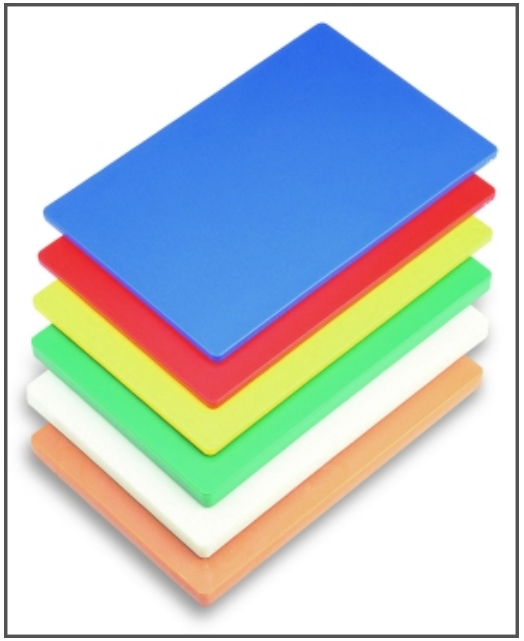
Advantages & Disadvantages of Standard Components

- Exam Question:
- Why might manufacturers choose to use standard components?

Hazards in food preparation

What are Hazards?

- **Hazards** are anything that can cause harm to the consumer. They can occur at any stage in the food production chain from the field to factory to shop to table.
- **Biological:**
- e.g. **salmonella** in raw chicken , seafood or eggs, **Campylobacter** (gastroenteritis) found in seafood, meat, poultry & milk; **Listeria** in soft cheeses and pates, **E-coli** in cooked meats, **Clostridium botulium** found in canned fish, meat & vegetables.
- **Chemical:**
- e.g. cleaning chemicals, agricultural chemical, paint, oil
- **Physical: e.g.**
- Glass from bottles, jars, light fixtures
- Metal from machinery, equipment, packaging, jewellery
- Wood from pallets, boxes
- Insects from plants, open windows
- Personal items e.g. jewellery, hair, fingernails, cigarettes
- Packaging faults e.g. bags not sealed



What is 'Food contamination'? Food contamination means:

• That food has micro-organisms/bacteria in it

• Food may cause food poisoning / unsafe food

• Food becomes harmful because of physical/chemical/biological contaminants

• You can also refer to 'high risk foods' and 'cross contamination'.

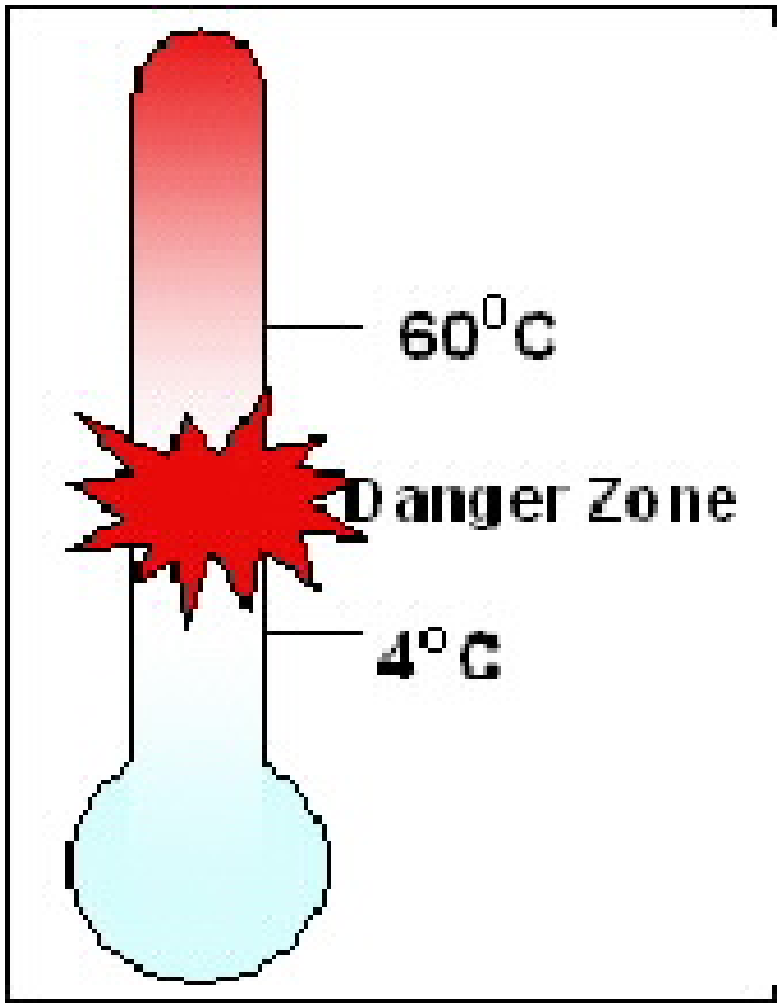
You will need to explain how food contamination can be prevented . Include checks on:

Staff (clean uniform / healthy / no visible cuts / boils etc**.), sanitising & cleaning equipment / surfaces; checking equipment is safe and in good condition, use of colour coded chopping boards, checking storage temperatures, rotation of stock (FIFO), using reputable suppliers & quality ingredients etc.**

Exam Question

Problem	QC/CCP Issue	What went wrong?	Solution
A hair has been found in a biscuit			
Pieces of metal were found in a cake			
A pasta dish contains bacteria			
A white sauce is too runny			
When reheated in the microwave a lasagne is still frozen in the middle			

The Danger Zone!



- Important temperature zones:
- 0 – 5°C – fridge temp.
- 5°C – 63°C – Danger Zone
- 72°C – Temp at which food must reach for at least 2 minutes to kill bacteria.
- -18°C Freezer temp (+ or – 3°C)

Remember the key temperatures

Danger Zone

Fridge

Freezer

Boiling point for sterilising equipment / utensils.

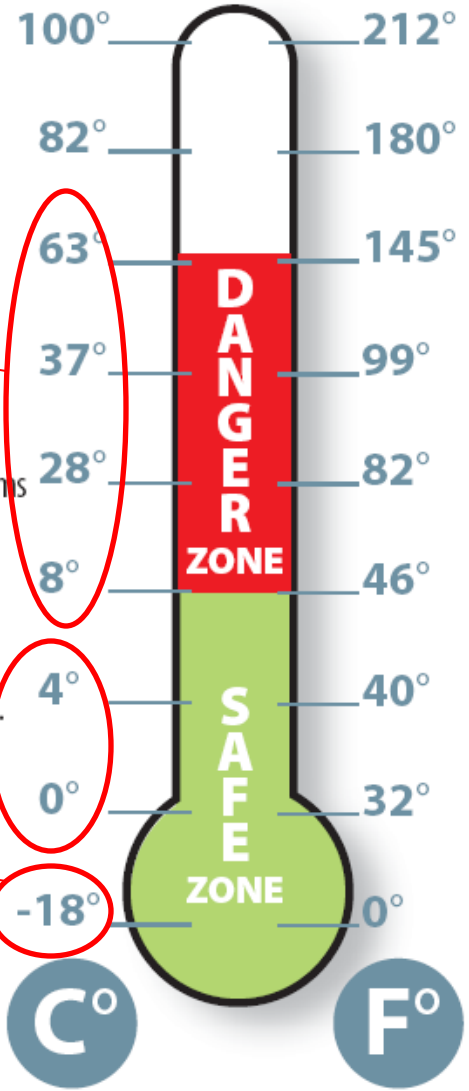
Final rinse temperature for dishwashers (82° - 88°)

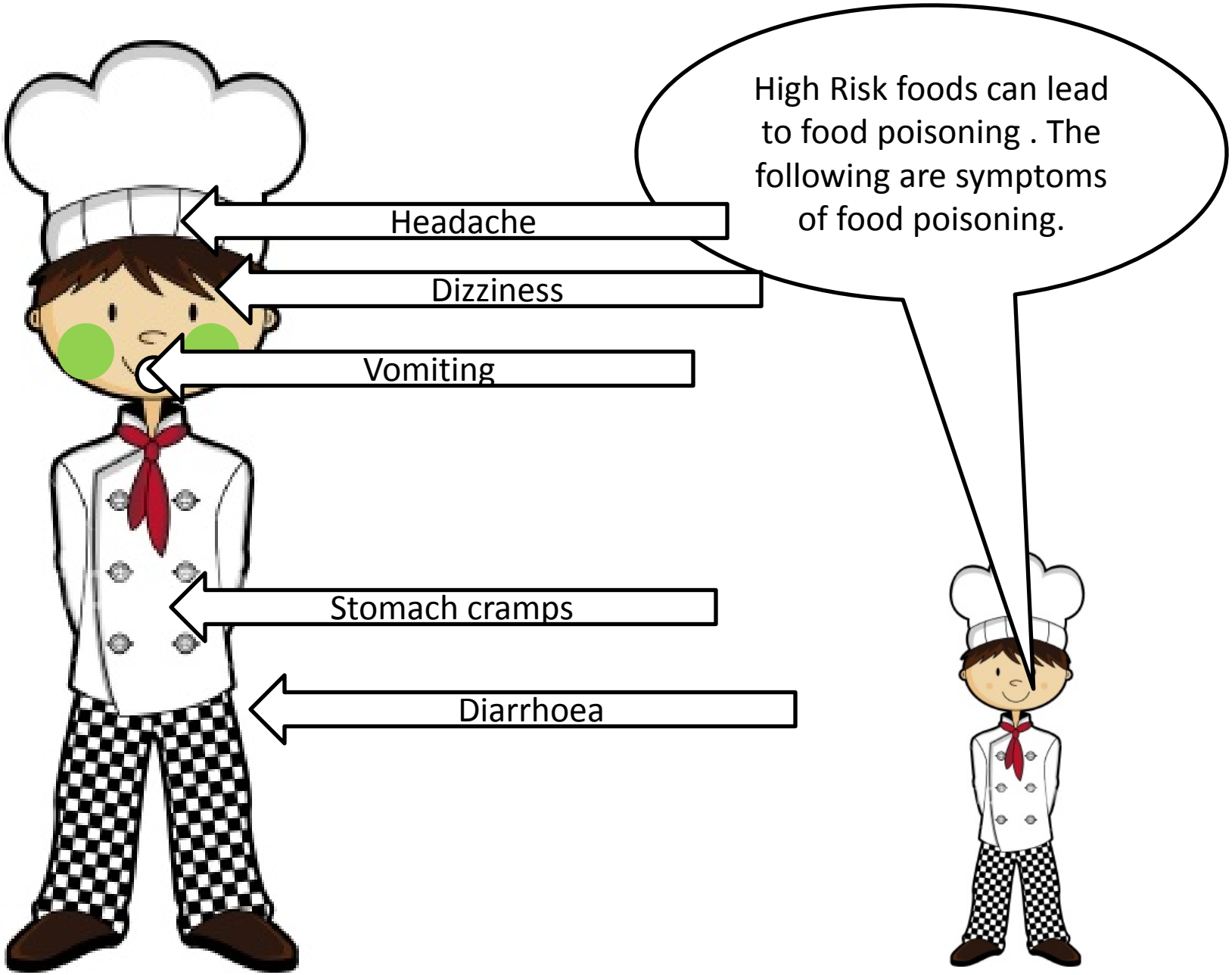
Temperature for hot holding keep food warm once cooked.

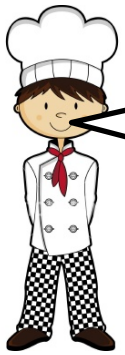
Do not leave raw or cooked items at room temperature as bacteria and micro organisms rapidly multiply.

Fridges - set air temperature at 8° or below for chilled food.

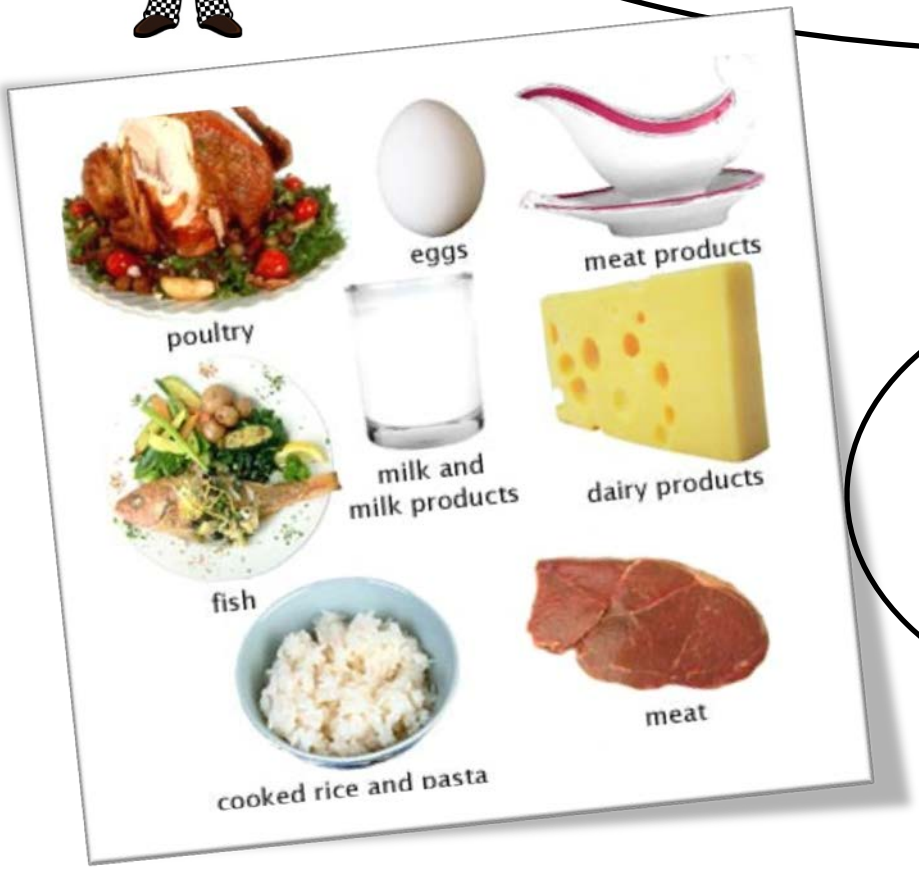
Freezer temperature or below

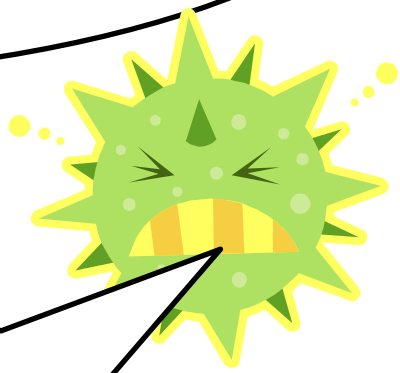



High Risk foods can lead to food poisoning . The following are symptoms of food poisoning.
Headache
Dizziness
Vomiting
Stomach cramps
Diarrhoea



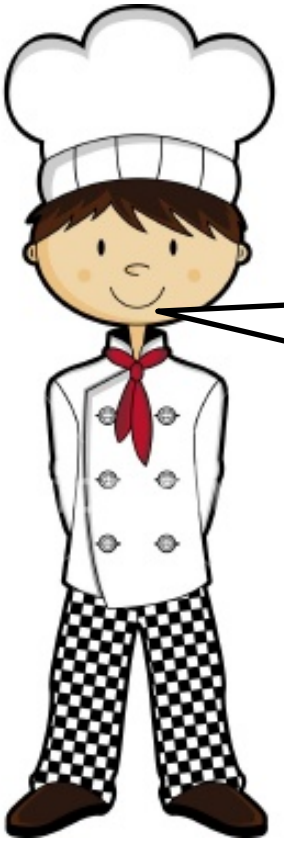
What is a high risk food?





A food which is an ideal medium for the growth of bacteria or microorganisms. We like moisture, protein and warmth to grow

What is a control Check?



You will be asked to relate to control checks in both sections of the exam. A control check is a step taken to ensure a product is consistent and of the same quality. Safety checks are also to ensure consistency

Electrical Kitchen Equipment

Health and safety rules to be followed by food workers using electrical equipment.

- Keep away from water
- Follow manufacturers instructions
- Check condition of flexes
- Check wiring on plug
- Do not use with wet hands
- Do not leave flexes across water supplies
- Check equipment has passed safety checks e.g. PAT tests
- Accept equipment specific responses, e.g. blender, mixers
- Hold securely / securely based during use.
- Keep fingers / clothing/ hair away from any moving parts
- Have training in correct use of equipment
- Equipment should be clean before/after use
- Personal safety precautions/ Wear clean, protective clothing
- Concentration during use/ do not leave unsupervised.

Hand Blender

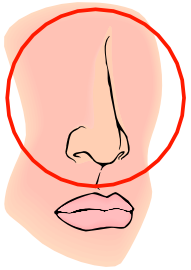
Electric Whisk

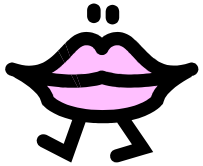
Tabletop Food Mixer

Kitchen Equipment

How do manufacturers make sure that their employees are safe when using electrical equipment? (4 marks)

Sensory Analysis – What is it?
What do I need to know?





The senses are key to a good analysis of a food product.
Sensory testing is carried out to analyse food products. You would have done sensory testing in your controlled assessment to help you evaluate your work. You must be able to explain how these tests can be carried out.

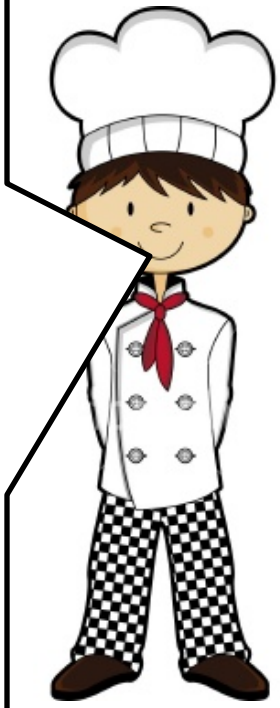
Ranking Tests

•These type of tests are used to test similar products in terms of specific flavour, e.g. sweetness

•Each sample should be coded and not put in a rank order. There should be a minimum of ten untrained tasters.

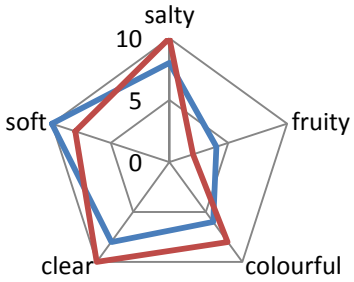
•Testers would need to put the products in order of sweetness

•Results could be recorded on a table



Profiling test

This is a star diagram – remember your coursework! It is normal to use a 6 point star diagram. This can be based on descriptive words, e.g. bland, fruity, crunchy.



Rating testing

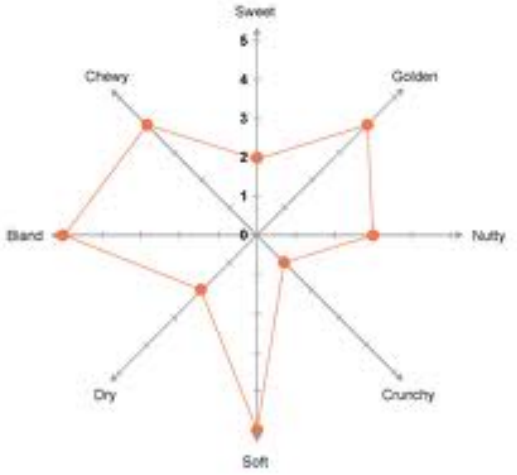
These tests are used to assess a specific flavour or texture. Must be tested by a trained tester. This could involve a seven point scale

1. Dislike extremely
2. Dislike a lot
3. Dislike a little
4. Average
5. Like a little
6. Like a lot
7. Like extremely

Sensory Testing

Food manufacturers use sensory testing when they are creating or improving food products. Testing is always carried out in controlled conditions. This refers to having all conditions the same, so it is unbiased /has no way of influencing tester / neutral conditions. Examples are:

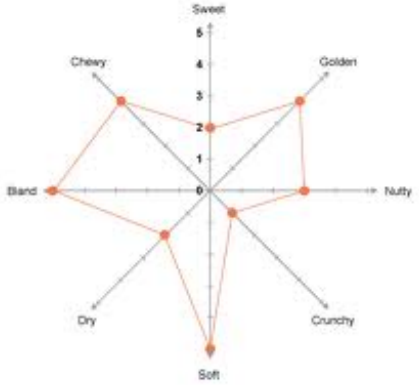
- So useful comparisons can be made between samples
- Same size samples
- Identical dishes
- Identical quantities of food
- Coded samples
- Same light conditions
- Noise free area
- Smell free area
- Individual booths for privacy
- Blind testing/blindfolded
- Clarity of instructions given to taste
- Water/cracker to refresh mouth after each tasting
- Similar charts used to record outcomes



Sensory Testing

How do food manufacturers ensure a fair test? (4 marks)

A bakewell tart test gives the following results, how would you improve this product? (4 marks)



Food Additives

Types of food additives:

- Preservatives
- Colourings e.g. tartrazine
- E numbers
- Flavourings
- Emulsifiers e.g. Lecithin (found in egg yolk)
- Natural
- Raising agents / baking powder
- Synthetic
- Stabilisers
- Anti oxidants
- Anti caking agents
- humectants
- Nutrient and flavour enhancers

Advantages and disadvantages of food additives:

Advantages

- Natural additives – no 'chemical' content
- Enable food to be preserved
- Improved colour / flavour
- Improve sensory attributes of food
- Use out of season
- Longer shelf life
- Prevent separation of e.g. dressings
- Allow colour of product to be constant, e.g. jam
- Prevents oxidation of fats in baked products

Disadvantages

- Synthetic additives are created in a laboratory
- Safety of some additives a concern
- Make some foods look unnatural and artificial
- Additives need approval from the EU, e.g. some are removed /

withdrawn

- Risk of hyper activity in children

May give examples e.g. colourings in squash

- Other health problems linked to the use of additives:

Increased asthma

Eczema

Food intolerances

- Unknown health risks of some additives

Food Additives

Manufacturers are trying to cut down on using additives in food products due to consumer pressure. Why would they need to do this? (5 marks)

Additives

Food additives can be classified as natural or artificial.

Natural additives occur naturally in foods. They are extracted and put into other foods. Caramelised sugar is used as colouring in cola.

Artificial additives do not occur naturally. They are made synthetically for a certain purposes. For example tartrazine is a synthetic colouring added to some sweets to make them yellow.

Uses for additives

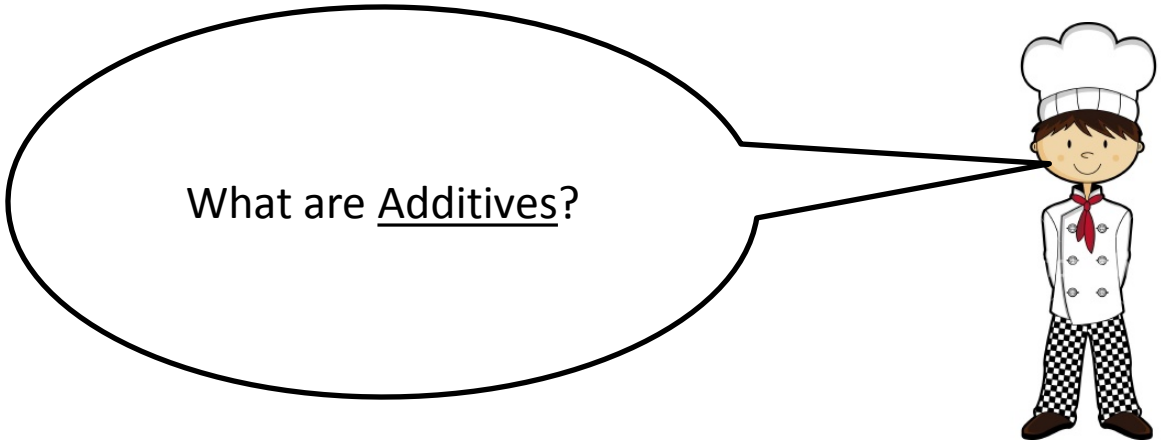
Both natural and artificial additives are used for many different reasons:

Preservatives extend the shelf life of a product. Salt is used used in bacon and sausages.

Colouring makes food products look more appealing and appetising.

Flavourings can be used to add or improve the flavour of a food product. Vanilla flavouring is often added to cakes and biscuits.

Emulsifiers are used to prevent ingredients from separating. For example, lecithin, which is found in eggs, is used to stop the ingredients in mayonnaise from separating.



Quality control checks using computers

Types of control checks:

- Timing
- Temperatures of oven
- Metal detection
- Weigh of ingredients
- Quality Control, e.g. shape, size
- Portion control
- Microbiological checks
- Other relevant checks

Why Computers are used:

- More accurate than humans in minute measurements
- Less staff needed / cost reduction in long term
- Humans may be unable to carry out the check
- Safety
- Speed / quicker / saves time/ reliability
- Ability to record results / store results
- Automatic, 24 hours a day
- Other relevant reasons

Advantages and disadvantages of using computers to carry out market research.

Advantages:

- Less human error / more reliable / quicker
- Cheaper than employing extra staff to research / in long term
- Greater accuracy and up to date information
- Wider range of information available
- More consistent
- Easier to carry out analysis of statistics / results
- Can be carried out when human not present, 24/7
- Clearly presented results e.g. graphs, charts
- Can make changes easily to update current data
- Results can be analysed quickly, e.g. on Excel
- Easier to import other programs and software.

Disadvantages:

- May be expensive to set up initially / decreasing profits
- Need to decide on validity of entries on websites or other information used otherwise results are worthless
- Need to train staff in it use or inaccuracies will result
- If information is inaccurate it can affect success of future products based on research
- Lack of human interaction may lead to incorrect results
- Lack of compatibility between software programs
- Difficulties/costly if system breaks down, need back up.

What are the advantages and disadvantages of using computers in food production? (6 marks)

Food Labelling

NUTRITION			GDA	
Typical values	per 100g	per pack	adult	per pack
Energy kJ	450	1345		
Energy kcal	105	315	2000	16%
Protein	7.9g	23.7g	45g	53%
Carbohydrate	8.8g	26.4g	230g	11%
of which sugars	1.2g	3.6g	90g	4%
Fat	4.2g	12.6g	70g	18%
of which saturates	2.7g	8.1g	20g	41%
Fibre.	1.2g	3.6g	24g	15%
Sodium	0.24g	0.72g	2.4g	30%
Equivalent as salt	0.60g	1.80g	6g	30%
GDA = Guideline daily amount				

Compulsory:

By law, all food manufacturers (people who make food products) must have the following on their food labels:

- Name of product
- Description of product
- Manufacturer's name & address
- Weight or volume
- Storage instructions
- Cooking or preparation instructions (e.g. heating up ready meals)
- List of ingredients (heaviest first)
- 'Best before' / 'Use by' date

- **Optional Food Labelling:**
- Food Manufacturers will often add one or more from the list below, although these are not required by law:
- Illustration (picture / photo)
- Bar code or smart code – they identify the price and are used by shops and manufacturers for stock control.
- Special claim (e.g. 'low fat')
- Symbol for average quantity (e)
- Nutritional information of the product. If the special claim is about a nutrient, this information MUST be included.
- Customer guarantee
- Price – although lots don't as they have smart codes.
- Allergy advice
- Recycling logos and anti-litter symbols to encourage consumers to recycle.
- Serving suggestions e.g. serve with custard or cream.

- ✓The product Name
- ✓List of ingredients
- ✓Weight or volume
- ✓Storage instructions
- ✓ Use by date/best before date
- ✓Manufacturer
- ✓Place of Origin
- ✓Allergic information

The purpose of packaging

- ***Protection - Packaging protects foods from:***
- Physical damage during transportation and storage
- The effects of temperature changes, insect or rodent attacks, mould growth etc. Packaging guarantees food safety and hygiene.
- ***Containing – Packaging contains the contents:***
- so that they can be transported, stored and displayed easily.
- Packaging can make awkwardly shaped products easy to handle.
- ***Preserving –***
- Packaging can be part of the preservation process such as tin cans and modified atmosphere packaging (MAP) (see below).
- ***Identification –***
- Packaging describes and identifies the contents.
- Good packaging design gives a brand image and links other products in the range.
- Orange, yellow and blue are popular packaging colours.
- ***Preventing Tampering –***
- Packaging helps stop the tampering of goods. It's almost impossible to make packaging tamperproof, but it can be designed so that it's obvious if the package has been opened.

What packaging materials would be suitable in the following circumstance's? (12 marks)

	Materials	Reasons for choice
A frozen pizza	1 2	
Soup	1 2	
Cream cake	1 2	
Lasagne	1 2	

Sustainability & Environmental Issues

Packaging Issues:

- Excess use leads to poor environmental control / deforestation /world's natural resources (e.g. oils) running out
- Use of recyclable packaging/biodegradable/concern over length of time to decompose
- Ethical/ environmental /moral concerns/issues.
- no use of packaging if preferable but need to package certain foods and for cooking
- Land fill
- Storage problems for foods and left over packaging
- Queries over information provided on packages e.g. Nutritional labelling
- Chemicals used in some food packaging
- Impact/harm of wildlife
- New technologies – vacuum packaging nanotechnology/ coatings, MAP, aseptic (e.g. TetraPak) – benefits and advantages.

Fair Trade:

Fair trade foods ensure that the workers or Farmers who produce the foods get a fair price for their produce and have a reasonable standard of living. Fair trade is about guaranteed fair prices for the farmers, farmer workers and their families, better working conditions and local sustainability. Companies who buy the farmers' products must pay the market price. Fair trade foods include coffee, tea, chocolate, icing sugar, caster sugar and bananas.

Seasonality:

By purchasing local foods in-season, you eliminate the environmental damage caused by shipping foods thousands of miles, your food pound goes directly to the farmer, and your family will be able to enjoy the health benefits of eating fresh, unprocessed fruits and vegetables. Foods that are in season are better in terms of nutritive value and are cheaper. Buying seasonal produce also provides an exciting opportunity to try new foods and to experiment with seasonal recipes. It simply tastes better too!
See http://www.bbcgoodfood.com/content/local/seasonal/table/

Food Miles:

Is the distance food travels from where its produced to where it's sold

Facts and figures

•UK food exports in 1994 - 12 million tonnes. UK food imports in 1994 - 20 million tonnes.

•Each tonne of food travelled an average of 123 km in 1998 (the average figure was 82 km in 1978)

•Food in the UK now travels 50% further than it did 15 years ago.

•Five large retail chains account for 80% of food sold in the UK.

•Transportation of food was responsible for 33% of the increase in road freight over the last 15 years.

•In the UK, road transport is the only source of a greenhouse gas (carbon dioxide) that is still increasing.

What can we do about this?

Buy locally sourced ingredients and eat in season. Try to avoid buying ingredients that have travelled long distances.

Sustainability & Environmental Issues

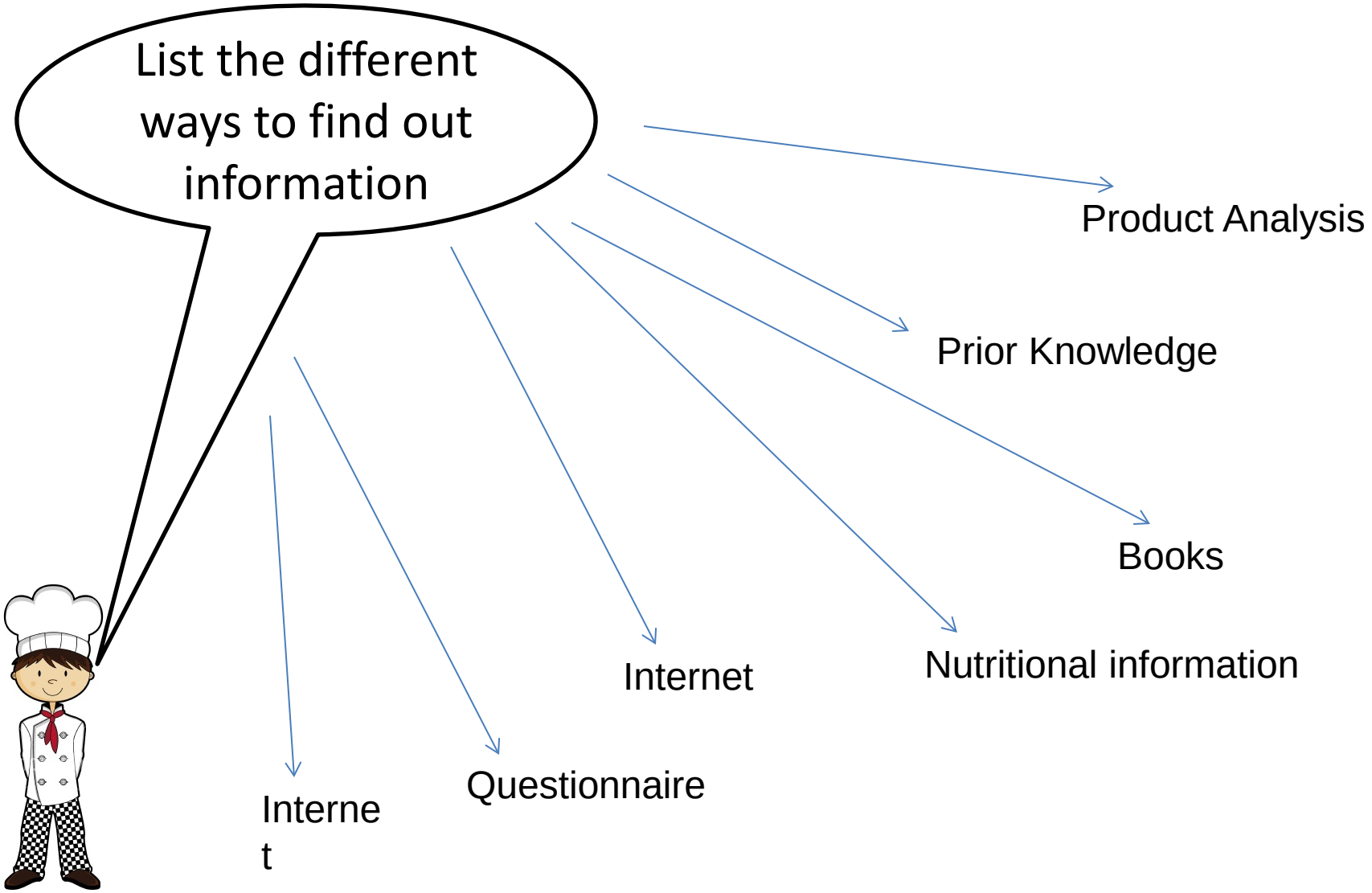
Explain the following symbols:

Sustainability & Environmental Issues

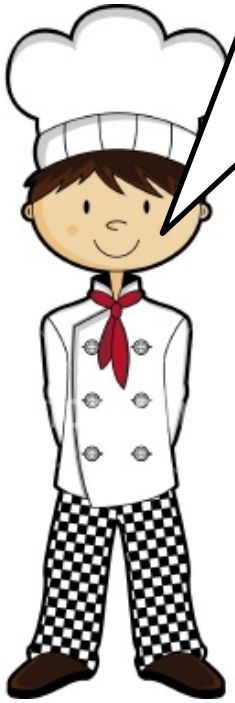
Explain why more consumers are choosing to buy their groceries from farmers markets. (6 marks)

Why are more consumers concerned about the amount of packaging used by food manufactures? (6 marks)

Research Methods



Make sure you triple check your answers when using data they have given you. Silly mistakes can be made loosing easy marks.



Bread	1960's	1980's	2000
White Bread	75%	50%	41%
Bagel	2%	6%	7%
Ciabatta	8%	20%	22%
Croissant	3%	9%	11%
Naan	9%	11%	14%

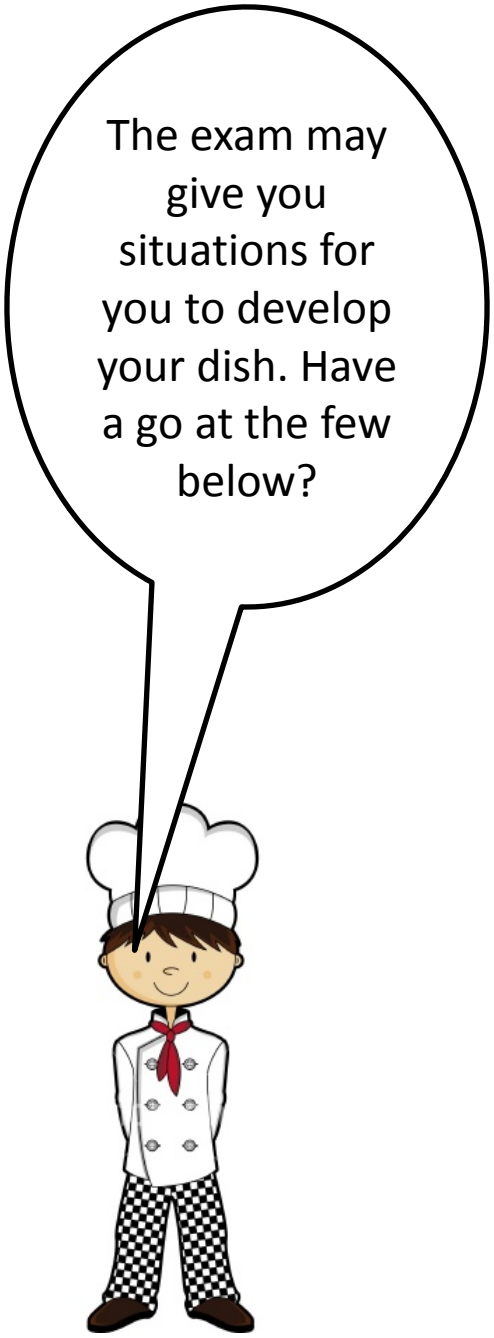
Design specification

This will be a general list of bullet points about what your design must have. A lot of the information will come from your research. Specify points such as:

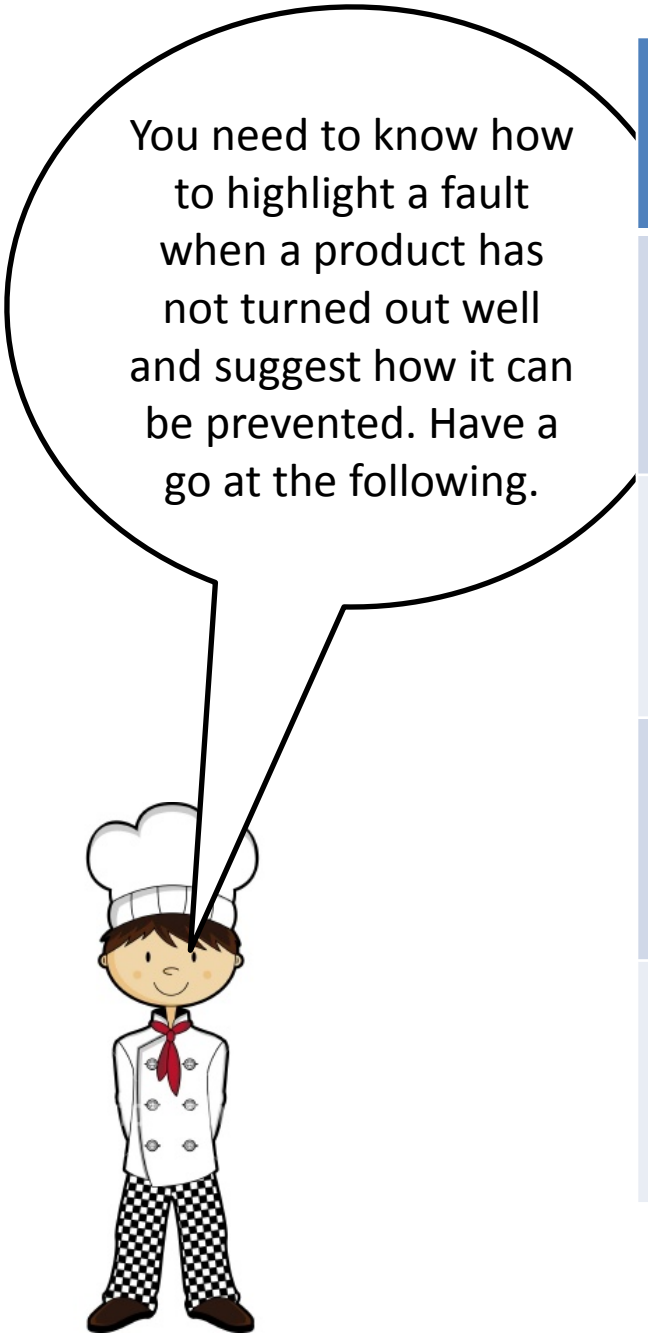
- Target group
- Diets
- Ingredients
- Nutritional information e.g. low in salt
- Texture
- Cost

Product Specification

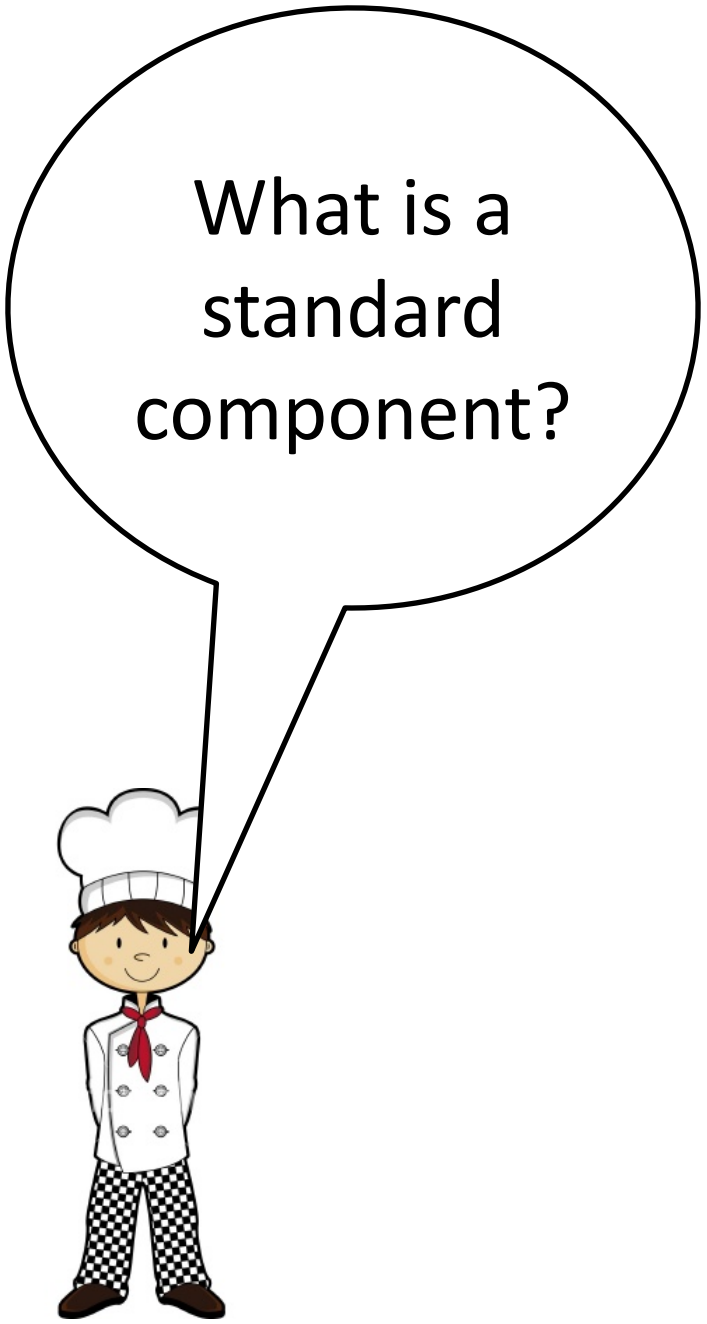
This is a very detailed specification and uses information gathered from research and design ideas you have tested out. You will eventually evaluate your work against the product specification. A product specification will be relevant to just one product. E.g. Meatballs and pasta.



Product – to help each product meet healthy guidelines	**Development 1**	**Development 2**
Beef Pattie with shortcrust pastry		
	Why?	Why?
Carrot Cake with butter icing		
	Why?	Why?
Chocolate mousse		
	Why?	Why?



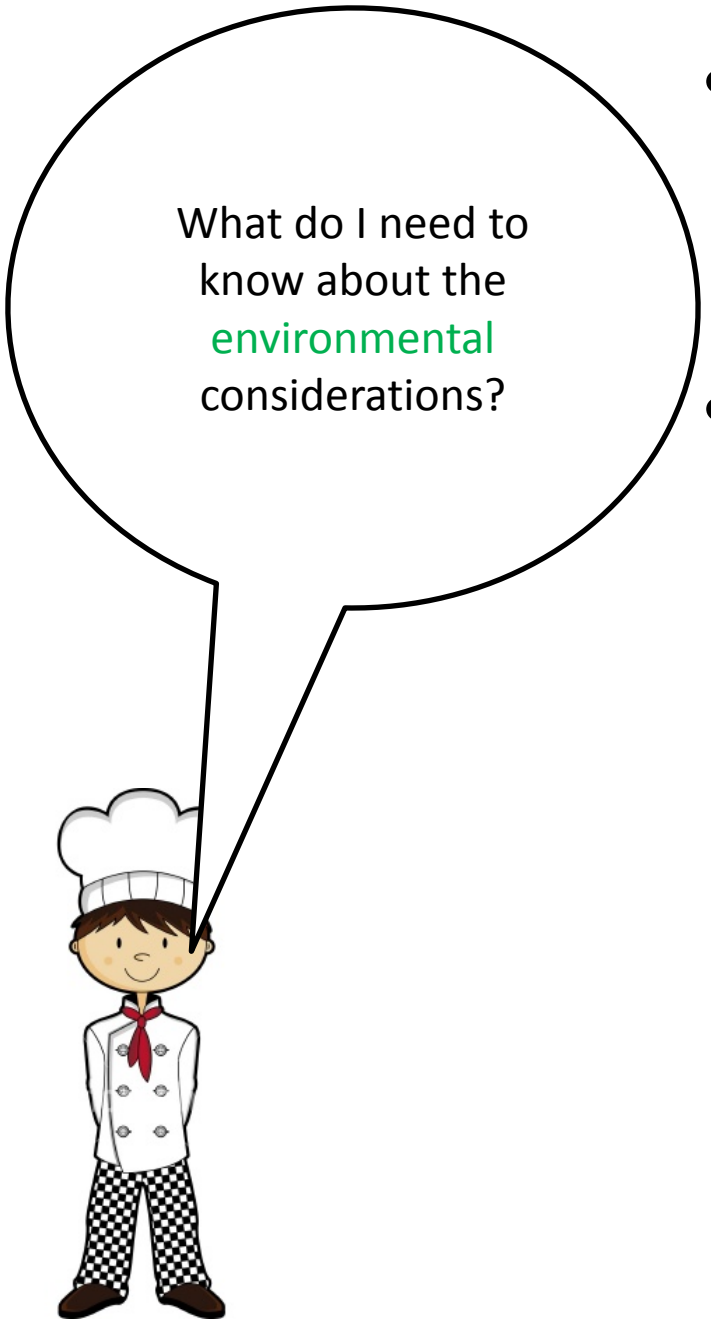
Product Fault	Reason for Fault	How could you prevent this from happening?
Filo pastry is dry and breaks up when handled		
The filling leaks out of the parcel during cooking		
Pieces of shell are found in the filling		
The creamy sauce is thin and runny		



A Standard Component is a pre-prepared item/ingredient that is used in the production of another product.

You must be able to

- Understand and define the term ‘Standard Component’
- Understand why standard components are used in food production
- To identify the advantaged and disadvantages of using a standard component.



- Understand how the use of packaging has an impact on the worlds resources
- Understand the sourcing of food affects the environmental climate.

Answer the questions on the next page to help you revise. You will need to know the answers

What are nanofoods?

What are farm assured foods?

What are Food miles?

What are organic foods?

What are fair trade foods?

CAD = Computer aided

Design

Using computer design programs to help with designing a food product for example sensory star diagrams

- Understand the difference between CAD and CAM
- Understand how each can be used in production

CAM = Computer aided

Manufacture

Using computers to control the process of mass production for example a bread maker

Good Luck!

Don’t Panic and make sure you write an answer for each question, even if it is a guess!