

# GCSE Food and Nutrition Student Workbook

Name \_\_\_\_\_

Target Grade \_\_\_\_\_

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Food Commodities

Bread

Bread is a \_\_\_\_\_ food. This means it is eaten regularly and makes a significant contribution to the diet.

Bread is very versatile, it can be served on it's own as well as being made into a number of products that can for main meals, lighter meals and snacks. It can also be sweet or savoury.

To make bread, the main ingredients are: \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Nutritional Value

It is a good source of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and the minerals \_\_\_\_\_ and \_\_\_\_\_. If whole meal flour is used in the bread it will also be a good source of \_\_\_\_\_.

Storage of Bread

How bread should be stored depends on the type:

- Fresh bread \_\_\_\_\_
- Supermarket loaves \_\_\_\_\_
- Freezing \_\_\_\_\_
- Fridge \_\_\_\_\_

Cereals

To many people the term 'cereals' means breakfast cereals. Breakfast cereals are usually made from cereal grains that could have been puffed, shredded or flaked. These are eaten for a nutritious start to the day for people of all ages.

In the UK, some of the cereals we grow include: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Nutritional Value

Cereals provide a valuable source of energy in the diet as well as other nutrients if the wholegrain is used. These include: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Storage of Bread

Cereals can become stale, perish, lose flavour, develop odours and become contaminated with bacteria. To store correctly:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities

## Flour

Flour comes from different types of cereals, e.g. wheat, rye.

Wheat flour is one of the main flours produced. There are different strengths of wheat flour depending on what it's used for.

- Strong \_\_\_\_\_
- Weak \_\_\_\_\_

### Nutritional Value

Strong flours have a high protein content, this becomes gluten when the flour is mixed with a liquid. Gluten will give the dough \_\_\_\_\_ and \_\_\_\_\_.

In the UK, white flour is fortified with the minerals Calcium and Iron and some B vitamins, this is because they are lost during processing.

### Storage of flour

To store flour safely and maintain its quality:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Oats

Oat grains have protective husk covering them, this has to be removed before oats can be used as a food.

Oats can be \_\_\_\_\_

Oat flour can \_\_\_\_\_

Oats can be \_\_\_\_\_

Porridge is \_\_\_\_\_

Jumbo oats \_\_\_\_\_

### Nutritional Value

Oats are a very nutritious cereal, the main nutrient provided is \_\_\_\_\_, but they also contain some \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Wholegrain oats can provide slow-release energy, this means the energy release will be over a longer period of time when compared to sugary foods.

### Storage of oats

- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities

## Rice

Rice is one of the most popular staple foods eaten by the worlds population. It is very versatile as it can be used to make both sweet and savoury dishes.

Rice is served as part of a meal to provide bulk and a feeling of fullness. It is quick to cook, is a good store cupboard ingredients as it has a long shelf life and is easy to store.

Rice can be bland in flavour, this can be improved by cooking it with flavoursome ingredients such as garlic and herbs. It can also add a balance to spicy meals such as curry or chilli con carne.

There are different forms of rice available in the supermarket such as boil in the bag, easy cook. Rice can be short or long grain and most types are available as brown or white.

### Nutritional Value

Rice is regarded as the poorest of all cereal foods in relation to its \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ content, but is an excellent source of \_\_\_\_\_.

### Storage of Rice

Uncooked - \_\_\_\_\_

It is recommended that cooked rice should not be stored and re-heated, as this can lead to food poisoning. Once cooked, rice becomes a **high risk food**. Storage must be above \_\_\_\_\_ for no more than \_\_\_\_\_ hours.

## Pasta

Pasta is made from strong wheat known as \_\_\_\_\_. This type of wheat contains more protein than common wheat.

To make pasta, water is added to form a dough, which can be shaped to produce the type of pasta required. Different shapes, sizes and styles of pasta are widely available to buy in shops.

Dried pasta is popular due to its long shelf life and versatility; it can be combined with many other ingredients. When dried pasta is cooked it changes to a lighter colour and increases in size as it absorbs the cooking liquid.

### Storage of pasta

- \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_

Potatoes

There are many different varieties of potatoes grown in the UK, e.g King Edwards, Maris Piper. Sweet potatoes are also a popular choice as an alternative to traditional potatoes.

The part of the potato plant we eat is called the \_\_\_\_\_. Potato tubers can come in a variety of colours, although we are most familiar with white and red.

The variety of potato used when preparing meals and dishes can result in very different textures and outcomes. Cooked potatoes can be \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_.

Potatoes are regarded as a traditional staple food. In the UK, they are often eaten as the main accompaniment to dishes. They can be prepared and cooked in a variety of ways: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_

Nutritional Value

Potatoes can be a good source of \_\_\_\_\_ due to the amount eaten and the number of times they are eaten. They provide \_\_\_\_\_ in the form of \_\_\_\_\_, some \_\_\_\_\_ and a small amount of B group vitamins. They also contain water.

Storage of Rice

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Exam Practice questions

Complete on separate lined paper in full sentences.

1. List **three** of the main nutrients found in cereals. ( 3 marks)
2. Explain why we should choose cereal products that are of a wholegrain variety when making dishes. (3 marks)
3. State the type of flour used when making bread. Explain why it is important to use this type of flour. (4 marks)
4. Explain why a person following a slimming diet should consider having an oat-based breakfast to start the day? (3 marks)
5. Explain why it is important to store potatoes correctly? (4 marks)
6. Explain why dried pasta is considered to be a good store cupboard ingredient for a large family. (5 marks)

There are many different types of fruits available in the supermarkets that are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_ grown. Many fruits are \_\_\_\_\_, this means they are not available all year round. Many fruits are imported from different countries so that they are available all year round due to customer demand.

The Eatwell Guide recommends that \_\_\_\_\_ of our diet should be made up of fruit and vegetables and we should try to eat a variety of them.

Fruit and vegetables are very nutritious, it is recommended that at least \_\_\_\_\_ portions of them are eaten every day, to include a variety of colours and types to meet different \_\_\_\_\_ and \_\_\_\_\_ requirements. They provide: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. They are regarded as a low fat food.

There are four main groups of fruits. The table below lists the groups and how they need to be stored. Fill in examples:

Groups of fruits	Example fruits	Storage
Citrus		Cool dry place. Some citrus fruits can be refrigerated.
Hard fruits		Keep out of direct sunlight, at room temperature. Can be refrigerated.
Soft or berry fruits		Keep refrigerated. Remove to serve at room temperature
Stone fruits		Keep refrigerated. Store in a fruit bowl at room temperature for faster ripening.

There are some fruits that do not fit into any of the groups identified. These include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. Sometime supermarkets will class these as tropical or exotic.

Fruits are available in many different forms, e.g. \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_. Before a fruit can be eaten raw it needs to ripen; this process makes fruit attractive to eat. Many changes take place when a fruit ripens; some include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ when the sweetness develops.

# Food Commodities - Vegetables

Vegetables are grouped according to the different part of the part they represent. These can be grown above or below the ground. The table shows the different grouping, complete the examples.

Vegetable group	Example of vegetables	Above or below ground
Roots		Below
Bulbs		Below
Tubers		Below
Stems		Above
Leaves		Above
Flowers		Above
Fruits and seeds		Above
Fungi		Above

The structure of vegetables is a collection of cells which are made of \_\_\_\_\_. The type of vegetable and the age of the vegetable can mean the structure varies. Vegetable cells contain a high amount of water; this helps to keep them firm. If they start to lose water the cells will lose their firmness and become limp. Just like fruits vegetables are available in many forms. \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

### Nutritional Value

We are encouraged to eat a wide variety of different vegetables as part of our daily diet. They can be eaten as part of a main meal or as a snack through the day. Many vegetables can be eaten raw; this increases their nutritional value as cooking them can destroy or reduce some of the nutrients found in them.

### Storage of vegetables

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Food Commodities - Milk

In the UK we mostly consume cow's milk. Other milks are available as an alternative, e.g. \_\_\_\_\_ and \_\_\_\_\_. Milk has to be treated to be safe to drink. This is normally done through heat treatment. Harmful \_\_\_\_\_ are destroyed during the treatment. This also gives the milk a longer shelf life.

Two examples of heat treatment are:

Pasteurisation: \_\_\_\_\_

Ultra Heat Treated (UHT) \_\_\_\_\_

There are many different types of milk sold in the shops. The most popular ones include:

Type of milk	Description
Whole milk	
Semi-Skimmed milk	
Skimmed milk	
Evaporated milk	
Condensed milk	
Dried milk powder	
Alternative milks	

## Nutritional Value

Milk is referred to as a \_\_\_\_\_ as it provides many of the nutrients that are need for health. It is designed to be the only food that a baby mammal needs for the first weeks of its life.

## Storage of milk

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities - Cheese

Cheese could be described as a solid or semi-solid form of milk. It is also sometimes referred to as a fermented dairy food. There are different varieties available both in the UK and internationally. The table lists these, can you give examples:

Type of cheese	Examples
Hard pressed cheese	
Soft cheese (ripened)	
Unripened cheese (soft, fresh cheese)	
Blue veined cheese	
Processed cheese	

## Nutritional value

As cheese is made from milk solids its nutrition is very similar to milk. However it is a much more concentrated food as most of the water content is lost during manufacture. The amount of nutrient will depend on the type of cheese. Cheese provides the following nutrients:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Uses of cheese

Cheese can be used in the making of both sweet and savoury dishes. It has many benefits and functions:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage of cheese

Store all cheeses in a refrigerator between \_\_\_\_ and \_\_\_\_\_. Some soft cheeses need to be used within a few days or will go off, hard cheeses can be stored for a longer period of time. Store cheese in an airtight box or package to prevent drying out.

# Food Commodities - Yoghurt

Yoghurt is made from milk. It is made by adding harmless edible bacteria to the milk, which causes it to ferment. This means the carbohydrate (sugar) in the milk, which is lactose, is converted to lactic acid by the bacteria. The lactic acid will also give the yoghurt its characteristic tangy taste.

## Types of Yoghurt

Yoghurt can be made from different types of milk. Some yoghurt will include additional ingredients such as sugar which is used to sweeten it, or fruit and other flavours such as honey or vanilla. Examples of types of yoghurt:

Set	
Live	
Greek (strained)	

## Nutritional value

Nutrient	Additional information
Protein	
Fat	
Calcium	
Carbohydrate	
Vitamins	
Water	

## Storage of yoghurt

- \_\_\_\_\_
- \_\_\_\_\_

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Suggest 3 different meals that could be made using potatoes? (3 marks)
2. It is recommended that we eat at least 5 portions of fruit and veg a day. Give two detailed reasons for following this recommendation. (4 marks)
3. Explain the benefit of using strawberries when they are in season to make a dessert. (4 marks)
4. Explain the difference between pasteurised and UHT milk. (6 marks)
5. A vegetable quiche can be made using cheddar cheese. Identify 2 different functions of the cheese and explain how the cheese fulfils each function. (4 marks)
6. Explain the importance of lactic acid in yoghurt making. (2 marks)

# Food Commodities - Meat

There are three animals that we generally used in the UK to provide us with meat: \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_. These animals provide a range of cuts of meat and a variety of different meat products for people to cook with. Meat is an important part of a daily diet for many people.

## Structure of meat

Meat is made up of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Raw meat is \_\_\_\_\_ with \_\_\_\_\_ and \_\_\_\_\_. The muscles are bundles of fibres which are surrounded and held together by connective tissue. These muscle fibres can be different lengths depending on which part of the animal they come from – if it is a part of the animal that does a lot of work, e.g. the neck or leg, the fibres will be longer; this can make the meat tougher. So a suitable method of cooking must be used to make the meat tender.

The fibres are very small tubes which contain water as well as mineral salts. The fat in meat is classed as \_\_\_\_\_ or \_\_\_\_\_.

Visible fat: \_\_\_\_\_

Invisible fat: \_\_\_\_\_

Animal	Subtypes	Description
Cows	Beef, veal	Steaks- Joints- Cuts-
Sheep	Lamb, mutton	Steaks- Joints- Cuts-
Pigs	Pork, bacon, gammon, ham	Steaks- Joints- Cuts-

Nutritional Value

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Cooking of meat

Meat is cooked for a variety of reasons:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Cooking and storage methods

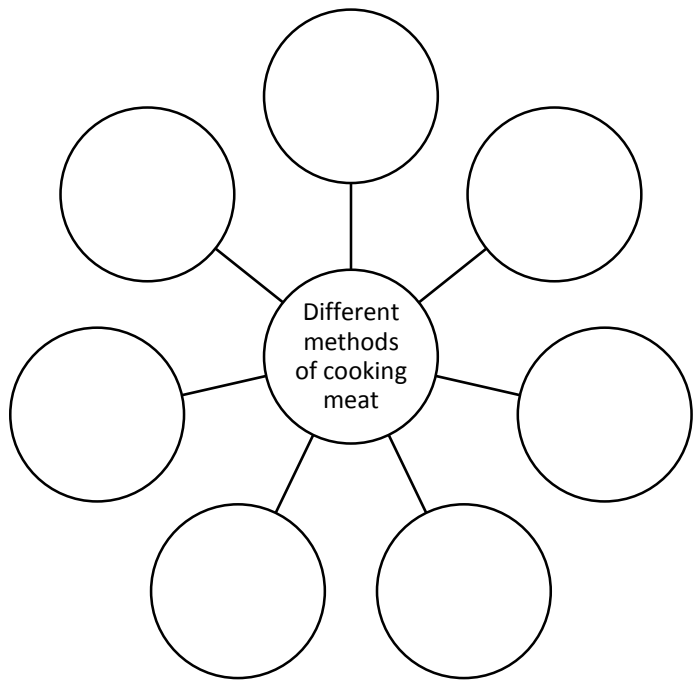
Meat is a high risk food that can contain harmful bacteria that could cause food poisoning, so it is important that it is cooked and stored correctly. When cooking, meat thermometers or temperature probes can be used to ensure the centre of the meat has reached a safe temperature.

Raw meat should be stored:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Cooked meat should be:

- \_\_\_\_\_
- \_\_\_\_\_



# Food Commodities - Fish

Fish can be categorised into three main types:

- White \_\_\_\_\_
- Oily \_\_\_\_\_
- Shellfish \_\_\_\_\_

## Structure of fish

Fish is made up of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

The flesh of fish is made up of muscle and connective tissue. The fish muscle has short fibres and the connective tissue which separates the muscles is very thin; this means fish can be cooked very quickly and still be tender. Fresh fish can be brought whole; it can also be cut into fillets, steaks, and goujons. Frozen, smoked and canned are also ways of buying fish.

## Nutritional value

The nutritional value of fish will vary depending on the type of fish. Generally fish is:

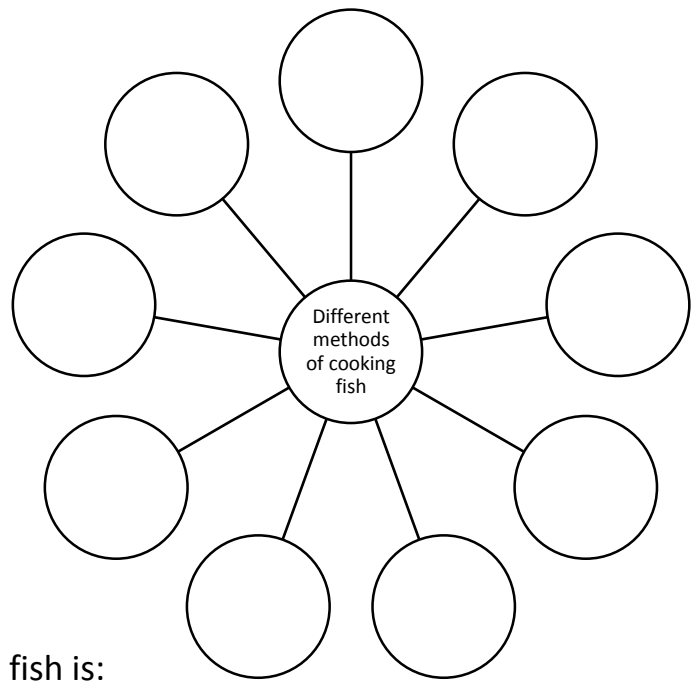
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage and cooking of fish

All types of fish spoil very quickly, which results in them being unsafe to eat. They should be:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Fish can be cooked in a variety of ways to make it more interesting; it can be served with a variety of other foods, e.g. parsley sauce or on a bed of spicy noodles to increase the nutritional value of the dish and to add more flavour.



\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ are all birds. These birds are classed as poultry. They are reared for their meat and sometimes eggs.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Chicken is a versatile food that can be combined well with other ingredients to make different dishes, it is suitable for: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Structure of poultry

Poultry is very similar in structure to other meats, so it has muscle fibres and connective tissue. The breast of poultry is softer than the legs, which can be tough depending on the amount of movement the muscles have had. Older birds are not as tender as younger birds.

Nutritional value

The nutritional value of poultry will depend on the type of bird, the age of the bird, how it's reared and the part of the animal eaten.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Storage and cooking of poultry

Poultry is a high risk food; this means it is high in protein and moisture. It can carry bacteria which can lead to \_\_\_\_\_ such as \_\_\_\_\_. It must be:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities - Eggs

There are many different types of eggs available in the UK produced by hens, ducks, quails and geese. The most popular eggs we consume and use in food preparation and cooking are hen eggs.

Eggs can be cooked by a range of methods; an example would be at breakfast time when you can choose eggs that are:

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Eggs have functional properties; this means they carry out important jobs when making many different food products, e.g.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Some of the types of hens eggs available in shops include:

Enriched cage farm eggs \_\_\_\_\_

Free range eggs \_\_\_\_\_

Barn eggs \_\_\_\_\_

Eggs have a porous outer shell. The shell can be brown or white and makes up 10 per cent of an eggs structure. Inside the shell there are two parts:

Egg white \_\_\_\_\_

Egg yolk \_\_\_\_\_

## Nutritional value

Egg will provide a range of nutrients:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage of eggs

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Food Commodities - Soya

Soya comes from soya bean pods that are located in the soya plant. Soya beans are part of the Legume family. Beans, Peas and lentils are also part of this family.

Soya beans are usually \_\_\_\_\_ but can be yellow, brown or black. Young soya beans are know as edamame beans; these can be eaten fresh from the pod and are sometimes included in salads.

The texture of soya bean is very adaptable; this allows the beans to be processed into a variety of foods such as:

Soya milk \_\_\_\_\_

Soy sauce \_\_\_\_\_

Miso \_\_\_\_\_

Soya flour \_\_\_\_\_

Tempeh \_\_\_\_\_

Many supermarkets and health food shops sell other soya products such as desserts, yoghurts and margarine. Soya beans can be bought: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

### Nutritional value

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Storage of soya products

The storage of soya products depends on the type of product, chilled products are stored in refrigerators. Cupboard ingredients should be stored in cool, dry places. For soya beans:

- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities - Tofu

Tofu is sometimes referred to as \_\_\_\_\_. It is made from soya milk that has been curdled; it is then pressed into a solid block and cooled.

This process is the same that is used to make traditional dairy cheese. The liquid which is referred to as whey is removed and the curds are pressed to form a firm block.

Tofu is a bland tasting food, so it must be cooked with other stronger flavoured foods so it can absorb those flavours. It can be cooked in different ways, which can change its texture from quite smooth and spongy to crisp and crunchy.

Tofu can be used to make a number of dishes such as \_\_\_\_\_ & \_\_\_\_\_.

### Nutritional value

The nutritional value of tofu is similar to soya:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Buying and storing tofu

The storage of soya products depends on the type of product, chilled products are stored in refrigerators. Cupboard ingredients should be stored in cool, dry places.

For soya beans:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Beans

Many people if asked to name a bean would say 'Baked beans'. This type of bean is very popular and sold in large quantities in the UK. Baked beans are haricot beans that are sold in a tomato sauce.

Beans are sold in shops in different forms, most supermarkets will sell them: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_.

Beans are a good store cupboard ingredient; they can be added to many different dishes to add colour, bulk, different texture, flavour and to improve the nutritional value of the dish.

### Nutritional Value

Most beans will provide:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Storage of beans

This will depend on the type of bean:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food Commodities - Nuts

When asked to describe what a nut is, it can be difficult to be precise. Some nuts are edible kernels from which the fruit has been remove (almonds). Some are seeds (brazil) some are pulses (peanuts) and some are fruits with a dry shell (hazelnuts).

There are many different types of nuts available that can be used in the cooking of savoury dishes, e.g. nut roast and chicken satay. Nuts can also be used in cakes, biscuits, or eaten as a healthy snack.

Some adults and children have an allergy to nuts. Peanuts are the most common nuts that cause allergic reactions. A severe reaction to nuts is called anaphylaxis and can be life threatening. Symptoms can include breathing difficulties and swelling of the throat.

Some examples of nuts include: \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

There are many different ways of buying nuts. Some include:  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

## Nutritional Value

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage of nuts

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Seeds

Seeds come in a variety of shape, sizes and colours. Most supermarkets will offer a range of seeds to be used in the preparation and eating of food; specialist shops tend to offer a more varied selection.

Sunflower seeds are one of the most commonly available seeds. Other types of seeds include:  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Seeds have many uses, some of these include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Nutritional value

Seeds can provide a range of nutrients. Some of these include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage of seeds

Seeds are best stored in airtight containers in cool, dry places. They will also be provided with a best before date.

# Food Commodities - Butter

Butter is made from cream that is churned or moved around quickly until lumps of butter is formed. It is a solid fat, firm fat at room temperature. When heated it will change from a solid to a soft consistency and melt. There are different types of butter sold in shops; with the two main ones being \_\_\_\_\_ and \_\_\_\_\_.

When preparing different dishes butter has many uses, some include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Nutritional Value

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Storage of butter

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Oils

Oils are liquid at room temperature. They can be lighter than a solid fat such as butter, and easier to digest. Vegetable oils are natural oils found in seeds, nuts and some fruit.

Some examples of vegetable oils include: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

General uses of oils include: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Some oils are more suitable for particular recipes and uses such as drizzling and sprinkling over food due to their flavour. Flavoured oils are also very popular, e.g. chilli oil.

### Nutritional value

The main nutrient provided by oils is \_\_\_\_\_; this is \_\_\_\_\_. This means the fat comes from a vegetable, nut or seed, rather than an animal source. This type of fat is considered as a 'healthy fat'.

### Storage of oils

Oils should be stored in a cool, dark place away from direct sunlight.

Margarine was introduced as and in expensive alternative for butter. It is made from vegetable oils and has \_\_\_\_\_ and \_\_\_\_\_ added to it by law.

There are many different brands of margarine produced by different manufacturers, giving consumers a wide choice. These can vary in flavour. Margarine is sold either in blocks as hard margarine or in tubs as soft margarine.

## Uses of margarine

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Nutritional value

This will depend on the type of margarine, but most provide:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Storage of margarine

Margarine should be stored in the refrigerator and used within its use-by date.

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Explain why fish takes less time to cook than meat. (2 marks)
2. Cod fillet can be cooked by different methods like baking and frying. Explain which method of cooking would be healthier and why? (3 marks)
3. Give 2 detailed reasons for cooking meat. (4 marks)
4. Explain why some people refuse to buy battery farm eggs. (4 marks)
5. Explain what the term legume means? (2 marks)
6. Name 3 different products that can be made using soya beans. (3 marks)
7. Tofu has a bland flavour. Explain how you could improve this when using it to prepare dishes. (2 marks)
8. Explain why nuts can be a health risk to certain people. (3 marks)
9. Explain the function of butter when using it to make shortcrust pastry. (4 marks)
- 10 Give 2 difference between butter and margarine (2 marks)
11. Suggest 3 different uses for olive oil when preparing and cooking foods. (3 marks)

## Food Commodities – Sugar

Sugar comes from \_\_\_\_\_ or \_\_\_\_\_. Sugar is pure carbohydrate; it is referred to as providing 'empty calories' as it does not provide any other nutrients.

There are many different types of sugar available. Some of the most popular types are included in the table below, you will need to complete the description of these:

Sugar type	Description	Uses
Granulated		For sweetening drinks like tea, sprinkled on cereals, can be used in some sweet baked goods
Caster		Used in cake making, e.g. Victoria sandwich
Icing		For cake decorating and icing, e.g. buttercream
Demerara		For dishes that like extra crunchiness, e.g. baked apples, flapjacks, crumble toppings
Soft brown/ dark brown		For colour in cakes, e.g. fruit cake, Christmas Cakes.

Sugar performs many functions in the manufacturing of different food products. One of its primary functions is to act as a sweetener for both sweet and savoury products.

### Storage of sugar

Sugar should be stored in a cool, dry place away from moisture., heat and strong flavours and odours. Sugar has a long shelf life if stored correctly.

## Syrup

Golden syrup is the most familiar syrup to many people. It can be bought in various styles including the traditional tin, in a squeeze bottle to make pouring easier when using for cooking, and in flip cap breakfast bottle that does not drip.

Golden syrup is gold in colour and very sweet. It can be used in the making of both sweet and savoury products such as

\_\_\_\_\_,  
\_\_\_\_\_,  
\_\_\_\_\_ and  
\_\_\_\_\_.

Black treacle is also classed as a syrup. It has a much darker brown colour than golden syrup and is thicker in consistency. It also has a much stronger flavour. Black treacle is used in the making of Christmas puddings, gingerbread and some curry sauces.

### Storage of Syrup

Syrups are best stored in a cool, dry cupboard and are best used within three months.

Macronutrients and Micronutrients

Our bodies need fuel and chemicals to grow, maintain and repair all the cells and organs, and to make them work properly. If you put the wrong fuel in a car it wouldn't work properly. The same rules apply to our bodies. We have to eat food that contains everything we need to provide the energy and chemicals our bodies require to keep them as healthy as possible.

The fuel and chemicals that we need for our bodies are called \_\_\_\_\_.

The nutrients that we eat are divided into two main groups:

- **Macronutrients** (macro means large) these are needed by the body in large amounts. These nutrients are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- **Micronutrients** (micro means small) these are needed by the body in small amounts. These nutrients are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- The body also needs other substances to work properly, including \_\_\_\_\_ and \_\_\_\_\_.

Macronutrients: \_\_\_\_\_  
\_\_\_\_\_

Micronutrients: \_\_\_\_\_

Amino acids: \_\_\_\_\_

Essential amino acids: \_\_\_\_\_

High Biological Value Proteins: \_\_\_\_\_

Low Biological Value Proteins: \_\_\_\_\_

Complementary proteins: \_\_\_\_\_

Dietary Reference Value: \_\_\_\_\_

Lipids: \_\_\_\_\_

Satiety: \_\_\_\_\_

Saturated fats: \_\_\_\_\_  
\_\_\_\_\_

Unsaturated fats: \_\_\_\_\_

Monounsaturated fats: \_\_\_\_\_  
\_\_\_\_\_

Polyunsaturated fats: \_\_\_\_\_  
\_\_\_\_\_

Trans-fatty acids: \_\_\_\_\_

Hydrogenation: \_\_\_\_\_

Visible fats: \_\_\_\_\_

Invisible fats: \_\_\_\_\_

Essential fatty acids: \_\_\_\_\_

# Protein

Protein is a \_\_\_\_\_ and is needed by the body for the following reasons:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Proteins are very large molecules and are made of small units called \_\_\_\_\_. There are many different amino acids that are joined together in different ways and different numbers to produce different proteins. Some amino acids are known as \_\_\_\_\_. These are the amino acids that cannot be made by the body, so we must eat proteins that contain them. There are nine essential amino acids needed by our bodies. These are:

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

All the other amino acids can be made by our bodies from the protein we eat. These are the **non-essential amino acids**. There are 11 of these. They are: alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, proline, serine and tyrosine.

## High Biological Value (HBV) proteins

Foods that contain all of the essential amino acids are called **High Biological Value Proteins**. The following foods are sources of HBV protein: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

## Low Biological Value (LBV) proteins

Foods that only contain some of the essential amino acids are called **Low Biological Value Proteins**. You will have to eat a mixture of these foods every day to get all of the amino acids you need. Other protein foods are sources of LBV protein include: Cereals (\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_); Peas, beans (except soya beans) and lentils; nuts and seeds.

If we combine LBV proteins in a meal, we can provide all the essential amino acids for our bodies. This is called \_\_\_\_\_ or using \_\_\_\_\_. An example of a meal using complementary proteins is beans on toast.



## Protein cont.

### What happens if we eat too little or too much protein?

Because protein is such an important macronutrient, either too much or too little will have an impact on the body.

#### **If children have too little protein in their diet, they:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### **If you are an adult, too little protein will have the following effects:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### **Too much protein will also have an effect on your body:**

- \_\_\_\_\_
- \_\_\_\_\_

### How much protein to we need?

Everyone needs to eat foods which contain protein every day, but how much protein we need depends on our age, our lifestyle and our activities.

Babies, children and teenagers are still growing and therefore need more protein for this, as well doing all the other things in their bodies that require protein.

Adults still need protein to help their hair and fingernails grow and for their body to repair.

Pregnant women need protein to allow their baby to develop, and women who are breastfeeding need protein to make milk.

Nutritionists and scientists have worked out how much protein is needed by individuals. These are called **Dietary reference Values (DRVs)**.

# Fats and Oils

Fat is a \_\_\_\_\_. A general term for fats is \_\_\_\_\_.

Fats can be either solid or liquid at room temperature. Oils are liquid at room temperature.

Fat is necessary in the diet for the following:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Fats are made of a combination of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ atoms. They are composed of fatty acids and glycerol. There are differences in how these are combined in different types of fat.

## Saturated Fat

In saturated fats, each carbon atom is combined with two hydrogen atoms. Most saturated fats are solid at room temperature, examples of saturated fats are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Too much saturated fat in the diet has been linked to high blood cholesterol, an increased risk of heart disease, diabetes and obesity.

## Unsaturated Fat

There are two types of unsaturated fats: monounsaturated and polyunsaturated. Unsaturated fats are usually liquid or soft at room temperature and have a lower melting point.

Monounsaturated fats contain a pair of carbon atoms with only one hydrogen atom attached, so they are capable of taking another carbon atom. They are soft at room temperature, but will harden when put in the fridge. They are found in \_\_\_\_\_ and \_\_\_\_\_ fats and are considered healthier because they can help to lower blood cholesterol, reduce the risk of diabetes and are linked with a lower rate of cancer.

Polyunsaturated fats have two or more pairs of carbon atoms, which are capable of taking up more hydrogen atoms. They are soft and oily at room temperature and will not harden in the fridge. Manufacturers sometimes change the structure of fats in products by adding hydrogen to vegetable oils. This creates manmade molecules called trans-fatty acids. This process is called hydrogenation. It turns oils into solid fats, and is much cheaper to use in products than those normally used, such as solid fats like butter – for example, in cakes and biscuits. It makes them behave like saturated fats. Recently, medical research has found that these trans-fatty acids are very bad for your cardiovascular system, and may increase your risk of heart disease and breast cancer.

# Fats and Oils

## Sources of fat

Fats come from animal and plant sources:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Visible and Invisible fats

Some fats are \_\_\_\_\_, such as the \_\_\_\_\_, or in the \_\_\_\_\_ or \_\_\_\_\_ that we use for frying or salad dressing. Other fats are invisible and form part of a product that we eat, such as \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_.

## Essential Fatty Acids (EFAs)

Essential fatty acids are fatty acids that cannot be made by the body, but are important for your body to make it function efficiently. The balance of EFAs is important for us, as they are essential for regulating body processes, including blood clotting and control of inflammation. Two important ones are:

Omega 3, \_\_\_\_\_

Omega 6, \_\_\_\_\_

## What happens if we eat too much or too little fat?

### Too much fat

Fat is a high energy source, providing over twice the amount of energy as carbohydrates. If we do not use up the energy from the fat we consume, it will be stored as fat in our body and we will gain weight. If we eat too much fat, the extra fat may be stored in our liver and cause health problems. It can also increase the risk of stroke. Eating food high in saturated fat can raise blood cholesterol levels and increase the chance of heart disease. Hydrogenated fats can increase the risk of cancer, diabetes, obesity and bone problems.

### Too little fat

Some fatty acids are essential for the correct growth and functioning of the body. If babies and children lack these their normal growth will be affected. If we do not get enough energy from fat or carbohydrate, we will use up our fat stores and become thinner. We may also feel colder.

# Fats and Oils

## How much fat should we eat per day?

Most people eat too much saturated fat. A gram of fat provides 9 kcal, compared with 4 kcal per gram of carbohydrate.

- The average man should not eat more than 95 g of fat per day, of which not more than 30 g should be saturated fat.
- The average woman should not eat more than 70 g of fat per day, of which not more than 20 g should be saturated fat.
- A child's diet should aim to have about 35 per cent of total intake of food as fat. This ensures the child is getting sufficient energy sources and vitamins D, E and K.

## Exam Practice questions

### Complete on separate lined paper in full sentences.

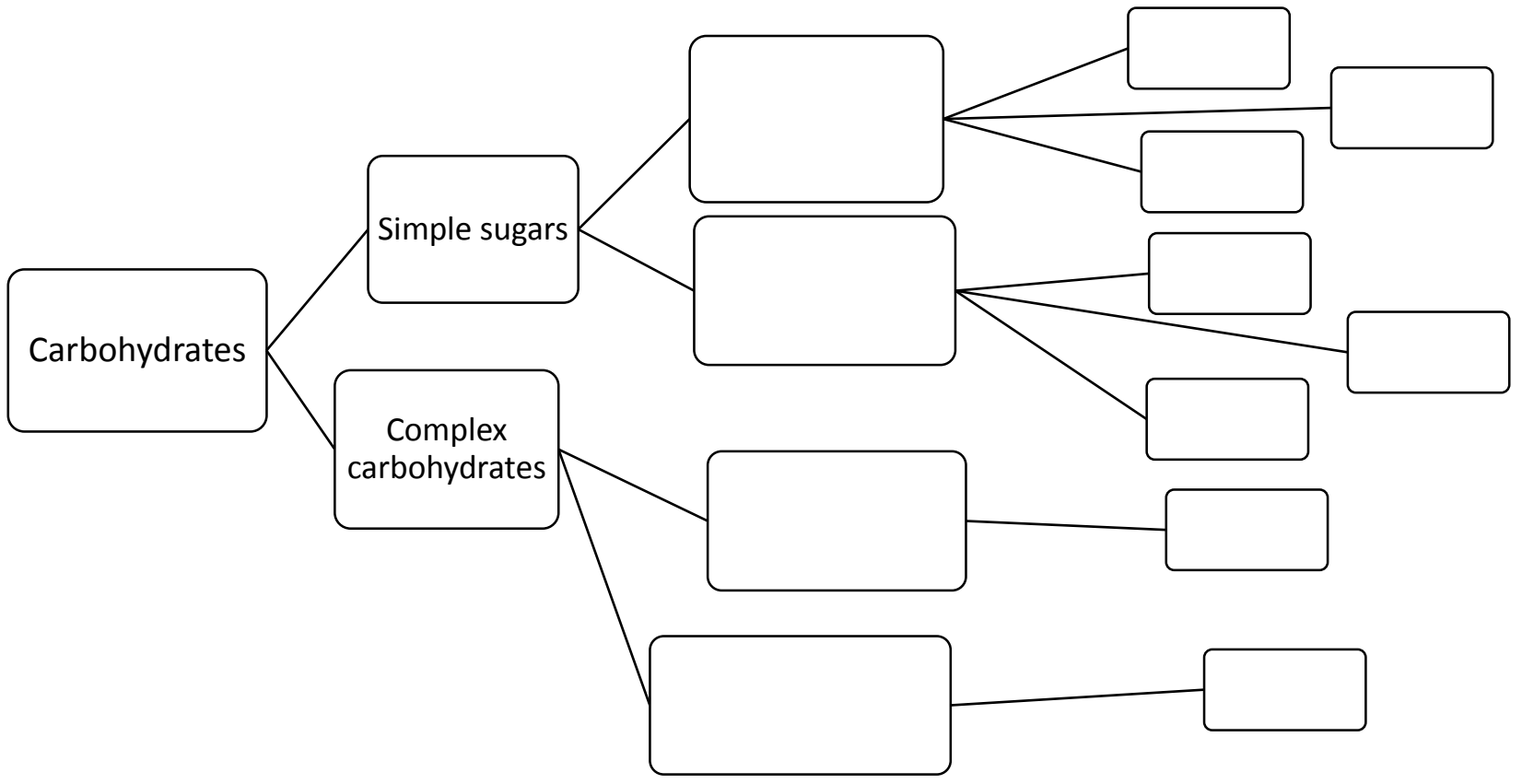
1. List 3 functions of protein in the diet (3 marks)
2. Explain the difference between HBV and LBV proteins. (4 marks)
3. Name 3 sources of HBV protein. (3 marks)
4. List 4 symptoms you might see in a child who is not getting enough protein in their diet. (4 marks)
5. What happens if we have too much protein in our diet? (3 marks)
6. List 4 functions of fat in the body. (4 marks)
7. a) If you wanted to reduce the intake of saturated fats, which foods would you avoid eating too much of? (3 marks)  
  
b) What should you eat instead to provide more healthy sources of fat? (2 marks)
8. Name 3 different oils that are mostly made up of unsaturated fats. (3 marks)
9. Name 4 foods other than fats or oils that give us a source of fat in our daily diet. (4 marks)
10. Explain the term 'invisible fat' and give an example of where this may be found.

# Carbohydrates

Carbohydrates are \_\_\_\_\_. They are made from \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ and are mainly used to provide energy. During digestion they are broken down into a simple form called \_\_\_\_\_, which can be used for energy. There are three main forms of carbohydrates: \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ (NSP), which is more commonly known as \_\_\_\_\_. Carbohydrates:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Carbohydrates are divided into simple carbohydrates and complex carbohydrates.



# Simple carbohydrates

There are two main types of simple carbohydrates: \_\_\_\_\_ and \_\_\_\_\_.

## Monosaccharides

These are called \_\_\_\_\_ as they are made of small molecules that are easily broken up during digestion and therefore absorbed quickly into the body through the wall of the digestive system, providing energy quickly.

Simple sugars include the following:

Glucose \_\_\_\_\_

Fructose \_\_\_\_\_

Galactose \_\_\_\_\_

## Disaccharides

These are \_\_\_\_\_ made up of two monosaccharides.

Sucrose \_\_\_\_\_

Lactose \_\_\_\_\_

Maltose \_\_\_\_\_

The sugars we eat are in two different forms:

**Intrinsic sugars** \_\_\_\_\_

**Extrinsic sugars** \_\_\_\_\_

### Key Terms

Monosaccharides \_\_\_\_\_

Disaccharides \_\_\_\_\_

Intrinsic sugars \_\_\_\_\_

Extrinsic sugars \_\_\_\_\_

# Complex carbohydrates

Complex carbohydrates are called \_\_\_\_\_. They are made from hundreds of simple glucose molecules connected together. They provide the body with energy, but because they are so big, they take time to be broken down during digestion.

There are two main polysaccharides in our diet: \_\_\_\_\_ and \_\_\_\_\_, also known as \_\_\_\_\_ (NSP).

## Starch

This is found in \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and some \_\_\_\_\_ and \_\_\_\_\_. It fills you up for longer, so is an excellent way to stop overeating or snacking if you are trying to lose weight. All starch comes from plant sources.

Functions of starch:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Fibre/NSP

This is the non-digestible part of plant cell walls that is called \_\_\_\_\_. It can not be digested by our bodies, so it passes straight through our digestive system, providing bulk in our diet and helping to move waste through our system, preventing constipation and also cleaning the walls of the digestive system to remove bacteria.

Functions of NSP:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Soluble fibre** slows down the digestive process and the absorption of carbohydrates, so makes us feel fuller for longer. It helps to control blood sugar levels and can also help lower blood cholesterol levels. Good sources are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

**Insoluble fibre** absorbs water and increases bulk so keeps faeces soft, making them pass through the digestive system easily. This prevents constipation. Good sources of insoluble fibre are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

## Other polysaccharides

There are also 3 other polysaccharides in our diet:

Pectin \_\_\_\_\_

Dextrin \_\_\_\_\_

Glycogen \_\_\_\_\_

### What happens if we eat too much or too little carbohydrate?

If you eat too much carbohydrate, the excess will be converted into fat and stored in your body. This means you will gain weight. The consumption of too much sugar can result in tooth decay.

If you eat too little carbohydrate, your body will use up energy stores that it has, so you may lose weight. Your body will also use some protein you eat as a secondary energy source.

### How much carbohydrate should we eat per day?

Carbohydrates provide about \_\_\_\_\_ per gram. The government Eatwell Guide advises that one third of your daily food should be starchy carbohydrates like \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. These can also provide you with fibre if wholemeal or wholegrain products are consumed.

An average \_\_\_\_\_ calories a day diet should contain about 250g of carbohydrates. An equivalent for this would be a total of a bowl of wholegrain breakfast cereal, one portion of pasta and 3 slices of bread.

Exam Practice questions – complete on separate lined paper.

1. Name two polysaccharides. (2 marks)
2. Explain how NSP helps the digestive system to work more efficiently, and prevents constipation. (4 marks)
3. How can eating wholegrain breakfast cereal help to prevent a student from snacking on sweet foods during the morning. (3 marks)
4. List 3 foods that are a good source of fibre. (3 marks)
5. This is the ingredients for an organic product: Oats, Sugar, Butter (19.18%), Invert sugar syrup, Salt. The nutrition label is shown also.
  - a) Identify the ingredient that provides the dietary fibre (1 mark)
  - b) Which 3 ingredients are carbohydrate sources (3 marks)
  - c) What do you think the product is? (1 mark)

Typical values	Per 100g	Per 40g bar
Energy	1181kJ	724kJ
	432kcal	173kcal
Protein	6.1g	2.4g
Carbohydrates	59.4g	23.8g
Of which sugars	29.9g	11.9g
Fat	18.8g	7.5g
Of which saturates	9.5g	3.8g
Sodium	0.06g	0.02g
Salt	0.15g	0.06g



# Vitamins

Vitamins are \_\_\_\_\_. They are needed in small amounts by the body for a large number of different jobs. Vitamins are referred to by letters, even though they have chemical names. Vitamins are needed because they:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Vitamins are divided into two main groups: \_\_\_\_\_ and \_\_\_\_\_.

## Fat-soluble vitamins

Fat soluble vitamins are called this because they dissolve in fat. Vitamin A, D, E and K are include in this group. Vitamin A and D are added to margarine by law.

**Vitamin A** – has the chemical name retinol in animal sources and beta-carotene in plant sources.

Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)

# Vitamins (fat-soluble)

**Vitamin D** – has the chemical name cholecalciferol.

Most people can get enough vitamin D from their diet and the sun. However, the following groups of people may be at risk of deficiency:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Vitamin D is not destroyed by normal cooking processes.

Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)

# Vitamins (fat-soluble)

**Vitamin E** – has the chemical name tocopherol.

Vitamin E is not destroyed by normal cooking processes.

Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)

**Vitamin K** – comes from a chemical group.

Vitamin K is not destroyed by normal cooking processes.

Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)

# Vitamins (water-soluble)

These vitamins dissolve in water. They include all of the B group vitamins and Vitamin C. These cannot be stored in our bodies and so we need to eat foods which contain them everyday.

## B group vitamins

The B group vitamins contain several different sections. Each one has a different number, name and function in our diet.

B group vitamins	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Vitamin B1 (also called thiamin)				
Vitamin B2 (also known as riboflavin)				
Vitamin B3 (also called niacin)				

# Vitamins (water-soluble)

B group vitamins	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Vitamin B6 (also known as pyridoxine)				
Vitamin B9 (also known as folate or folic acid)				
Vitamin B12 (also called cobalamin)				

All the B vitamins are destroyed by cooking in water. The loss can be reduced by steaming vegetables, or using the water the vegetables were cooked in to make gravy or sauces to serve with the vegetables.

# Vitamins (water-soluble)

**Vitamin C** – is also known as ascorbic acid.

Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)

Vitamin C is destroyed by exposure to water and heat.

Vegetables should be as fresh as possible, prepared at the last minute and cooked in as little water as possible, for as short a time as possible. Steaming is an ideal way to preserve most of the vitamin C.

Exam Practice questions – complete on separate lined paper.

1. Identify 2 problems caused by a lack of vitamin D and state what will happen to the body in each case. (4 marks)
2. Suggest one way of cooking green vegetables that will minimise the loss of vitamin C, and explain why this will help reduce the loss. (2 marks)
3. Name 2 sources of foods that contain folic acid, and explain why it is important that pregnant women eat enough folic acid (4 marks)
4. How could a vegan ensure they obtain enough vitamin B2 and B3? Design a meal to include these vitamins that could be eaten by a vegan. (6 marks)

# Minerals

Minerals and trace elements are \_\_\_\_\_. They are needed for a variety of functions in the body.

Minerals \_\_\_\_\_

Trace elements \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Mineral	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Iron				

# Minerals

Mineral	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Calcium				
Potassium				



# Minerals

Mineral	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Magnesium				
Iodine				
Fluoride				

# Minerals

Mineral	Function (what it does in the body)	Where it is found in our food	What happens if we do not eat enough (deficiency)	What happens if we eat too much (excess)
Sodium				
Zinc				
Phosphorus				

# Water

Water is not a nutrient, but it is vital part of our diet.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Water is taken into the body through our drinks and in the food we eat. Fruits and vegetables have large amounts of water in them. We should be taking in between 1.75 to 2 litres of water a day in drinks and food.

### What happens if we have too little or too much water in our bodies?

If we do not drink enough, we will become de-hydrated. This means you may have the following symptoms:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

If you drink too much water, your kidney's will not be able to cope and your blood will become diluted. Your brain will swell and this can cause nausea, convulsions and maybe death.

## Fibre (Non-starch polysaccharides)

Remember that fibre is part of the carbohydrate group, but it is sometimes kept in a category by itself. Fibre:

- \_\_\_\_\_
- \_\_\_\_\_

Lack of fibre can cause constipation and diverticular disease and can increase the chance of cancer of the bowel. We need a minimum of 18g of fibre per day, but the ideal amount is 30g per day.

Children need less fibre, as it will fill them up too quickly and may mean they are not getting enough of the other nutrients needed for their healthy growth.

Eating wholemeal and wholegrain products, such as plenty of fresh fruit and vegetables, particularly with the skins on, and dried fruits, nuts and seeds, will provide fibre.

Exam Practice questions – complete on separate lined paper.

1. Identify two stages in our lives when it is important to eat plenty of calcium rich foods. (2 marks)
2. Give advice to a teenager who is a vegetarian on how they can obtain enough iron in their diet. (4 marks)
3. Suggest ways you could provide sufficient calcium to a vegan who is pregnant. (4 marks)
4. Which foods should someone avoid if they are trying to reduce the amount of salt in their diet (4 marks)
5. List three health problems that can result from a diet low in fibre. (3 marks)
6. You are making a pasta bake for someone who is lacking in fibre but does not like vegetables. How can you increase the fibre content of the dish? (4 marks)

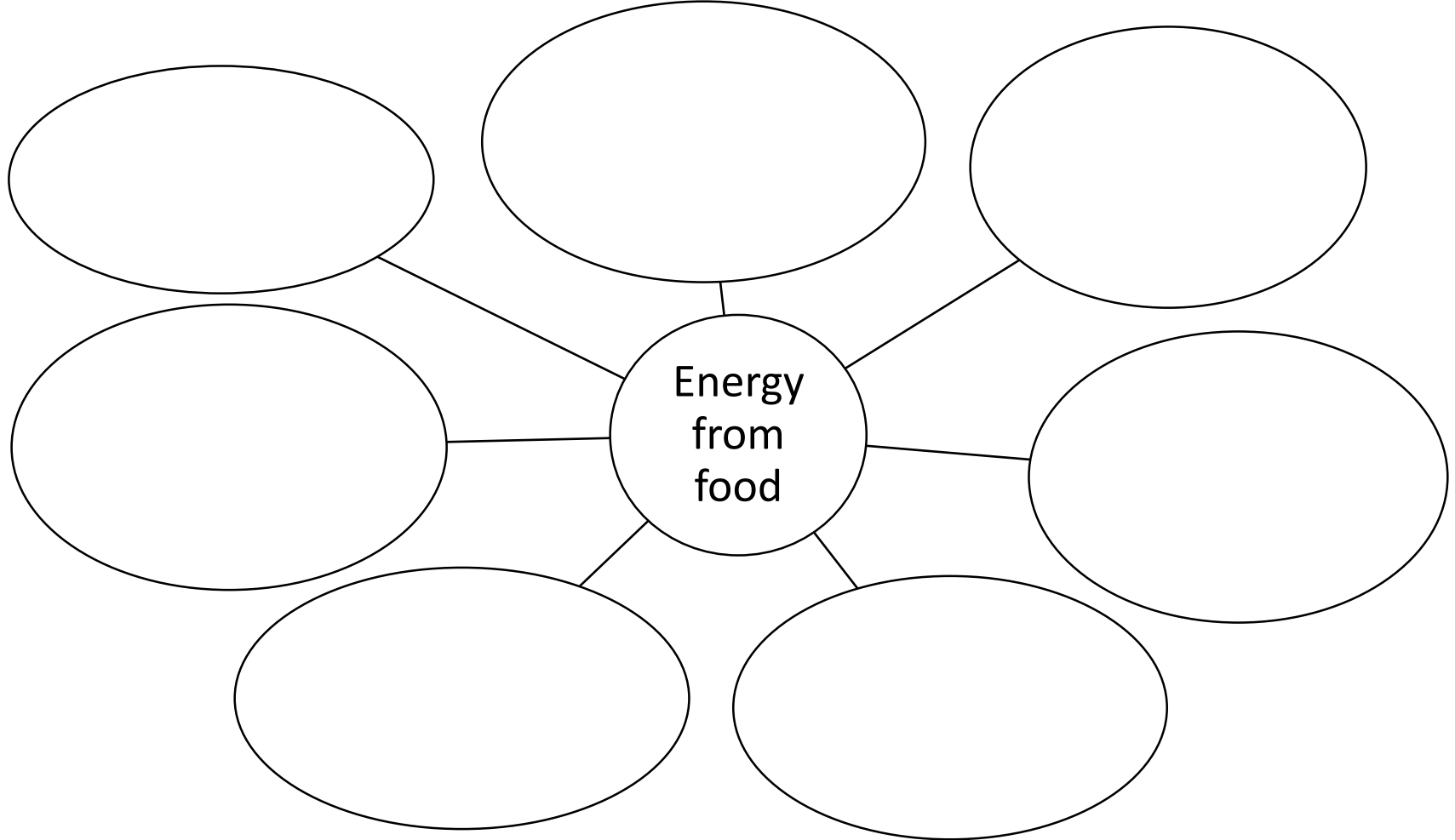
How can you encourage a teenager to eat more fruit and vegetables to increase the amount of fibre and vitamins in their diet? (6 marks)

Energy requirements of individuals

We have already looked at different nutrient groups needed to keep your body working at it's best, and how to keep you healthy. To recap, to ensure good health, every day we need to eat: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Energy

Every person needs a certain amount of energy to keep the body going throughout the day. We will look at what effects the amount of energy that you need. Energy is needed in order for our bodies to carry out every single function. Fill in the examples in the chart below.



# Energy requirements of individuals

How much energy is supplied from each of the nutrient groups?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The government recommendations for a healthy diet are show in the table below:

Nutrient	Total amount in a 2000 kilocalorie per day diet for an adult	Percentage of energy from this nutrient
Total fat Of which saturated fat	70 grams 20 grams	35% 11%
Total carbohydrates Of which sugars	260 grams 50 grams	50% 5% from extrinsic sugars 45% from intrinsic sugars and starches
Protein	50 grams	15%

The **Recommended Daily Intake (RDI)** of each source of energy will vary depending on your dietary needs, deficiencies and your lifestyle.

Vitamins and minerals are not broken down by the body, but are used by the body in the form in which they are absorbed into the body. There fore they are not used for energy.

The recommended amount of extrinsic sugar was reduced in July 2015 due to concerns about obesity and dental caries (tooth decay) problems of the population, particularly in young children. The total amount of extrinsic sugar consumed per day should be around 7 teaspoons. A regular 330ml can of fizzy drink such as Coca Cola has about 6 teaspoons of sugar in it.

## Energy requirements of individuals

### How do nutrients work together in the body?

Some of these nutrients work closely together, and therefore you will get more benefit from these nutrients if you combine foods in your meals to help the body absorb these. The ways these nutrients work together are called \_\_\_\_\_. The following nutrient pairs are important.

#### Vitamin D and calcium

Calcium is important for \_\_\_\_\_ and \_\_\_\_\_. It is absorbed in the intestine. Vitamin D helps with this absorption, so you will gain more calcium if you eat foods containing vitamin D with them in the same meal. An example would be a bowl of fortified \_\_\_\_\_ containing vitamin D and \_\_\_\_\_, which contains calcium.

#### Iron and vitamin C

Vitamin C helps the body to take up the plant-based non-haem iron that is found in \_\_\_\_\_ such as dark green leafy cabbages and spinach. This type of iron is more difficult for the body to absorb. It is important, particularly for a \_\_\_\_\_ who does not eat meat, or a \_\_\_\_\_ who eats no animal products, that the amount of iron is as accessible as possible for the body. Eating or drinking foods or drinks that contain vitamin C with a meal that has non-haem iron in it will help the body to get the amount of iron needed for a healthy body. An example of this would be drinking a glass of freshly-squeezed \_\_\_\_\_ juice with your spinach and ricotta \_\_\_\_\_.

#### Sodium and potassium

Too much sodium, or salt, in the diet will contribute to high blood pressure, stroke and heart attacks. Eating potassium helps encourage the kidneys to excrete, or get rid of, excess sodium. Foods that are rich in potassium are sweet potatoes and bananas.

#### Niacin and tryptophan

Niacin is vitamin B3. Tryptophan is one of the essential amino acids that is a building block of protein, which also contains niacin. An example of this is chicken and turkey.

#### Vitamin B12 and folate/folic acid

These work closely together to help with cell division and replication, during foetal development and healing processes.

#### Zinc and copper

These are trace elements needed in very small quantities in our diet, but they compete with each other to be absorbed in the intestine. It is important to try to avoid eating foods that contain both these trace elements at the same time. Foods containing copper include leafy greens, asparagus, wholegrains, nuts and seeds. Foods containing zinc include seafood, meats and dairy products.

# Energy requirements of individuals

## How much energy do we need?

The amount of energy needed just to keep everything working to stay alive is called the \_\_\_\_\_ (BMR). This is simply the energy required to keep breathing, making chemicals, keep your heart beating, other body organs working, blood pumping and nerves working. Recently the amount of energy required for your BMR has been recalculated using a scientific study organised by the government. This study also calculated the amount of extra energy needed to carry out physical activities, which are things you do like sitting, standing, walking, running, or planned and structured exercise. These activities are called your \_\_\_\_\_ (PAL). They will be different depending on what amount of physical activity you do.

To calculate your PAL you can use the following table.

PAL	Daily activities	Lifestyle
Less than 1.4	Hospital patient in bed	Inactive
1.4-1.55	Little physical activity at work or leisure time	Sedentary
1.6	Moderate physical exercise, female	Moderately active
1.7	Moderate physical exercise, male	Moderately active
1.7-2.0	Construction worker; someone who works out at the gym for 1 hour per day	Moderately active
2.0-2.4	Physically active at work (fitness trainer)	Very active
2.4+	Professional athlete, footballer	Extremely active.

You can increase PAL quite easily. To increase your PAL you have to become more active.

Amount of increase	Activity needed
0.15	30 minutes of moderate activity 5 or more days a week
0.2	60 minutes brisk walking daily
0.3	60 minutes active sport, like jogging, 5 times a week
0.4	60 minutes jogging at 9km per hour daily
0.5	Intensive aerobic activity



# Energy requirements of individuals

The total amount of energy required for an individual person will be different to anyone else.

- \_\_\_\_\_
- \_\_\_\_\_

To find the amount of food you need to eat to maintain your weight (so you don't lose or gain weight) you need to calculate your \_\_\_\_\_ (EAR) of food, and calculate the number of calories you should consume each day.

To calculate your Estimated Average Requirement, the following calculation can be used:

**Basal Metabolic Rate x Physical Activity Level = Estimated Average Requirement or BMR x PAL = EAR**

The table below shows figures for the EAR of men at different life stages. (Tables for children and women can be found on the next few pages.)

Men					
Age	Height	Weight	BMR	EAR	
				Less active	More active
19-24 years	178cm	71.5kg	1695	2530	3000
25-34 years	178cm	71kg	1695	2500	3000
35-44 years	176cm	69kg	1600	2380	2860
45-54 years	175cm	68kg	1600	2360	2800
55-64 years	174cm	68kg	1500	2360	2800
65-74 years	173cm	67kg	1400	2150	2500
75+ years	170cm	65kg	1350	2100	2500

You can see from this that the older a man gets, the fewer calories he needs.

## Energy requirements of individuals

The table below shows the number of calories needed per day for children on average.

Age	Basal Metabolic Rate (BMR)		Estimated Average requirements			
	Boys	Girls	Boys		Girls	
	Kilocalories per day		Kilocalories per day			
	Kilocalories per day		Less active	More active	Less active	More active
1 Year	550	500	750	790	700	750
2 Years	720	660	970	1000	900	955
3 Years	820	770	1100	1200	1050	1120
4 Years	870	820	1250	1500	1150	1350
5 Years	920	860	1330	1570	1250	1500
6 Years	980	920	1400	1700	1330	1575
7 Years	1030	970	1500	1760	1380	1650
8 Years	1100	1030	1575	1880	1500	1750
9 Years	1160	1090	1670	1980	1550	1850
10 Years	1190	1100	1900	2150	1850	2050
11 Years	1200	1150	2030	2250	1930	2150
12 Years	1280	1200	2150	2380	2030	2250
13 Years	1380	1275	2300	2570	2150	2400
14 Years	1500	1330	2500	2790	2250	2780
15 Years	1600	1360	2700	3000	2300	2500
18 Years	1800	1400	3000	3300	2350	2600

## Energy requirements of individuals

The table below shows figures for the EAR of men at different life stages.

Women					
Age	Height	Weight	BMR Kilocalories per day	EAR	
				Less active	More active
19-24 years	163cm	59.9kg	1330	2000	2380
25-34 years	163cm	59.9kg	1330	1980	2300
35-44 years	163cm	59.9kg	1280	1930	2300
45-54 years	162cm	59kg	1280	1910	2290
55-64 years	161cm	58kg	1260	1880	2270
65-74 years	159cm	57kg	1170	1750	2050
75+ years	155cm	54kg	1120	1670	2000

You can see from this that the older a woman gets, the fewer calories she needs.

Exam Practice questions – complete on separate lined paper.

1. Explain why children need more energy than an adult who works in an office and sits at a desk all day. (4 marks)
2. What activity would you suggest a 60 year old man takes up to increase his PAL? Explain why this will help him lose weight. (3 marks)
3. Explain why the Estimated Average Requirement (EAR) for men is higher than that for women between the ages of 19 to 24 years old. (4 marks)
4. The figures on the above table show an average height and weight measurement for women. What would happen to the Estimated Average Requirement if the women were taller than this average height? Explain why. (3 marks)
5. In the male table, a more active male aged 18 years needs about 700 kilocalories more than an active female aged 18 years. Suggest reasons why this is the case. (4 marks)



# Plan balanced diets

There are also recommended amounts of each nutrient that we should be eating daily. These are called Recommended Daily Intake (or RDI) of each nutrient, these are shown in the table below:

Age	RDI (in grams)		
	Protein	Fat	Carbohydrates
1-3 years	15g		
4-5 years	20g		
6-10 years	28g	70g	220g
11-14 years	42g	70g	220g
15-18 years	55g	70g	230-300g
Women	45g	70g	230g
Men	55g	95g	300g

There are no Recommended Daily Intake figures of fats and carbohydrates for children under 5 years old.

As well as providing the Eatwell Guide, the government have issued a set of eight guidelines to help improve our health through our eating habits:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

# Plan balanced diets

Base your meals on starchy  
food

Eating lots of fruit and  
vegetables

Two portions of fish

Cutting down on saturated  
fat and sugar

Eating less salt

Drink plenty of water

Don't skip breakfast

Get active.

# Plan balanced diets

## Identify how your age will change your nutritional requirements

Everyone needs to eat a balanced diet, but depending on your age, your needs will be different.

Babies and young children

Children aged 1 to 4 years old

# Plan balanced diets

## Identify how your age will change your nutritional requirements

Children aged 5 to 12 years

Teenagers



## Identify how your age will change your nutritional requirements

Adults and older people

### Exam Practice questions

Complete on separate lined paper in full sentences.

1. Identify 3 foods in the Eatwell Guide that you should eat less of to have a healthy, balanced diet. (3 marks)
2. Explain why it is important to base your diet on starchy carbohydrates. (4 marks)
3. What advice would you give to someone who was trying to cut down on the amount of saturated fat in their diet? (6 marks)
4. Why must babies have iron in their diet when they are weaned? (2 marks)
5. Suggest 3 ways that parents can help their young children to develop good eating habits for the future. (3 marks)
6. Identify 2 sources of calcium for teenagers who don't drink milk. (3 marks)
7. Discuss how adults can maintain a healthy weight. Suggest changes to their diet and recommend other ways that they can keep healthy. (6 marks)

# Plan balanced diets

## Identifying how people's lifestyles choices and state of health change their nutritional needs

There are many choices of lifestyle that will change what we eat. There are also dietary conditions, such as allergies or nutritional deficiencies, which will have an influence on our choice of foods.

Some people develop illnesses or life-long medical conditions that means they have to look carefully at what they eat. It is important to be aware of these conditions, and to be able to plan meals that will provide a healthy range of foods to fit in with those needs.

We will look at people who make decision to change what they eat. This could be for any of the following reasons:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Different religious beliefs

There are many different religions across the world, and may of them have specific rules about what you can or cannot eat. These rules are based on beliefs, religious books or traditional celebrations.

The three main religions you will need to know are Hinduism (Hindus), Islam (Muslims) and Judaism (Jewish). Other religions, including Christianity, Sikhism, Buddhism and Rastafarianism, also have some dietary rules.

Hindus (Hinduism)

# Plan balanced diets

Muslim (Islam)

Muslim (Islam)

# Plan balanced diets

## Different ethical beliefs – types of vegetarians

Many people change the way they eat due to their thoughts on the way animals are treated. These people usually become \_\_\_\_\_ or \_\_\_\_\_.

There are several reasons why people choose a vegetarian diet:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

There are three main types of vegetarianism:

Lacto-ovo vegetarians \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Lacto vegetarians \_\_\_\_\_

\_\_\_\_\_

Vegans \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Plan balanced diets

## Nutritional needs of vegetarians – what nutrients might be lacking in a vegetarian diet?

### Iron

Iron is found mostly in \_\_\_\_\_ and \_\_\_\_\_. Vegetarians have to get their iron from vegetable sources. This is non-haem iron, which is not absorbed so easily. Vegetarians must eat plenty of \_\_\_\_\_ to help with the absorption of this form of iron. They must include plenty of fresh fruit and vegetables in their diet, along with fortified breakfast cereals with added iron, wholegrain cereals, dried fruits such as apricots and figs, nuts and seeds such as sunflower and pumpkin seeds, as well as lentils and beans.

Women who have heavy periods, pregnant women, someone recovering from an operation or an accident, or elderly people who are vegetarians may have to take iron supplements, so that they do not develop anaemia.

### Protein

We have learnt about HBV and LBV proteins. HBV proteins have all the \_\_\_\_\_ needed for our bodies, but are mostly found in \_\_\_\_\_ sources, apart from soya beans. A lacto-ovo or lacto vegetarian will have no problems finding sources of HBV protein in milk, cheese and eggs. A vegan, however, will be eating mostly LBV proteins, so will have to make sure they eat a combination (or protein complementation) of these foods to get sufficient protein.

Examples of these combinations are:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

It is also possible to buy soya milk, tofu and tempeh which are made from soya beans and contain HBV protein. Textured Vegetable Protein (TVP) also is made from soya and can be used in recipes that usually use minced beef, such as cottage pie. Quorn™ is a trademarked product used in vegetarian foods. It is made into ready meals and sausages, burgers, fillets and escalopes. It is made from a type of fungi called mycoprotein, and egg white, so is not suitable for vegans

### Vitamin B12

This is mainly found in \_\_\_\_\_ products, so again lacto-ovo and lacto vegetarians will not find it difficult to get sufficient amounts in their diets. Vegans will have to rely on fortified foods such as yeast extract (marmite), soya milk, sunflower margarine and breakfast cereals. It is possible to buy vitamin B12 supplements.

# Plan balanced diets

## Pregnancy

During the nine months of pregnancy, a woman is providing all the nutrients to ensure the foetus develops into a healthy baby, and making sure that they stay healthy themselves. It does not mean that they are 'eating for two'.

All the nutrients we have discussed before are needed, but the following are needed in greater quantities:

Calcium \_\_\_\_\_

\_\_\_\_\_

Vitamin D \_\_\_\_\_

\_\_\_\_\_

Iron \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Vitamin C \_\_\_\_\_

Folic acid/folate \_\_\_\_\_

\_\_\_\_\_

Fibre \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Plan balanced diets

## Foods to avoid during pregnancy

Foods to avoid	Reasons why
Pate and soft cheeses	
Soft blue cheeses	
Raw or partly cooked eggs	
Raw or undercooked meat	
Liver; liver pate	
Certain types of fish, fresh tuna, shark etc	
shellfish	

## People trying to lose weight

Obesity is becoming a major health problem in the UK. Currently, about one in four adults is obese, and one in every five children aged 10 to 11 years old is obese. The calculations used to find out if an adult is a healthy weight or obese is the Body Mass Index (BMI). This means you use your weight and height measurements.

Divide your weight in kilograms by your height in metres, then divide the answer by your height in metres again.

For example: if you weigh 70 kg and you are 1.75 m tall: divide 70 by 1.75 = 40 divide 40 by 1.75 = 22.9. This is your BMI.

For most adults:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Being overweight can make you more likely to develop health problems such as:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Plan balanced diets

Losing weight (if you need to) will improve your health, your self-esteem, your energy levels and improve your lifestyle. To lose weight, you need to reduce the amount of energy in the foods you eat, and increase the amount of physical activity you do to burn up the fat stores in your body. It takes a long time to put weight on, so it will take time to lose it. To change eating habits is often difficult. To encourage people to lose weight, they often do better in a situation where they are supported, for example, by joining a slimming club.

The following changes to eating patterns will help:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Exam Practice questions

Complete on separate lined paper in full sentences.

1. Name 2 meats that Hindus must not eat. (2 marks)
2. Explain what is meant by Halal food. (3 marks)
3. Which vitamins could be lacking in a vegan diet, and which foods can vegans eat to ensure they get this in their diet. (3 marks)
4. Discuss the foods that pregnant women should avoid, and give reasons why they should not be eaten. (6 marks)



# Plan balanced diets

## Planning a balanced diet for people with specific dietary needs or illnesses

Here we will look at people who have illnesses that affect what they can eat, people with allergies that mean they have to avoid certain foods, and people with nutritional deficiencies.

Specific dietary conditions or illnesses will restrict the foods that people can eat

\_\_\_\_\_ and \_\_\_\_\_ are conditions that require special dietary needs.

\_\_\_\_\_ includes coronary heart disease and stroke.

Anaemia, iron deficiency and \_\_\_\_\_ will require changes to a diet.

\_\_\_\_\_, such as nut allergy or lactose intolerance can be life threatening conditions, so diets need to be carefully managed.

### Coeliac disease

People with this condition have an intolerance to a protein called gluten, which is found in wheat, barley, oats and rye. Any food product made using these ingredients will cause problems for a sufferer if it is eaten.

The lining of the small intestine is damaged by gluten. This means that the absorption of nutrients becomes more difficult. Symptoms of coeliac diseases are:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Coeliac disease cannot be cured, it is a lifelong condition. The damage that is done to the intestine is never properly reversed, but can be improved by eating a diet that is gluten-free.

Many products are now available in the supermarkets that are gluten-free. They are clearly labelled, but are usually more expensive than other products.

Some foods suitable for coeliac suffers are: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Plan balanced diets

## Type 2 diabetes

This is called \_\_\_\_\_. People with this condition often develop it later in their lives, although recently, due to the sugar-rich diets of young people, more \_\_\_\_\_ and \_\_\_\_\_ are being diagnosed with the condition.

The \_\_\_\_\_ in the body are controlled by a hormone called \_\_\_\_\_, which is released from an organ called the pancreas in the body.

Continual consumption of high-value sugary foods seems to cause the pancreas to stop releasing insulin. People who are \_\_\_\_\_ or \_\_\_\_\_ are also at risk of developing this disease.

A low level of glucose in the blood is called \_\_\_\_\_, and a high level is called \_\_\_\_\_.

If glucose stays in the blood it can eventually damage blood vessels in your eyes, and cause \_\_\_\_\_.

It can restrict blood flow to your hands, feet and toes, resulting in \_\_\_\_\_ and in the worst cases, \_\_\_\_\_.

It also can cause \_\_\_\_\_.

In 2014, Type 2 diabetes had been diagnosed in \_\_\_\_\_ people in the UK. This number is predicted to rise to \_\_\_\_\_ by 2025 unless diets are improved.

Type 2 diabetes can be controlled by eating a balanced, healthy diet based on complex, starchy carbohydrates.

Also the following rules should be followed:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Plan balanced diets

## Cardiovascular disease (CVD)

This is a general term that describes a disease of the heart or blood vessels. Blood flow to the heart can be restricted by a build-up of fatty deposits on the walls of the arteries that supply the heart. This causes the arteries to harden and narrow.

## Coronary Heart Disease (CHD)

This is when the arteries supplying the heart become reduced in diameter, or blocked, and the blood cannot flow properly to the heart. This condition is caused by high levels of \_\_\_\_\_ in the blood. Cholesterol is a fatty substance made in the \_\_\_\_\_. It is used for some functions in the body. It attaches itself to special proteins called \_\_\_\_\_. It is then carried around the body in the blood.

If we eat a lot of \_\_\_\_\_ fats, these will form extra cholesterol which will be attached to low density lipoproteins (LDL). This is sometimes called \_\_\_\_\_ cholesterol. This will be deposited in the walls of the artery, building up to block the blood flow. \_\_\_\_\_ fats make less cholesterol. This attaches itself to high density lipoproteins (HDL), which do not get deposited in the artery walls. This is called \_\_\_\_\_ cholesterol.

Other factors contribute to CHD:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

You can lower the risk of developing CHD by:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Stroke

This happens when a blood vessel to the \_\_\_\_\_ becomes blocked and part of the brain does not get enough \_\_\_\_\_. The brain cells are then damaged or destroyed. People who have a stroke can exhibit mild or severe difficulties following the event. Some may recover fully, with help and nursing care, while others may be severely impaired. Stroke victims will need to follow the guidelines for a diet that is the same as those people with CHD.

# Plan balanced diets

## Obesity

Previously we have been calculating Body Mass Index, you saw that anyone with a BMI of over 30 is considered obese. Obese people have a much higher risk of developing health problems including:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Calcium Deficiency

Calcium is needed for the production of healthy \_\_\_\_\_ and \_\_\_\_\_. If you lack calcium, you may develop \_\_\_\_\_ and a calcium-deficient disease called hypocalcaemia.

Early-stage calcium deficiency will not cause many symptoms, but if not corrected the following symptoms can develop:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The disease can be easily cured by eating more calcium-enriched foods, or taking a calcium supplement. Long-term calcium deficiency will increase the risk of developing osteoporosis in older age.

## Anaemia and iron deficiency

If someone does not eat sufficient iron in their diet, they will become iron deficient or anaemic. This is because they are not producing sufficient haemoglobin in their red blood cells to carry oxygen around their body. Symptoms of anaemia include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

People at risk of developing anaemia are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Iron-rich foods include red meat, beans, nuts, dried fruit, wholegrains, fortified breakfast cereals, and most dark green leafy vegetables such as kale and spinach. Remember, vitamin C is very important in helping with the absorption of iron in the intestines. Men need 8.7 mg of iron a day. Women need 14.8 mg a day

# Plan balanced diets

## Dental caries

This is \_\_\_\_\_, which happens when acids in the mouth dissolve the \_\_\_\_\_ on the teeth. This is a big problem in the UK, as a recent study has shown that nearly \_\_\_\_\_ of 8-year-old children and \_\_\_\_\_ of 5-year-old children have signs of decay in their teeth. \_\_\_\_\_ of adults in the UK have some dental decay.

To help prevent dental caries:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Allergies and intolerances

The two main food allergies and intolerances which we will deal with are nut allergies and lactose intolerance. There are also other foods that people are allergic to, including eggs, shellfish and strawberries.

### Nut allergy

Allergic reactions can be minor, and often happen within a few minutes of eating the food.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

An extreme reaction is when the throat starts to swell and the person cannot breathe. This is known as \_\_\_\_\_. Someone with a known allergy to nuts will often carry a special pen called an \_\_\_\_\_, which will give them an injection of adrenaline to reduce the swelling. Nut allergies can be \_\_\_\_\_. The presence of nuts in any environment can cause a reaction for a severe sufferer. All processed foods that are sold have to carry a nut allergy \_\_\_\_\_. Food labels have to be read carefully, and if sufferers are eating in a restaurant, they will have to check whether the food they order is \_\_\_\_\_.

## Plan balanced diets

A person who is \_\_\_\_\_ is allergic to the sugar in milk, which is called \_\_\_\_\_. They are unable to digest this particular sugar because they lack the correct \_\_\_\_\_ in their small intestine.

The milk sugar will pass into their large intestine, causing \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. The condition is not life-threatening but is very uncomfortable for the sufferer.

People who have this condition will have to avoid dairy products. There are now a large range of products which are lacto-free. You can buy lacto-free milk and milk products. A person with this condition can use milk alternatives such as soya, coconut, rice and almond milk.

Some products that are lactose free include \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Exam Practice questions

Complete on separate lined paper in full sentences.

1. Identify 3 products from the supermarket that someone with coeliac disease should avoid. (3 marks)
2. Plan a meal for someone who has coeliac disease. Discuss reasons why you have chosen each food ingredient for the meal and say why it is appropriate for a coeliac sufferer. (6 marks)
3. Explain what happens if someone develops Type 2 diabetes. (4 marks)
4. Give 2 foods that a person with coronary heart disease should avoid. (2 marks)
5. If someone is either deficient in iron or anaemic, suggest 3 foods they could include in their diet to improve their condition. (3 marks)
6. How could you encourage a child to eat to less sugary foods to lessen their chances of developing dental caries? Suggest 4 changes to their diet. (4 marks)
7. When someone in your family has a severe nut allergy, what steps would you have to take to prevent them having a life-threatening allergic reaction. (6 marks)

# Plan balanced diets

## Planning a balanced diet for people with high-energy needs

There are some situations when people require higher energy levels to provide sufficient calories for their lifestyle. This could be, for example:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Illness

If a person has had a debilitating illness, or has had major surgery and has spent a period of time when they were eating less food because of the illness, a \_\_\_\_\_ diet will help the person to regain the weight they may have lost, and provide \_\_\_\_\_ to aid \_\_\_\_\_ and \_\_\_\_\_.

This is particularly important in \_\_\_\_\_, who lose muscle tone very easily. In these cases, small, frequent meals that are high in \_\_\_\_\_ and \_\_\_\_\_ are recommended. To increase the nutritional value of the meal you can, for example, add \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_ to mashed potatoes; or add \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_ to cereals. Patients could be given full-fat versions of milk of semi-skimmed or skimmed.

You can also provide snacks between meals to increase nutritional intake. For example: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_. Elderly people with Alzheimer’s disease often lose weight, so it is important to keep them on a high-energy diet to prevent weight loss.

## Specific dietary or genetic conditions

Some dietary or genetic conditions or illnesses mean that nutrients are not \_\_\_\_\_ as efficiently as usual through the intestines. One of these conditions is \_\_\_\_\_, which is a genetically inherited condition.

Most people with \_\_\_\_\_ do not absorb nutrients as easily as people without cystic fibrosis. They will need a diet that is higher in \_\_\_\_\_, so using full-fat versions of dairy products, increasing \_\_\_\_\_ intake by having a good helping at each meal and adding \_\_\_\_\_ and \_\_\_\_\_ to starchy foods such as pasta and potatoes, will help to increase the total number of calories eaten each day.

People suffering from coeliac disease often do not absorb nutrients well, particularly just after they have been diagnosed with the condition, as the wall of their intestine will be damaged. They will need to increase their calorie intake, using a gluten-free diet, until their gut wall heals.

# Plan balanced diets

## Sports people and athletes

Sports people and athletes will need to have a diet that will provide an increase in energy provision to be able to compete well and maintain their body weight. The basic athlete's diet plan is the same as a normal person's, but the energy intake is divided into:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Foods based on wholegrain carbohydrates should form the basis of meals, with extra carbohydrate being consumed per day depending on the level of exercise they do. Similarly, there should be an increase in the amount of protein they eat to help post-exercise recovery and repair, as well as building extra muscle.

The recommended amounts of carbohydrates and protein for an athlete per day is shown below:

Activity	Recommended amount of carbohydrate (grams/kilogram of bodyweight)	Recommended amount of protein (grams/kilogram of bodyweight)
Light intensity exercise (30 minutes per day)	3 to 5 g/kg	1 g/kg
Moderate intensity exercise (60 minutes per day)	5 to 7 g/kg	1 to 1.2 g/kg
Endurance exercise (1-3 hours per day)	6-10 g/kg	1.2 to 1.5 g/kg
Extreme endurance (more than 4 hours per day)	8-12 g/kg	1.5 to 1.7 g/kg



# Calculating energy and nutritional values of recipes, meals and diets

## Calculating energy and nutrients

We have seen that the amounts of energy needed for our Basal Metabolic Rate (BMR) alters according to our age and our Physical Activity Levels (PAL). This affects the amount of food and energy that is needed by our bodies.

Energy is measure in kilojoules (kj) or kilocalories (kcal).

Source of energy	Energy value in kj	Energy value in kcal
1g of pure carbohydrate	15.7	3.75
1g of pure fat	37.8	9.0
1g of pure protein	16.8	4.0

To calculate the energy in a particular food, multiply the number of grams of that food by the energy value in kcal for each nutrient that is in the food. You will have to use a computer program or food tables to find out how much of each nutrient is in that particular food.

For example: 100g of cheddar cheese contains 25.5g of protein, 35g of fat and 0.1g of carbohydrate.

Total energy form protein =  $25.5 \times 4 =$  \_\_\_\_\_ kcal

Total energy from fat =  $35 \times 9 =$  \_\_\_\_\_ kcal

Total energy from carbohydrate =  $0.1 \times 3.75 =$  \_\_\_\_\_ kcal

Total energy from 100g cheddar cheese = \_\_\_\_\_ kcal

You can then use this figure to find out how much energy is in a recipe, by multiplying the energy amount by the number of grams you have used of that ingredient. For example:

If you used 200g of cheddar cheese in a cheese sauce you multiply the above answer by 2 and the total energy from the cheese in that sauce would be.

\_\_\_\_\_ x 2 = \_\_\_\_\_ kcal

## Calculating energy and nutritional values of recipes, meals and diets

It is possible to work out individual amounts of energy for each ingredient in a recipe, meal and a diet this way. For example, this is how you could work out the energy from a particular meal:

Lunch			
Food	Weight in grams	Calculation	Total energy provided in kilocalories
2 slices of wholemeal bread	90g 8g protein 30g carbohydrate 2g fat	$8 \times 4 = 32\text{kcal}$ $30 \times 3.75 = 112.5\text{kcal}$ $2 \times 9 = 18\text{kcal}$	162
1 slice of ham	30g 9g protein 3g carbohydrate 5g fat	$9 \times 4 = 36\text{kcal}$ $3 \times 3.75 = 11.25\text{kcal}$ $5 \times 9 = 45\text{kcal}$	92.25
1 tomato	25g 0.25g protein 1g carbohydrate 0g fat	$0.25 \times 4 = 1\text{kcal}$ $1 \times 3.75 = 3.75\text{kcal}$	4.75
1 apple	180g 0.5g protein 25g carbohydrate 0g fat	$0.5 \times 4 = 2\text{kcal}$ $25 \times 3.75 = 93.75\text{kcal}$	95.75
Carton of apple juice	150ml 0.1g protein 25g carbohydrate 0g fat	$0.1 \times 4 = 0.4\text{kcal}$ $25 \times 3.75 = 93.75\text{kcal}$	94.15
		Total energy	

To find out the amount of macronutrients and micronutrients in an ingredient, you will also need to use special online tables, or reference books. We use the Jenny Ridgwell Nutrition program

# Calculating energy and nutritional values of recipes, meals and diets

## Adapting meals and diets

People of different ages, with different lifestyles and different medical conditions or diseases, allergies and intolerances all require changes to their diets. To keep a balanced, healthy diet it is often recommended that fat, sugar and salt is reduced and fibre is increased. There are a number of ways in which these can be done:

Reduce fat	<ul style="list-style-type: none"><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li></ul>
Reduce sugar	<ul style="list-style-type: none"><li>• _____</li><li>• _____</li><li>• _____</li></ul>
Reduce salt	<ul style="list-style-type: none"><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li></ul>
Increase fibre	<ul style="list-style-type: none"><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li><li>• _____</li></ul>

# Calculating energy and nutritional values of recipes, meals and diets

If it is necessary to plan for a diet for the allergies or intolerances we have previously looked at, the type of allergy will need to be identified and the appropriate foods substituted with foods that will not cause an allergic reaction. For example, shown below is a recipe for cauliflower cheese with and adaption for someone who is lactose intolerant.

Cauliflower cheese: normal recipe
1 cauliflower
500ml semi-skimmed milk
50g margarine
50g flour
150g cheddar cheese

Cauliflower cheese: normal recipe
1 cauliflower
500ml soya milk
50g lacto-free margarine, e.g. Pure
50g flour
150g lacto-free cheese

## Increasing energy intake

If you wish to increase your energy intake, for example if you are a sports person training for a specific event like a marathon, you need to increase the amount of energy you are getting from \_\_\_\_\_ from \_\_\_\_\_ of your total energy input to between \_\_\_\_\_. Sports people training for an \_\_\_\_\_ or \_\_\_\_\_ event, such as weightlifting, may need to increase the amount of \_\_\_\_\_ they eat to build more muscle.

## Energy balance

Energy balance is when we take in exactly the same amount of energy as we use every day. This will mean that someone doesn't gain or lose weight. If you eat too much, and have too much energy from the food you eat, \_\_\_\_\_.  
\_\_\_\_\_. If you use more energy than you eat, \_\_\_\_\_.  
\_\_\_\_\_. When you are young, you are probably more active than when you get older. This means that unless you eat less food as you become less active, you will gain weight. Earlier we looked at how to calculate energy requirements for different age groups, lifestyles and physical activities. In order to maintain body weight energy input must equal energy output. The changes in your lifestyle must be reflected in changes in what you eat, otherwise you will lose or gain weight.

# Calculating energy and nutritional values of recipes, meals and diets

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Look at the menu plan for a day's meals for a 30-year-old woman (opposite side of the page who is trying to lose weight. She works in an office, takes very little exercise each day, but does go to an aerobics class twice a week in the evening. Suggest changes to each meal which will reduce the kilocalories and provide a suitable alternative. State why you have made each change. (8marks)
2. How would you recommend that a friend, who has recently found she is lactose intolerant, can obtain sufficient calcium in her diet now that she can no longer eat dairy foods? (4marks)
- 3 Identify three ways in which someone could reduce the amount of saturated fat in their diet. (3marks)
- 4 a) State why it is important that we reduce the amount of salt we are eating. (2marks)  
b) Explain what is meant by the term 'hidden salt'. (3marks)

<b>Menu</b>
<b>Breakfast</b>
Bowl of sugary cereal with semi-skimmed milk
Glass of orange juice
Cup of coffee with milk and 1 teaspoon of sugar
<b>Snack</b>
Cup of coffee with 1 teaspoon of sugar
2 chocolate digestive biscuits
<b>Lunch</b>
Ham and tomato sandwich on white bread
Packet of crisps
Can of fizzy drink
<b>Afternoon snack</b>
Cup of tea with 1 teaspoon of sugar
Slice of fruitcake
<b>Supper</b>
Beef lasagne with salad
Ice cream with strawberries
Cup of coffee with 1 teaspoon of sugar
<b>Late night snack</b>
Cup of hot chocolate with 1 teaspoon of sugar

# The effect of cooking food

## Why do we cook food?

No one is exactly sure how and why food started to be cooked, but the discovery of fire thousands of years ago must have been when our ancestors started cooking food.

The definition of cooking is the \_\_\_\_\_

\_\_\_\_\_ (in most cases). Heating food causes a series of \_\_\_\_\_ and \_\_\_\_\_ changes to occur. The changes may be advantageous, for example they may change the colour, texture and flavour of the food which will make it more appealing and palatable for us. However, in some cases they may be disadvantageous, for example reducing the nutritional content or generating undesirable compounds in the foods we are cooking. Food needs to be cooked for several reason.

## To destroy harmful bacteria in food

Many raw foods contain harmful bacteria. Eggs may contain salmonella, and meat can contain salmonella, listeria and campylobacter. Cooking to a temperature above 75°C destroys the bacteria. Meat, fish and eggs are three foods that require cooking, although sometimes all these foods are eaten raw:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## To make food easier to chew, swallow and digest

Cooking breaks down chemical bonds in \_\_\_\_\_ and \_\_\_\_\_, making meat, fish and vegetables softer and easier to chew. These processes are called \_\_\_\_\_ and \_\_\_\_\_. Once the food arrives in your stomach and digestion begins, it is easier if the chemical bonds have been broken during cooking.

## Protein denaturation

Many foods contain proteins: \_\_\_\_\_. Proteins are made of amino acids, which are formed in complicated folded shapes. During heating, the bonds between the folds \_\_\_\_\_ and the protein starts to \_\_\_\_\_. This usually results in a substantial change to the food item. An example of this is what happens to an egg when it is cooked. The white of the egg turns from a clear, jelly-like substance into a rigid, white structure. Another example is when the protein is changed to a softer structure. Protein denaturation is an \_\_\_\_\_. You will never change the protein back into its original form. Methods of cooking that result in protein denaturation are \_\_\_\_\_.

## Starch degradation

Plants have \_\_\_\_\_ cell walls to give rigidity to the plant to stop it falling over. Cellulose is a \_\_\_\_\_. When vegetables and fruit are cooked, the cell walls are broken down and the fruit and vegetables become \_\_\_\_\_. This process is called \_\_\_\_\_. Think of the difference between a raw, crunchy carrot and a soft cooked carrot.

# The effect of cooking food

## To develop the flavour of foods

Some foods actually taste better when they are cooked. Cooking meat develops the meaty flavour we enjoy, when it undergoes the \_\_\_\_\_. \_\_\_\_\_ helps release the sweetness in starchy foods. Starch degradation also releases the sweetness in foods.

### Maillard reaction

This is a very complicated \_\_\_\_\_ that occurs in foods that contain both \_\_\_\_\_ and \_\_\_\_\_, such as meat, bread, nuts, cakes and biscuits. It is a chemical reaction between the \_\_\_\_\_ in the protein and a \_\_\_\_\_, such as glucose, fructose or lactose. The heat will start a range of chemical reactions, which result in the formation of a range of \_\_\_\_\_ and \_\_\_\_\_ compounds. Hundreds of different flavours are generated. For example, one of them is the savoury, meaty flavour which is characteristic of cooked meat. The maillard reaction also results in the \_\_\_\_\_ of food. The complex chemical reactions result in the production of brown-coloured compounds, which cause foods such as meat to have their characteristic brown colour when cooked. Cooking methods that result in the maillard reaction are \_\_\_\_\_.

### Caramelisation

Caramelisation produces the desirable \_\_\_\_\_ and \_\_\_\_\_ that are characteristic of food products such as coffee, confectionary, cakes, biscuits and dark beer. It changes the colour of the food to a shade of \_\_\_\_\_, which varies between light caramel to black. This reaction occurs when foods containing a high concentration of \_\_\_\_\_ are cooked at high temperatures using a dry heat, such as \_\_\_\_\_.

- \_\_\_\_\_

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- \_\_\_\_\_

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- \_\_\_\_\_

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As well as changing the flavour, caramelisation causes food to brown.

All foods that contain carbohydrates will undergo caramelisation when heated. Cooking methods that result in caramelisation are \_\_\_\_\_.

# The effect of cooking food

## To develop the flavour of foods – cont.

Starch is made of large chains of \_\_\_\_\_ molecules which are joined together. When starch is \_\_\_\_\_, the bonds between the glucose molecules break, releasing the \_\_\_\_\_ of the glucose into the food. This reaction takes place in starchy foods such as pasta, bread, potatoes, wheat and oats. Cooking methods that result in starch degradation are \_\_\_\_\_.

## To enable foods to rise, thicken, dissolve and set

We like to see a well-risen cake, a colourful jelly, a well-cooked quiche or a thick, glossy sauce.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

None of these would happen if the food was not cooked. Heat causes chemical reactions to take place in our food, which allows us to enjoy the finished result. A sauce thickens by gelatinisation during the cooking process.

## Starch gelatinisation

Foods containing starch are often used to \_\_\_\_\_ sauces. This is because when starch is heated in water, the starch granules \_\_\_\_\_ water and \_\_\_\_\_. The polysaccharide called \_\_\_\_\_ releases out of the starch granules and traps the water, causing the mixture to thicken, and form a gel. This process is called starch gelatinisation. The cooking method that results in starch gelatinisation is \_\_\_\_\_.

## To kill toxins and natural poisons in foods

Some foods might kill us if we ate them raw. For example, kidney beans contain toxins and need to be soaked for at least five hours, and then boiled for at least ten minutes on a high boil. Partly-cooked kidney beans can be more toxic than raw beans.



# The effect of cooking food

## **To make food look and smell more attractive**

We all make an instant decision on whether or not we are going to eat something by how it looks on our plate. Smell also can influence our preferences. You probably would not eat a piece of raw beef, but when it is roasted you may well eat it! If you overcook vegetables, there can be a loss of pigmentation (colour). Foods that contain colour pigments are generally fruit and vegetables. There are four main colour pigments:

Chlorophyll \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Carotenoids \_\_\_\_\_

\_\_\_\_\_

Anthocyanins \_\_\_\_\_

\_\_\_\_\_

Anthoxanthins \_\_\_\_\_

\_\_\_\_\_

## **To produce a variety of foods using different cooking methods**

You can fry, bake or poach fish, and each way produces a different flavour to the fish. Many foods have several ways in which they can be cooked and served. Variety means we can enjoy our food.

## **To provide hot food in cold weather**

It is very comforting to sit down to a plate of hot stew when the weather is very cold. Hot food also provides warmth to our bodies.

# The effect of cooking food

## How heat is transferred to food during cooking processes

We will now look at how heat passes into food to cook it. Heat is a type of energy. As heat gives energy to the molecules in food, they start to vibrate and move. The faster they move, the more heat is produced. There are three ways that heat is transferred during cooking: \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

Conduction

# The effect of cooking food

Convection

Radiation

# The effect of cooking food

We have already found out that there are only three ways that heat is transferred. These are conduction, convection and radiation. If we look at the ways we cook foods, we can see how this happens:

Oven cooking/baking: \_\_\_\_\_

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Boiling/simmering: \_\_\_\_\_

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Deep-frying/roasting/shallow-frying: \_\_\_\_\_

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Grilling: \_\_\_\_\_

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Microwaving: \_\_\_\_\_

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Slow cooking: \_\_\_\_\_

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# The effect of cooking food

## Selecting methods of cooking to conserve or modify nutritive values and improve palatability of foods

In this section we will look at how we can retain nutrients in our foods during cooking, how we can add extra nutrients, and how we can improve the way the food tastes and looks to make it more attractive.

### Conserving nutritive value

We have already found out about all the nutrients that our body needs for a balanced, healthy diet, and which foods contain these nutrients. It is not going to be any use to our bodies if we destroy some of these nutrients during the cooking process, so if you have carefully planned and selected a dish or carried out a day's menu planning to provide all the necessary nutrients, it is just as important to make sure you prepare and cook the food to supply these nutrients. This is called conserving nutritive value. We also need to look at how robust(strong) the nutrients are before we decide on a suitable cooking method.

Nutrient	How easily is it destroyed?
Protein	
Carbohydrate	
Fat	
Fat-soluble vitamins A, D, E & K	
Water-soluble vitamins B & C	
Minerals	

Looking at the above table we can see that the main foods that could lose nutrients during cooking are those containing vitamins. Many vitamins are found in fruit and vegetables, so these are the foods that we must take care of during cooking, to ensure as many vitamins are kept in the food as possible.

# The effect of cooking food

## Fat-soluble vitamins

Vitamin A: \_\_\_\_\_

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Vitamin D: \_\_\_\_\_

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Vitamin E: \_\_\_\_\_

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It is unlikely that cooking these foods will result in loss of these vitamins, as they are needed in small quantities, and we usually eat enough foods to give us sufficient quantities of these vitamins.

# The effect of cooking food

## Water-soluble vitamins

These are much more likely to be destroyed by cooking methods as they are not very robust. They are easily destroyed by heat, and dissolve in water during cooking. Vitamin C is also destroyed when it is exposed to oxygen, so when you shred spinach or cabbage, the vitamin C starts to break down as oxygen from the air hits it.

Ways to ensure as much of these vitamins remain in the food as possible:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Modifying nutritive value

When a recipe or meal plan is selected, it is possible to change the amount of any nutrient by adding or removing ingredients. We have looked at ways to reduce salt, sugar, fat or increase fibre in the diet. Similarly, extra nutrients can be added to food to cater for any needs. For example:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# The effect of cooking food

## Improving palatability of a dish

The taste buds on our tongues recognise, salt, sour, sweet, bitter and umami (a pleasant savoury taste). There are times when food palatability needs to be improved:

- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_  
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- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# The effect of cooking food

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Describe the changes that take place when you fry an egg. Use the correct words to describe the reaction that takes place. (3 marks)
2. When a cake is cooked, the top turns brown. Explain what happens. (2 marks)
3. Identify two ways that green vegetables can be cooked to minimise the loss of vitamin C. (2 marks)
4. Give three reasons why we cook food. (3 marks)
5. Describe what energy transfers are taking place when you boil potatoes (2 marks)
6. Explain why it is unsafe to use metal dishes in a microwave oven. (3 marks)
7. Identify two ways of cooking that show conduction as a method of heat transfer. (2 marks)
8. Identify two ways that Brussel sprouts can be cooked to preserve the vitamin C content. (2 marks)
9. Explain why it is important to make food for elderly people as palatable as possible. (4 marks)
10. How would you alter a recipe to add more protein for someone who was recovering from an operation and needed to have extra protein for healing? State the recipe that you would use and what you would add to it. Describe how this would increase the protein content. (4 marks)

# The effect of cooking food

## The positive use of micro-organisms

Most people think of micro-organisms as harmful, and indeed they can be. A lot of time is spent making sure that cross-contamination of harmful bacteria and moulds does not happen during the preparation and cooking processes. However, some micro-organisms are useful during food production. We would not have many of our favourite foods unless they were used.

### Dairy products

Most people love cheese, and many of us eat yoghurt. Both of these are made from milk. In order to turn milk into cheese and yoghurt, a bacteria needs to be added.

Making yoghurt:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Making cheese:

- \_\_\_\_\_
  - \_\_\_\_\_
- 
- \_\_\_\_\_
  - \_\_\_\_\_

### Meat products

Salami, chorizo and French saucisson are made from fermented meat. \_\_\_\_\_ is the chemical breakdown of a substance by micro-organisms. In these products, \_\_\_\_\_ are used to change the acidity of the meat and prevent harmful bacteria spoiling it. This results in \_\_\_\_\_ of the protein. Salt or flavourings are added, and then the products are left to dry in the air at controlled low temperatures.

# The effect of cooking food

## Fermentation of sugar

Alcoholic drinks use \_\_\_\_\_ and the resulting sugar fermentation to produce the alcohol. For hundreds of years, people around the world have made forms of naturally-fermented sweet, fizzy drinks, such as ginger beer, dandelion and burdock, elderflower fizz, and other flavoured soda drinks. If you make your own fizzy drinks at home, yeast and sugar is used to create a 'starter', which will encourage \_\_\_\_\_ bacteria to grow. This will eventually create the \_\_\_\_\_, which makes the drink fizzy. The fizzy drinks that we consume today have carbonated, fizzy water added to the base syrup before the drink is canned or bottled.

## Breadmaking

Yeast is the product used in bread to make it rise. Yeast is a \_\_\_\_\_, but one that is not harmful to us. Yeast is also used in beer making and wine making.

## Quorn™

Quorn™ is a meat substitute that can be eaten by ovo-lacto vegetarians and lacto vegetarians, but not vegans. Quorn™ is made from a mycoprotein, which is derived from a fungus. The protein is mixed with egg white and formed into shapes such as sausages, burgers, meat-sized chunks and Quorn™ mince.

## **Working characteristics, functional and chemical properties of ingredients**

Here we will find out about:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The three macronutrients – protein, carbohydrates and fats – make up the basis of nearly all our recipes and meals. Each of these has particular characteristics, which mean that when they are cooked, they alter. To recap, when food is cooked:

We will look more closely at what different properties of these three macronutrients make them suitable for certain recipes, so we can have a successful result.

# The effect of cooking food

## Proteins

Proteins exhibit the following characteristics:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

We know that when proteins are heated, the bonds between the amino acids unravel and create a different structure. This is called \_\_\_\_\_.

This will happen when:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The main protein source that we use in cooking to create different recipes is eggs. Eggs have many properties and can be cooked and raw in recipes. They demonstrate \_\_\_\_\_.

The table below shows how and where eggs exhibit these properties:

The function of eggs	Why egg is used	Examples of recipes using this function
To bind ingredients together		
To trap air		
To thicken products		
To coat products		
To create an emulsion		
To glaze products		

# The effect of cooking food

Eggs exhibit the following properties that are unique to proteins

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Proteins also have other characteristics. When we are making bread, the dough has to be worked for a long time. We call this \_\_\_\_\_. During the kneading process, the \_\_\_\_\_ that is in the flour, called \_\_\_\_\_, is developed and \_\_\_\_\_. This is going to form the structure of the bread.

As the bread begins to rise, the gluten traps the \_\_\_\_\_ that is given off by the yeast, and the bread will rise to form the loaf, or bread rolls. When the bread is cooked, the gluten \_\_\_\_\_, and forms the structure of the bread.

Denaturation can also happen when a protein has \_\_\_\_\_ added. This can be in the form of \_\_\_\_\_ or \_\_\_\_\_, both of which are weak acids. This property is used in a marinade, where meat may be \_\_\_\_\_ in a flavoured liquid before cooking. The acid in the marinade begins to \_\_\_\_\_ the protein, and makes the meat more \_\_\_\_\_ before it is cooked. This is beneficial when barbecuing meat, as the method of cooking is quite fast, so does not allow the meat to tenderise much during cooking.

# The effect of cooking food

## Carbohydrates

### Starch

One of the main starchy products we use for our recipes is flour. Flour is usually made from wheat products (although it is now possible to buy gluten-free flour for coeliac sufferers). Flour comes in several different types, and each one is used for a different function.

Type of flour	Reason for use	Examples of recipes showing this function
Self-raising flour		
Soft plain flour		
Strong plain flour		
Durum wheat flour		

Wheat flours also contain \_\_\_\_\_. The starch will not dissolve if it is mixed with cold water or another cold liquid such as milk.

When the mixed water and starch is \_\_\_\_\_, the starch granules start to \_\_\_\_\_ the water, or liquid, and they start to \_\_\_\_\_. This causes the liquid to \_\_\_\_\_. Some of the starch granules will then burst and release the starch, which then forms a gel. This process is called \_\_\_\_\_. An example of this making a white sauce.

Gelatinisation also happens with \_\_\_\_\_.

The \_\_\_\_\_ in flour products is also converted to \_\_\_\_\_ when heated. This is called \_\_\_\_\_.

This happens in dry heat, such as \_\_\_\_\_ or \_\_\_\_\_. You can see this when you toast a piece of bread, and the surface turns brown and crunchy, or when you cook a cake, and the surface goes golden brown.

# The effect of cooking food

## Sugars

Sugars can be bought in various forms for different recipes.

- \_\_\_\_\_
- \_\_\_\_\_

Function of sugar	Reason for use	Examples of recipes
To add sweetness and enhance the flavour of sweet foods such as fruits		
To add texture		
To add colour		
To trap air		

# The effect of cooking food

## Fats and oils

### Shortening

Shortening is the ability of fat to give a product a characteristically \_\_\_\_\_ texture, such as in \_\_\_\_\_ or \_\_\_\_\_. The fat coats the flour particles with a \_\_\_\_\_ layer. This stops the \_\_\_\_\_ forming long strands and makes the final baked product have a \_\_\_\_\_ texture (or mouthfeel) because the fat has \_\_\_\_\_ the gluten strands.

### Aeration

The fat in a \_\_\_\_\_ recipe, such as a \_\_\_\_\_ cake, where the fat is creamed with caster sugar, will \_\_\_\_\_. This will form a stable foam, which is then cooked. The trapped air will \_\_\_\_\_ and be trapped by the gluten in the flour as the cake is cooked.

### Plasticity

Different fats \_\_\_\_\_ at different \_\_\_\_\_. This property is called plasticity. It means that each type of fat has a unique character. It is due to the mixture of combinations of \_\_\_\_\_ in the fats, which are called triglycerides. Each one has its own melting point:

- \_\_\_\_\_
- \_\_\_\_\_

### Emulsification

Fats are \_\_\_\_\_. This means that they will not mix with \_\_\_\_\_, but tend to form large globules when mixed with water, or a liquid. To allow them to mix with a liquid (emulsification), an \_\_\_\_\_ needs to be added. An example of this is when egg yolk is added to mayonnaise to allow the oil and vinegar to mix together.

Fats are \_\_\_\_\_

Oils are \_\_\_\_\_

Fats and oils \_\_\_\_\_

Oils are \_\_\_\_\_



# The effect of cooking food

## Uses of fats in cooking

Function of fats	Reason for use	Examples of recipes
To make cakes, biscuits and pastry (fats are sometimes called 'shortenings')		
To trap air		
To give flavour and moisture to recipes		
To make frostings and toppings for cakes and pastries		
Spread on bread, putting on vegetables, such as potatoes before serving		
To add nutrients in the form of fat-soluble vitamins		

# The effect of cooking food

## Uses of oils in cooking

Function of oils	Reason for use	Examples of recipes
For roasting		
For sautéing		
For shallow-frying, stir-frying or deep-frying foods		
To make salad dressings		
As a dip for breads		

# The effect of cooking food

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Name two properties of eggs that show why they are used in cooking, and give examples of a recipe using each property. (4 marks)
2. Describe what happens to gluten during the kneading of bread dough. (3 marks)
3. Identify a recipe where it would be better to use a marinade before cooking a meat. (2 marks)
4. Suggest two recipes that use self-raising flour. (2 marks)
5. Give two functions of sugar in cooking. (2 marks)
6. Explain how caramelisation adds colour to the top of a cake. (3 marks)
7. Describe how fat helps create a crumbly texture to biscuits. Include reference to its shortening property. (4 marks)
8. What is meant by the term plasticity when referring to fats? Identify different fats that show this property. (3 marks)
9. Explain how fat acts as an aerator in cake making. (3 marks)
10. Name two recipes that use butter or margarine, and explain the function of the fat in each recipe. (4 marks)
11. Explain how adding margarine to a recipe would increase the nutritional value of the final product. (2 marks)
12. Describe what happens when you sauté foods. (4 marks)

# The effect of cooking food

## Chemical reactions in fruit and vegetables

When fruits and vegetables are cut or peeled, the surface of the fruit or vegetable is exposed to the air. The oxygen in the air reacts with the fruit or vegetable; this is called \_\_\_\_\_. When the cells in the fruit or vegetable are cut, they release \_\_\_\_\_ which react with oxygen, turning the fruit or vegetable brown. This is called \_\_\_\_\_. To stop oxidation taking place, you can do one of the following:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Why some recipes do not succeed, and how to remedy situations

Here we will look at the ways that basic recipes may not turn out as expected and the reasons why these problems happen. You can then use this information to correct the problem the next time you make the recipe. Sometimes it is possible to remedy the situation, and sometimes it is not possible. Sometimes you can change the product you are making into something else.

### Cake making

Fault	Cause of fault	How to avoid or remedy the fault
The cake has sunk in the middle		
The cake has risen to a peak and the top has cracked		

# The effect of cooking food

## Cake making cont.

Fault	Cause of fault	How to avoid or remedy the fault
The cake has a heavy texture		
The cake has an open and coarse texture		
The cake has risen unevenly		
The cake has a hard sugary crust		
The cake has not risen		
The dried fruit has sunk to the bottom of the cake		

If the cake has already been cooked, it is not possible to correct any faults, but knowing why problems occurred can help you to avoid them next time you make the cake.

# The effect of cooking food

## Pastry making

Fault	Cause of fault	How to avoid or remedy the fault
The pastry is sticky, soft and difficult to handle		
The cooked pastry is hard and tough		
The cooked pastry is dry and crumbly		
The pastry shrinks when it is cooked		

# The effect of cooking food

## Pastry making cont.

Fault	Cause of fault	How to avoid or remedy the fault
The pastry is oily and soft when cooked		
The pastry is soft and crumbly		
The pastry blisters		
The pastry is pale		
The pastry is too dark		

# The effect of cooking food

## Bread making

As bread has several stages during its making, there are various times that can go wrong

Fault	Cause of fault	How to avoid or remedy the fault
Bread has not risen well and is course		
Bread has a dense texture		
The dough collapses while baking		
The bread is uneven in texture and has large holes		



# The effect of cooking food

## Sauce making

There are three main methods to make a sauce:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Fault	Cause of fault	How to avoid or remedy the fault
The butter in the roux burns before flour is added		
The roux sauce tastes floury		
The sauce mixture is lumpy before being brought to the boil		
The sauce is catching and burning on the bottom		
The sauce is lumpy when it has thickened		

# The effect of cooking food

## Emulsion sauces

These sauces use a mixture of oil and vinegar, with the addition of an emulsifier, which prevents the oil and vinegar from separating.

Sauce	Fault	Cause of fault	How to avoid or remedy the fault
Mayonnaise			
Hollandaise			
Vinaigrette			

# Food Spoilage

## Storing foods correctly

Food must be stored correctly so that it is safe to consume. Storing food correctly can help prevent food \_\_\_\_\_. There are different ways of storing food; the method chosen will depend on the type of food that is being stored.

## Refrigeration of food/cold storage

When foods are refrigerated they provide less risk of food poisoning. The cold temperature slows down any bacterial growth and helps to prevent bacteria activity. There are certain foods that need to be kept in the refrigerator, for example fresh foods such as milk, meat, dairy produce, ready meals and some desserts. Some foods state 'keep refrigerated' on the label, for example, salads, some fruits and vegetables, and ready-prepared items like coleslaw and dips. Other foods state 'refrigerate after opening', for example, UHT milk, jams, chutneys and sauces. When storing food in the fridge, it is important that you store it in the correct place to prevent bacteria from raw foods contaminating cooked foods and ready-to-eat items.

## Rules for storing foods in a refrigerator

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Fill in the fridge – what foods should go where?



# Food Spoilage

## Freezing of food

When food is frozen, the \_\_\_\_\_ of the food is \_\_\_\_\_. The very cold temperature stops the \_\_\_\_\_ of micro-organisms and \_\_\_\_\_ that cause food spoilage. The length of time the food can be stored for will depend upon the star rating of the freezer.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

When food is frozen, the water content in the food becomes \_\_\_\_\_; this prevents any \_\_\_\_\_ of bacteria. When food is \_\_\_\_\_, its structure can be \_\_\_\_\_ and break down; the \_\_\_\_\_ of the food can also be affected. Bacteria activity will start when the food has reached a suitable temperature; this is why it is important that thawed foods are not refrozen.

Rules for storing food in the freezer:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food Spoilage

## Dry storage of food

Dry storage is used for foods that do not need to be stored in a refrigerator (chilled) or freezer (frozen). Foods generally stored in a dry storage area include \_\_\_\_\_.

Some vegetables such as \_\_\_\_\_ and \_\_\_\_\_ can also be stored this way. It is important that the food is stored so that it is safe to eat and that the food maintains its quality.

Foods stored using this method:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. List three possible causes of a cake sinking in the middle during baking. (3 marks)
2. If your pastry becomes too warm, and the fat is beginning to melt, what should you do to allow it to become easier to handle again? (2 marks)
3. You have used a packet of dried yeast for your bread. The bread has not risen properly. Name two possible causes for this. (2 marks)
4. State the correct temperature for a refrigerator. (1 mark)
5. List three rules to follow when storing foods in a refrigerator (3 marks)
6. Describe the correct way to store raw meat and poultry in a refrigerator. (2 marks)
7. Explain two differences between one star (\*), two star (\*\*), and three star (\*\*\*) freezer. (6 marks)
8. Describe the effect freezing can have on some foods. (3 marks)

# Food Spoilage

## Date marks and labelling

When food products are bought they will come with a date mark. This could be a \_\_\_\_\_ or a \_\_\_\_\_.

Use-by date \_\_\_\_\_

Best-before date \_\_\_\_\_

Date marks make sure the buyer is aware of the \_\_\_\_\_ of the product, so they know how long they can keep the food for and for how long the food will be safe to eat. When storing foods in the \_\_\_\_\_ or \_\_\_\_\_ at home, it is important that it is clearly \_\_\_\_\_. This will ensure that the food is used within its appropriate recommended storage time and that the food will be safe to consume.

When storing foods in the freezer they should be clearly \_\_\_\_\_ with the contents so that you are aware of the contents of different containers of food and do not get them mixed up when removing them. Important information such as \_\_\_\_\_, for example if the vegetables have been blanched, should also be included.

When using food from the refrigerator or freezer the \_\_\_\_\_ (FIFO) rule should apply, so that older items are used first. This can also prevent food wastage.

## Exam Practice questions

1. Explain the differences between a use-by date and a best-before date. (2 marks)

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2. Explain why it is important that food is clearly dated when storing in a freezer. (2 marks)

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# Food Spoilage

Growth conditions, prevention and control methods for enzyme action, mould growth, yeast production and bacteria

## Growth conditions

The conditions required to enable micro-organisms to grow and spoil food can vary depending on the type of micro-organism. Micro-organisms can make food unsafe to eat:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The main micro-organisms are:

Yeast \_\_\_\_\_

Moulds \_\_\_\_\_

Bacteria \_\_\_\_\_

The conditions required to enable growth of the micro-organisms are shown in the table below:

Micro-organism	Growth conditions
Yeast	
Moulds	
Bacteria	

# Food spoilage

Enzyme action

Mould growth



Yeast production

Bacteria

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Name the three different types of micro-organisms (3 marks)
2. Which micro-organism can only be seen under a microscope. (1 mark)
3. Name the micro-organism which is found on the skin of some fruits. (1 mark)
4. Identify the 3 conditions mould needs to reproduce (3 marks)
5. Explain what is meant by an enzyme. (2 marks)
6. Describe how enzymes can change the appearance of a food. ( 2 marks)
7. Explain what enzymic browning is and give an example of a food affected by it. (3 marks)
8. Describe one method used to prevent enzyme action. (3 marks)
9. Explain the differences between mould and yeast contamination. (2 marks)
10. List 4 conditions needed by yeasts to become active. (4 marks)
11. Why should leftover foods only be reheated once? (1 mark)
12. Explain why toxins can be harmful to humans. (2 marks)

# Food Spoilage

## Signs of food spoilage

Fresh food can spoil quite quickly during storage. During this time changes could be noticed in the texture, flavour or colour of food. Changes in food are generally caused by micro-organisms such as bacteria, moulds and yeasts. Enzymes will also cause food to spoil. Food can also spoil during storage due to the natural decaying of the food itself. Food that has spoiled is often referred to as food that has 'gone off'.

There are many signs that can help determine if food has spoiled. These include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

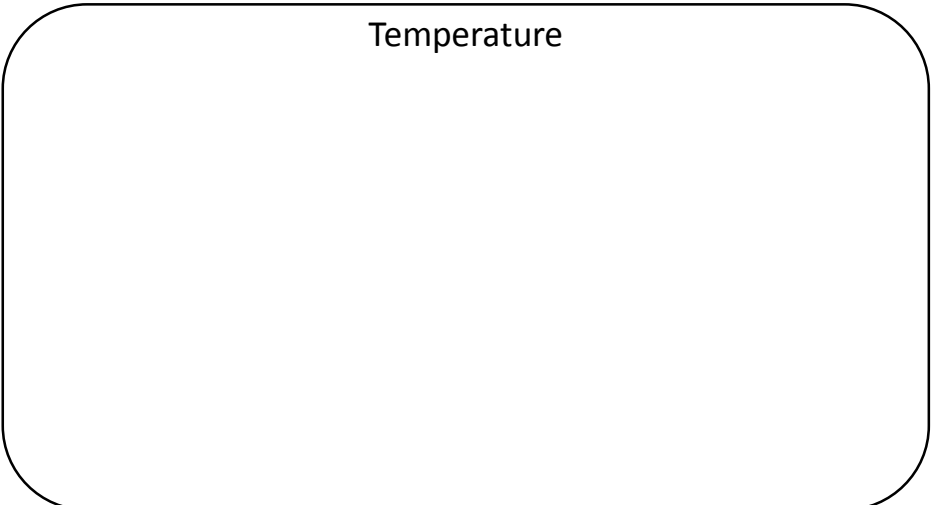
Food spoilage can also be caused by:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

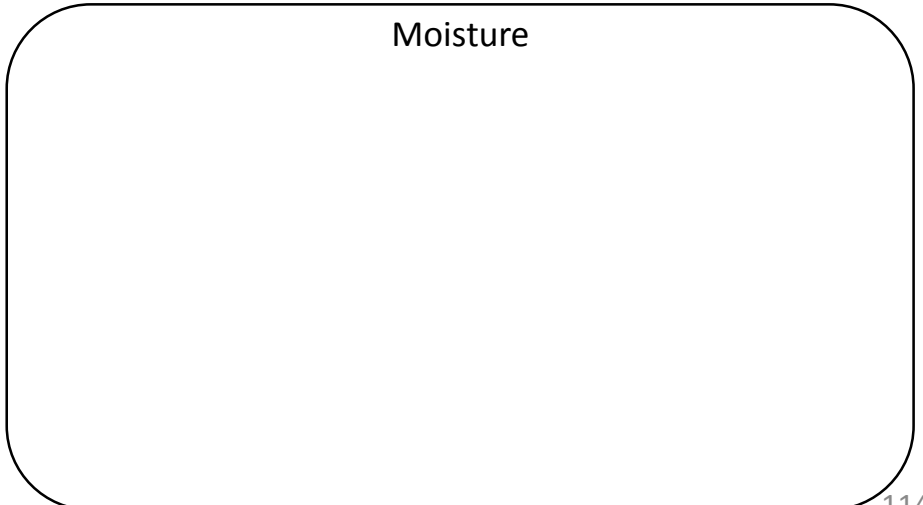
## The role of temperature, time, pH and moisture in the control of bacteria

Temperature and time are two crucial conditions that must be controlled to prevent the growth or reproduction of bacteria.

Temperature



Moisture



# Food spoilage

Enzyme action

Mould growth

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. State 3 causes of food spoilage (3 marks)
2. Identify three signs that could indicate if food has spoiled. (3 marks)
3. Describe how bacteria multiply. (2 marks)
4. Name three foods that bacteria like to multiply in (3 marks)
5. Explain why gravy is considered to be a high-risk food. (2 marks)
6. Explain what is meant by the danger zone. (2 marks)

# Food spoilage

## The types of bacterial cross contamination and their prevention

When food is being stored, prepared and cooked there are many opportunities for \_\_\_\_\_ to take place. Cross-contamination is when micro-organisms such as \_\_\_\_\_ are transferred from a source such as \_\_\_\_\_ to another source such as \_\_\_\_\_ . This can then lead to food poisoning.

The most common causes of bacteria cross-contamination include:

- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Food spoilage

## How to prevent bacterial cross-contamination

Bacterial cross-contamination can be controlled and prevented by ensuring good practices and following basic rules such as:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Exam Practice questions

Complete on separate lined paper in full sentences.

1. Give an example of when cross-contamination can take place during the preparation of food. (3 marks)
2. Explain how raw meat should be stored in a fridge and why the positioning of the meat is important. (3 marks)
3. Explain why it is important to put all raw pieces of meat into a frying pan at the same time. (2 marks)

# Food spoilage

## Preservation

Food is preserved to prevent it from spoiling or 'going off'. When you preserve food you are preventing the growth of micro-organisms such as bacteria and moulds and trying to delay the decaying of food. Preservation aims to extend the shelf life of a food product.

Freezing

Pickling

Freezer burn

Jam making

# Food spoilage

## Preservation

Bottling

Vacuum packing

## Exam Practice questions

1. Explain the process of blanching. (3 marks)

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2. Explain what the term 'freezer burn' means. (2 marks)

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# Food Spoilage

## Signs and symptoms of food poisoning

Food poisoning is an illness that is caused by the consuming of food or water that has been contaminated by specific pathogenic bacteria or their toxins, or by other harmful micro-organisms. There are many reasons why food poisoning can occur. Some of these include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Bacterial contamination

The most common cause of food poisoning is bacterial contamination. Bacteria need four requirements to be able to reproduce:

Food: \_\_\_\_\_

Warmth: \_\_\_\_\_

Moisture: \_\_\_\_\_

Time: \_\_\_\_\_

With all the requirements above, bacteria will reproduce every 10 to 20 minutes. If you take away one of more of these requirements, then the bacteria could be slowed down or prevented from growing. This could help reduce the risk of food poisoning. There are different types of pathogenic bacteria that will cause different food poisoning symptoms. This type of bacteria rarely change the smell, appearance or taste of the food. Some examples of food poisoning are shown in the table on the next page.



# Food spoilage

## Causes and symptoms of food poisoning

Type of bacteria	Food poisoning symptoms	Food sources	Where the bacteria is found
Salmonella			
Campylobacter			
E-coli			
Staphylococcus			

### Exam Practice questions - Complete on separate lined paper in full sentences.

1. Give two reasons why food poisoning occurs. (2 marks)
2. Name two symptoms of Salmonella food poisoning. (2 marks)
3. Describe in detail two of the requirements needed by bacteria to be able to reproduce. (4 marks)

# Food Spoilage

## Food wastage

As a country we generate a large amount of food wastage. According to the 'Love Food Hate Waste' website we throw away 7 million tonnes of food and drink from our homes every year in the UK, and more than half of this is food and drink we could have eaten. The main types of foods that are thrown away as waste include fresh vegetables and salad, fresh fruit, bread, cakes, prepared foods such as pasta and rice, as well as meat-based meals and takeaways. On many occasions whole, unopened packs of these items are disposed of.

There are many reasons why we waste so much food. These include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Effects on the environment

Financial implications of waste

Ways to reduce food wastage

# Food provenance

## Food origins: where and how foods are grown, reared, or caught

### How foods are grown

There are many different foods grown in the UK, some of the main crops grown in the UK include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The UK does not produce all the food that is required to feed everybody due to the population size and the climate, so some food is \_\_\_\_\_ from other countries. An example of this would be some of the fresh fruits and vegetables (for example, exotic fruits) that are available in supermarkets. There is a range of methods used for \_\_\_\_\_. How the foods are grown will depend upon the type of foods being grown. Farming is an example of how foods are grown in the UK. The main two forms of farming are \_\_\_\_\_ and \_\_\_\_\_.

### How crops are grown

When growing crops such as wheat and barley, a number of points must be considered by the farmer. Some of these include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The process of growing crops include stages such as:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The eastern and southern areas of England tend to be the best areas for growing cereal crops due to the fields being more flat and open. Some areas in Wales and Scotland focus more on sheep and dairy farming due to the land being hillier and therefore unsuitable for producing crops.

# Food provenance

Growing soft fruits

Growing hard or stone fruits

Growing vegetables

Intensive farming

Organic farming

# Food provenance

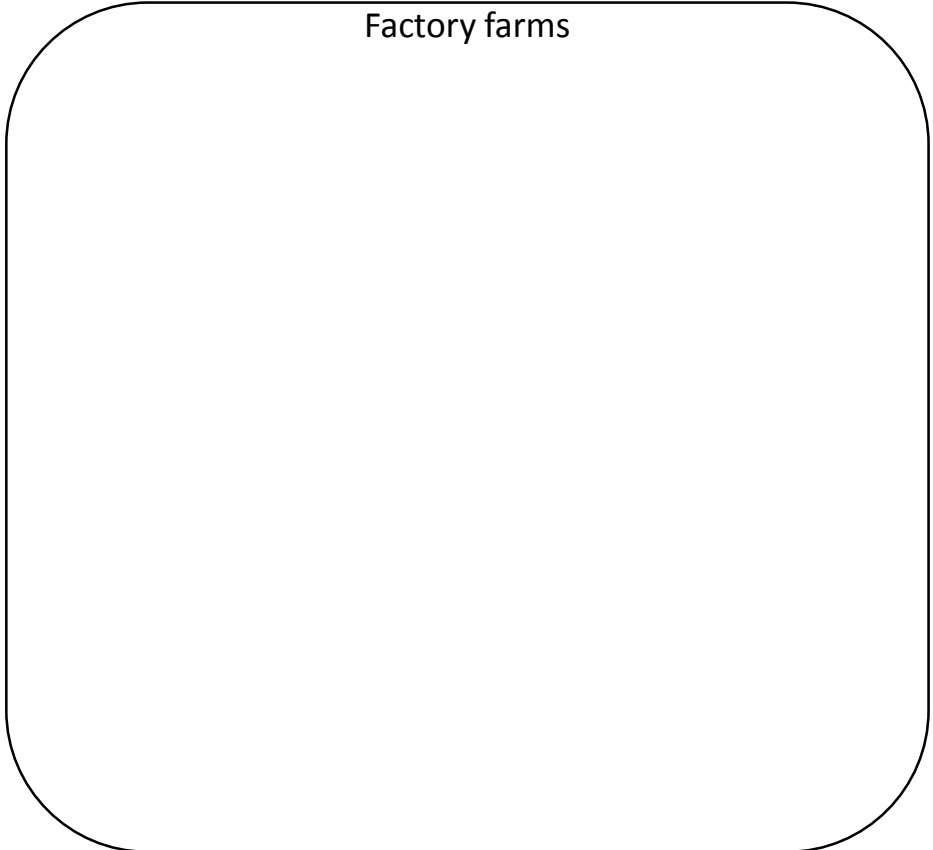
## How foods are reared

Many animals are reared on a large scale in \_\_\_\_\_ to provide food to be sold in \_\_\_\_\_ and \_\_\_\_\_. Some animals are reared on a \_\_\_\_\_, in family-owned farms or one-animal specialist farms. It is estimated that each year approximately \_\_\_\_\_ animals are killed to provide food.

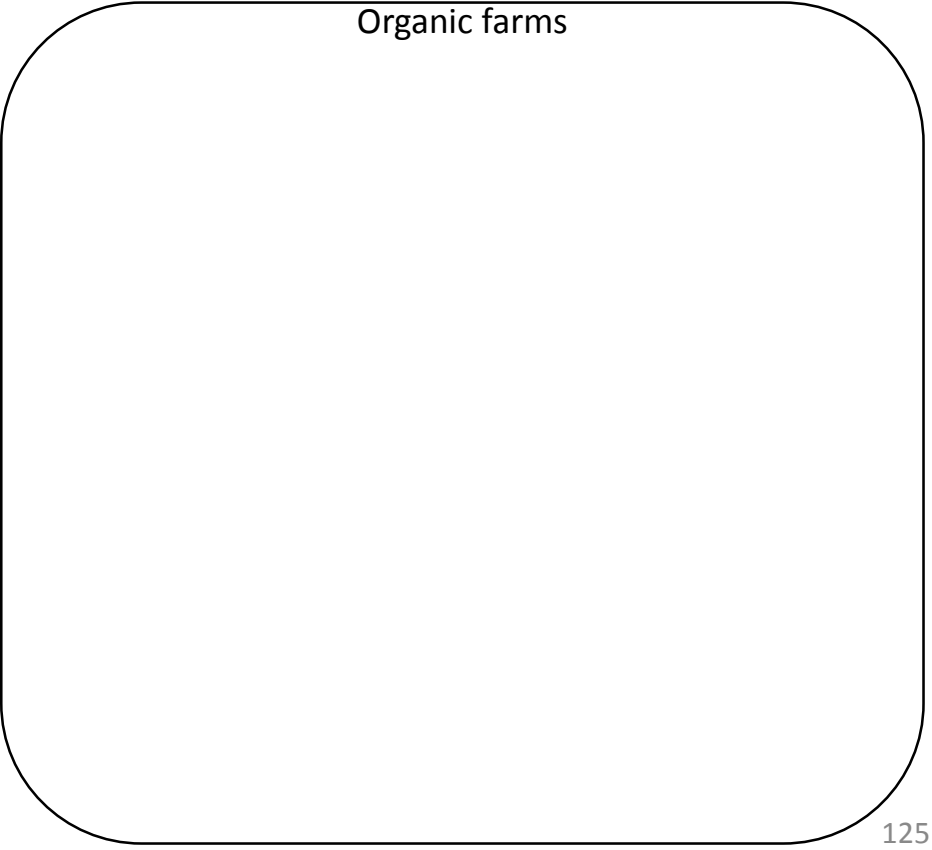
Some examples of animals reared for food include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Factory farms



Organic farms



# Food provenance

## How foods are caught

Many different types of fish are caught for food. Some of these include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

There are many different methods used to catch fish. The method will depend on:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Some fishing methods, which do not catch a large amount of fish, can have a \_\_\_\_\_ on the environment compared to \_\_\_\_\_ fishing which is on a large scale and aims to catch enormous amounts of fish. Large-scale fishing can cause problems in the marine environment.

Most of the fish we eat are caught by \_\_\_\_\_. This uses a net or nets to catch the fish. There are many different methods of trawling, which use nets in different ways. Some examples include pelagic trawling, otter trawling, beam trawling and pair trawling.

Other methods used to catch fish include:

Purse-seining \_\_\_\_\_

Dredging \_\_\_\_\_

# Food provenance

Farmed fish

Lobster and crab pots

## Exam Practice questions - Complete on separate lined paper in full sentences.

1. List 3 of the main crops grown in the UK. (3 marks)
2. Explain the difference between intensive farming and organic farming. (4 marks)
3. Describe why some customers will choose to buy organic produce when buying food. (6 marks)
4. Name 3 animals reared for food. (3 marks)
5. Explain why many people could be against factory farming for animals. (2 marks)
6. State 2 organic standards that must be met in organic farming. (2 marks)
7. Name 2 oily fish and 2 shellfish that are caught for food. (4 marks)
8. Describe 2 different methods used to catch fish. (2 marks)
9. Explain how farmed fish differ to caught at sea. (2 marks)

# Food provenance

## Food miles

Food miles is a term used to describe the \_\_\_\_\_.

This also includes the miles the consumer has travelled from home to the shop to buy the food.

Many of the foods available to buy in shops are from \_\_\_\_\_ and \_\_\_\_\_ that are in towns or rural areas that are hundreds of miles away from the shop. This could be due to a number of reasons. For example, the crops required to produce the foods could have been grown in that particular area, or the food manufacturer may have its main processing plant in that area. These foods or food products are then transported all over the country to various shops, so that consumers can buy them.

Some fruits and vegetables available in our shops and supermarkets come from other countries. This is because these foods are not in season or cannot be grown in the UK, so would not be available for us to buy if we did not import them.

Importing foods from other countries means that we can buy foods such as strawberries and asparagus when we want to at many other times of the year rather than just when they are in season. When foods travel or are imported they could be transported by: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

## Carbon footprint

The meaning of the term carbon footprint of a product is the amount of \_\_\_\_\_ that have been produced during the \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ (transporting) of a food product. In basic terms, this means all of the processes that must be gone through to create a \_\_\_\_\_.

The carbon footprint includes the estimated amount of \_\_\_\_\_ (CO<sub>2</sub>) given out as vehicles travel. Importing foods can have a huge impact on the carbon footprint, and transporting foods by air has \_\_\_\_\_ than transporting foods by \_\_\_\_\_ or \_\_\_\_\_ – although these methods are still considered to be an environmental problem. When foods are being transported in lorries by road, the lorries burn fuel, producing large amounts of air pollution.

When foods are being transported by road, sea or air, \_\_\_\_\_ are burned. This affects the environment because when fossil fuels are burnt they release carbon dioxide gas emissions, which have a big impact on \_\_\_\_\_. Global warming is described as the gradual heating of the Earth's surface, oceans and atmosphere.

Reducing transportation emissions is one of the most important steps that needs to be taken to fight global warming. Another step is to \_\_\_\_\_, as these will absorb the carbon dioxide. Buying local produce can also help the environment.



# Food provenance

## Buying foods locally

Buying foods locally means purchasing items near your home – this could be from the shop around the corner, from the greengrocers in the local town, or from the nearby farm that sells meat. This means that the foods were grown, assembled or manufactured nearby.

By purchasing foods that are produced and grown locally you:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Exam Practice questions

1. Explain the benefits of buying locally produced fresh vegetables instead of imported fresh vegetables. (6 marks)

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# Food provenance

## Packaging

Most of the foods we buy in shops are sold in some form of packaging. Some foods that are not sold in packaging include \_\_\_\_\_.

When consumers buy these products they often put them into \_\_\_\_\_ or \_\_\_\_\_ bags supplied by the shop or supermarket, so they do still have some form of packaging. There are many different types of packaging used for foods and food products; the type of packaging will often depend upon the foods or food products being sold.

## Why are foods packaged?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## The value of packaging for manufactured foods and food products

Food packaging is used to market a product. It is a method used to encourage customers to buy a particular product. The outside packaging will provide customers with essential information such as:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Types of packaging materials used

Type of packaging material	Examples of food
Card/paper	
Glass	
Plastic	
Metal, foil and cans	
Ovenable paperboard	

# Food provenance

## What impact does packaging have on the environment?

Food packaging can effect the environment in a number of ways:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Exam Practice questions

1. State 3 reasons for packaging foods. (3 marks)

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2. Give two reasons why a consumer could find the packaging of a food product useful. (2 marks)

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3. Explain why packaging is considered to be harmful to the environment. (4 marks)

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# Food provenance

## Sustainability of food

Sustainability is about meeting a variety of needs for \_\_\_\_ and \_\_\_\_\_, and \_\_\_\_\_. It is about meeting the needs of the country's population, as well as globally, in relation to food availability and the growing of food using \_\_\_\_\_. It is about considering where our food comes from and the process from \_\_\_\_\_, the necessity of avoiding food wastage and reducing the impact on the environment, and the importance of buying local and seasonal food, taking into consideration the farming and growing methods used to provide food.

## The impact of food waste on the environment

As a nation we throw away \_\_\_\_\_ of pounds worth of unused food every year. If the food that we waste goes to landfill sites, it will go through the process of decay and eventually rot. When food rots it produces methane; this is a powerful greenhouse gas. Therefore we are advised to reduce our food wastage.

## Recycling

Some of the leftover food or peelings from preparing foods that we throw away could be put to use by recycling them in a compost heap or food recycling bin. This would be suitable for leftovers such as:

- \_\_\_\_\_
- \_\_\_\_\_

This will rot down and produce fertiliser that can be used in the garden by adding to the soil when planting seeds.

## Reusing food

Reusing leftover food is a positive step that can be taken to reduce the amount of food we waste, as well as reducing the impact it has on the environment. By doing this, the amount of money that is spent on food would be reduced, and the nutritious ingredients could be used to produce more home-cooked meals. Ways to reuse leftover foods could be:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food provenance

## Local and global markets and communities

Local markets

Global markets and communities

Community farming

# Food provenance

## The effect of food poverty

Food poverty means that an \_\_\_\_\_.

The type of food that people in this situation tend to consume is often low-cost food that is high in fat and sugar, which can then lead to diet-related issues such as \_\_\_\_\_ and \_\_\_\_\_. Sometimes people find themselves having to go without food, or missing out on meals due to not having sufficient money available to buy food.

According to the Joseph Rowntree Foundation report Monitoring Poverty and Social Exclusion, in 2010 there were \_\_\_\_\_ people living in food poverty in the UK.

There are many different charities in the UK that provide information about the rise in food poverty. \_\_\_\_\_ and \_\_\_\_\_ are just two examples. FareShare, for example, highlights that \_\_\_\_\_ tonnes of food is wasted every year by the food and drink industry, with 10 per cent of the food being surplus and fit for consumption. The charity aims to make use of this surplus by linking with businesses in the industry and distributing the leftover food to people who are considered in need due to food poverty.

Food poverty is on the increase for a number of reasons:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Problems for children

Food banks

# Food provenance

## Food security

The World Food Summit of 1996 defined food security as existing '\_\_\_\_\_'. The concept of food security is defined by the \_\_\_\_\_ (WHO) as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. Food security is built on three main features that must be consistent all year round:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Food availability

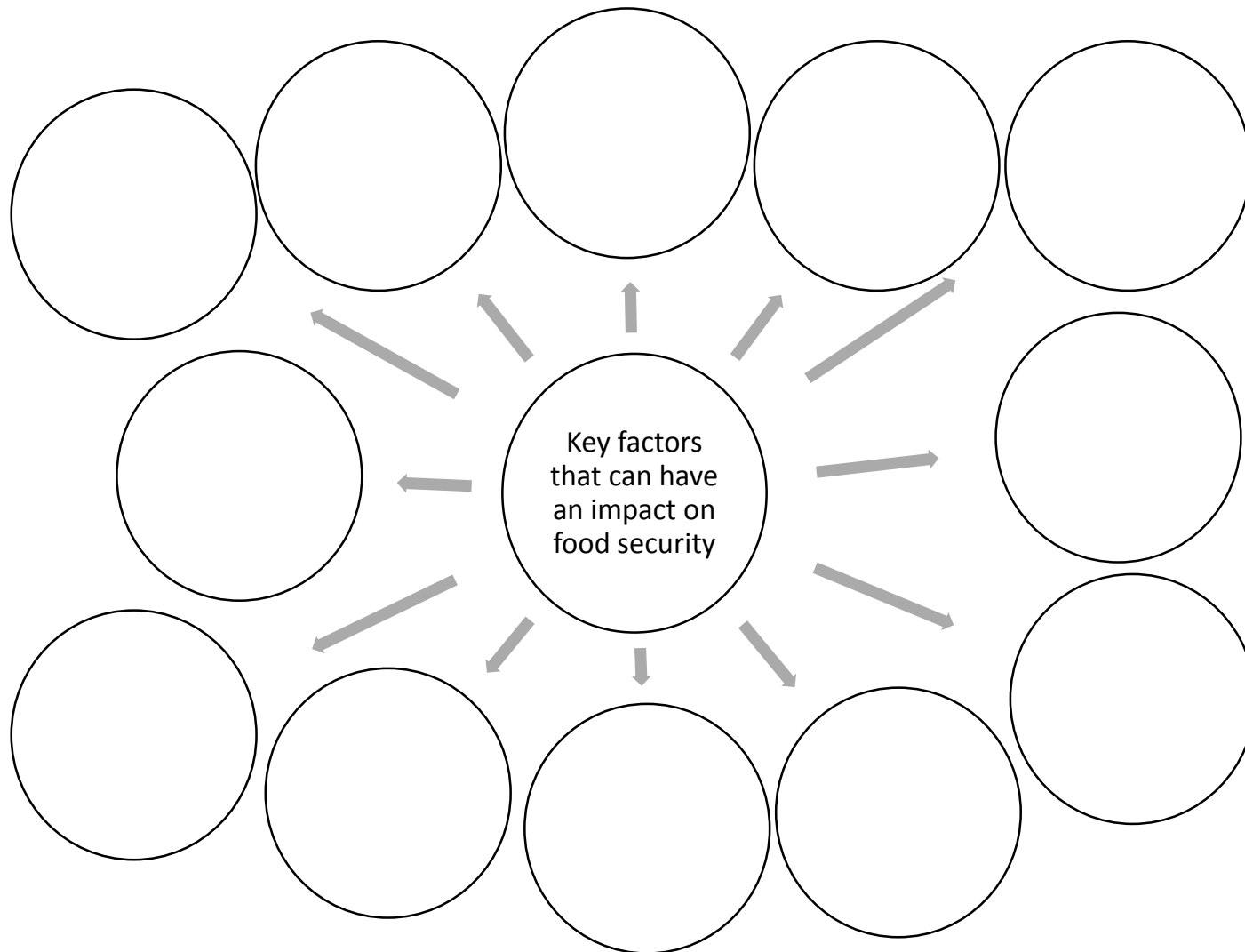
Food access

Food use

# Food provenance

## Key factors that can have an impact on food security

Food security is not just one individual element; it is many different elements that link together and affect many different countries.



### Exam Practice questions

Complete on separate lined paper in full sentences.

1. Name 2 dishes that could be made using leftover roast chicken. (2)
  2. Suggest 2 ways of using left over cooked rice. (2)
  3. Explain the safety issues regarding reheating cooked rice. (2)
  4. List 3 benefits of shopping at a local market. (3)
  5. Explain why the demand for food has grown over recent years. (2)
  6. Describe the benefits of community farming. (4)
  7. State 3 reasons why food poverty has increased. (3)
  8. Explain the meaning of food availability. (4)
  9. State 2 factors that are related to food use. (2)
- Name 3 factors that can have an impact on food security. (3)



# Food manufacturing

## Culinary traditions

When using the term cuisine, we are referring to the traditions of a country in relation to types of foods, meals, recipes and the different styles of cooking associated with the country.

### British Cuisine

Traditional British food could be described as \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and at times simple in its \_\_\_\_\_, as well as \_\_\_\_\_ to eat.

### Traditional dishes

Traditional dishes are regarded as typical dishes or meals associated with a cuisine. Some of them could be from a particular area of the country; some could be made using a particular method, or include a key ingredient associated with the country, for example \_\_\_\_\_, which are a staple British food. Other examples of typical British staple foods could include \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. Examples of traditional British dishes include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Modern British cuisine

Meal structures

# Food manufacturing

## International cuisine

There are many different international styles of foods, dishes and meals, which are available in supermarkets and restaurants for the consumer to experience. Examples of some of the cuisines you may find in your high street or area are shown in the table below and on the following page. The style of dish and types of ingredients used can vary considerably according to region and or state.

Type of cuisine	Example dishes	Key ingredients	Cooking methods
American			
Chinese			
French			

# Food manufacturing

## International cuisine

Type of cuisine	Example dishes	Key ingredients	Cooking methods
Italian			
Indian			
Mexican			

# Food manufacturing

## Meal structures

Many European countries have the same eating pattern as British cuisine: breakfast, lunch and an evening meal. Often lunch can be the most important meal and in some countries (for example Italy) many places of work like shops or banks will close early afternoon to allow workers to go home or dine out for lunch.

A typical Italian lunch will consist of a first course – this could be pasta or a rice-based dish. The second course would be meat, fish or vegetables. Fruit is often eaten to end the meal.

If the meal is related to festivities or a celebratory occasion then the number of courses can increase and the meal could involve:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Within different cultures, for example Chinese and Indian, the meal structure can be quite different compared to the European style. A large number of dishes can be put onto the table at the same time for people to select from, offering them a variety of flavours and foods.

### Exam Practice questions – complete on separate lined paper

1. British cuisine has changed over the last couple of decades. Explain how this style of cuisine has changed to have a modern approach. (4 marks)

# Food manufacturing

## Primary stages of processing and production

One of the first or primary stages of processing foods is to grow or rear a food so that it can be changed or transformed into a suitable state to either be eaten or used in the production of other products. A primary food is not edible in its original state; it has to be changed or have some form of preparation before it can be eaten. An example would be a raw potato. Sometimes, the primary processing can be quite basic, for example peeling vegetables or washing salad leaves. Other examples of primary foods could include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Wheat is an example of a primary food. It is processed into flour, which is a secondary source of food.

## Point of origin

The point of origin for a food item generally means where the essential character of the food is \_\_\_\_\_ or \_\_\_\_\_. A potato, for example, is a staple food that can be grown in fields on farms, on allotments and in gardens. Potatoes are grown to be sold in various areas of the UK, for example Cornwall and South-West Wales. When identifying the point of origin for the potatoes, these areas would be named, as the potatoes would have been grown on farms or allotments in these areas.

## Transportation of primary foods

Once grown or reared, primary foods are transported to the \_\_\_\_\_ or \_\_\_\_\_. This could be done using one of many methods or a combination of methods. The method or methods chosen will depend upon the location of the farm or allotment on which the goods were reared or grown and where processing is taking place.

Transportation could be in the form of:

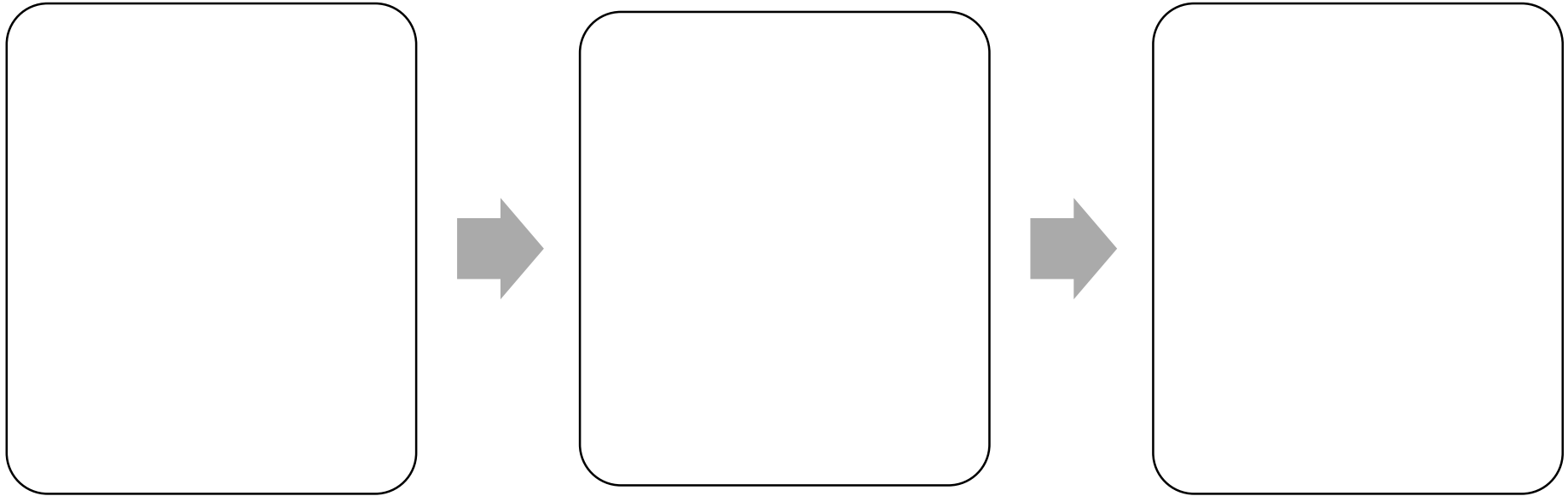
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food manufacturing

## Cleaning and sorting of raw foods

Primary stages of processing and production also include the cleaning and sorting of the raw materials. This may be carried out to remove any unwanted debris, to clean off mud or dirt, or to remove any damaged goods.

Complete the chart that identifies stages of this process for potatoes.



### Exam Practice questions – complete on separate lined paper

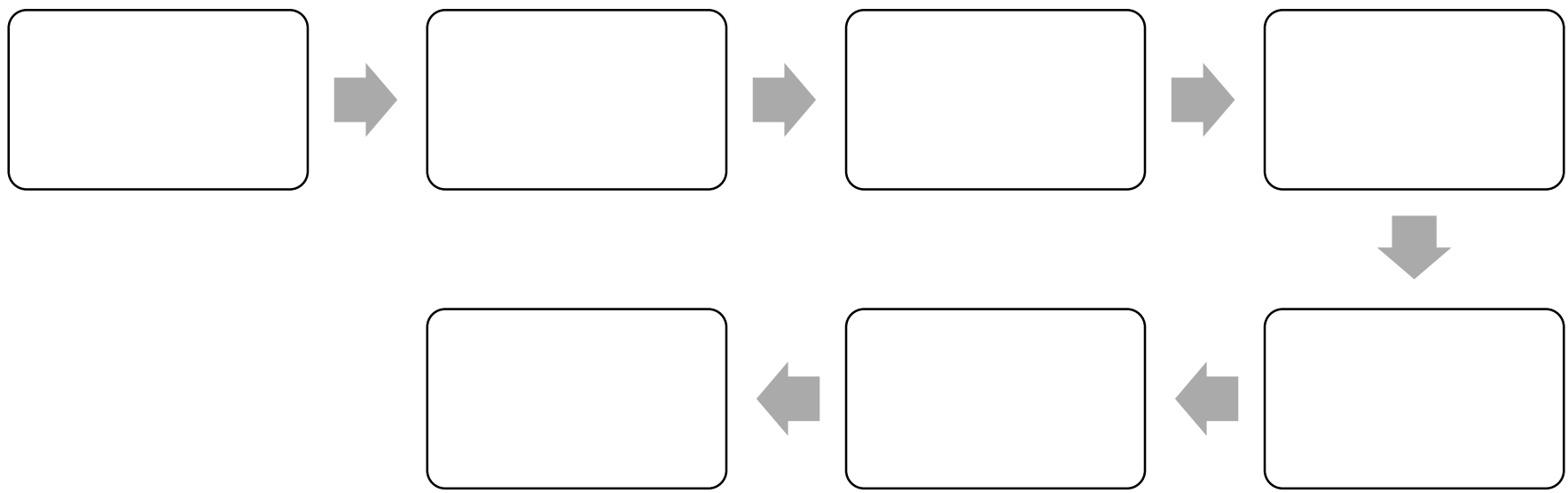
1. Explain what a primary food is and give an example of one. (2 marks)
2. Name two more primary foods. (2 marks)
3. Explain what point of origin means
4. State 2 methods of transportation for primary foods. (2 marks)

# Food manufacturing

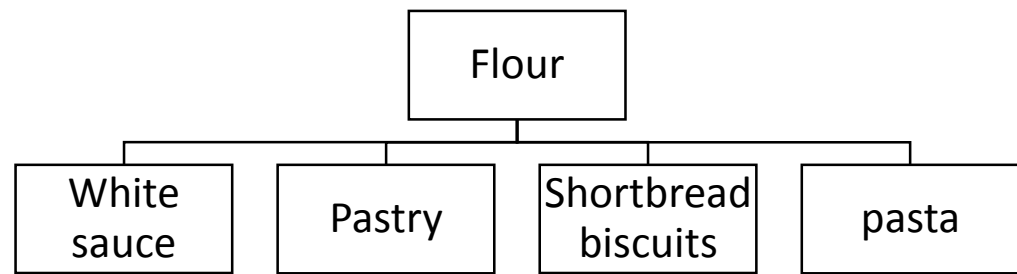
## Secondary stages of processing

Secondary processing is when you \_\_\_\_\_ or \_\_\_\_\_ the primary food into an \_\_\_\_\_ which can then be used to make a food product. Secondary processing can provide an opportunity to create a wide variety of foods. Flour processed from wheat is a secondary product; it has been changed or converted into an ingredient that can be used to make many different food products.

An example product would be bread. To end up as a finished final food product there would be many different stages of processing involved:



Flour can be used as a main ingredient to make a range of different food products.



# Food manufacturing

There are many other examples of primary foods that are processed into secondary foods and then used to produce other products. Two examples can be seen in the table below:

Primary food	Secondary process	The product after secondary processing
Milk	Pasteurisation	Cheese  Yoghurt
Fruit	Heating/stewing	Jam  Jelly

## Exam Practice questions

1. Explain the differences between primary and secondary processing. (2 marks)

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# Food manufacturing

When certain foods, for example some meats, go through the secondary processing stage they can also undergo \_\_\_\_\_ treatments, which can affect the \_\_\_\_\_ of the food.

Preservation treatments are used to prevent the growth of harmful \_\_\_\_\_ that can cause food spoilage and food poisoning, and to extend the shelf life of the food. Meats that undergo preserving treatments can have an extended shelf life of several \_\_\_\_\_, \_\_\_\_\_ or even \_\_\_\_\_. An example of a preserving treatment would be curing.

Curing is when meat is treated with preserving \_\_\_\_\_, for example \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. Examples of meats that are cured include \_\_\_\_\_.

Some of these processing methods can alter the sensory properties of the food, in particular the flavour and colour of the meat. For example, bacon can have a very salty taste; smoked meats can have a very strong, concentrated smoky flavour and luncheon meat can have a bright pink colour.

## Technological developments that support food processing and production

There are many technological developments that support food processing and production.

### The increased use of computers in manufacturing

Computers are increasingly used to control production systems. This means that using computers throughout the different stages involved in the manufacturing of a food product has increased. Many manufacturers make use of computers to increase productivity and overall standards. Using computers in the manufacturing process is often referred to as Computer-Aided Manufacturing (CAM). The advantages of using Computer-Aided Manufacturing (CAM) are:

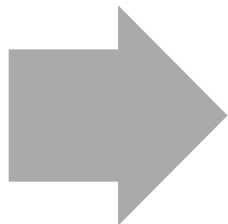
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Food manufacturing

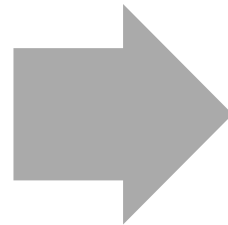
## How are computers used in the processing of food products?

Computers can be used during various stages of processing a food product. Some of the stages are identified below:

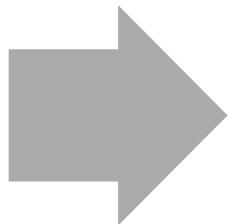
Weighing of  
raw ingredients



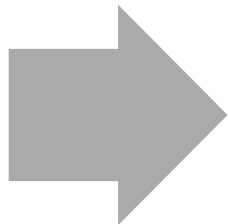
Combining of  
ingredients to form  
a dough or mixture



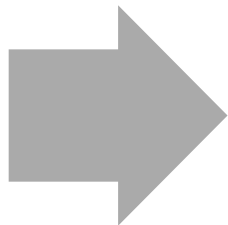
Dividing of dough  
or portioning of  
ingredients



Baking of  
food products



Packaging  
of products



# Food manufacturing

## Introduction of new processes

Freeze-drying is an example of a new process. When a food has been freeze-dried it has had all of its \_\_\_\_\_ removed by a special form of drying.

The food is frozen first and is then placed in a strong vacuum. The water that is present in the food will \_\_\_\_\_ that means it will turn straight from ice into vapour. Examples of foods that can be freeze-dried include some fruits like \_\_\_\_\_; \_\_\_\_\_ is another popular freeze-dried product. Freeze-drying does not have as much effect on the taste of the food as normal drying does.

## Exam Practice questions

1. Explain in detail how Computer-Aided Manufacturing (CAM) saves time. (2 marks)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Explain why computers would be used during the processing of a food product to portion ingredients or divide a mixture up. (2 marks)  
\_\_\_\_\_  
\_\_\_\_\_
3. Name two foods that can be freeze-dried. (2 marks)  
\_\_\_\_\_  
\_\_\_\_\_
4. Manufacturers will use computers during the processing of many different food products. Explain why a manufacturer would use sensors when baking bread products. (3 marks)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Food manufacturing

## The positive and negative effects of food modification on health

During food processing, manufacturers will sometimes use additives. There are three different groups of additives:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

The table below shows examples of additives and why they are used. Any additive that is used in the UK has to undergo strict testing and be approved. Numbers are allocated to additives once approved so that they can be identified. If an additive has an 'E number' this means it is accepted as being safe to use by the countries of the European Union.

Type of additive	Why used	Example foods
Preservative	<ul style="list-style-type: none"><li>• to extend shelf life</li></ul>	
Flavour intensifier	<ul style="list-style-type: none"><li>• To improve the taste of food by adding flavour</li><li>• To restore flavours lost in processing</li></ul>	
Stabilisers and emulsifiers	<ul style="list-style-type: none"><li>• To help products mix together and prevent ingredients from separating out when the product is being stored</li><li>• To give foods a smooth and creamy texture</li><li>• To extend shelf life of baked goods</li></ul>	
Colourings	<ul style="list-style-type: none"><li>• To make foods look attractive</li><li>• To boost the colour of foods already present</li><li>• To add colour to food lost during processing</li></ul>	

# Food manufacturing

## Advantages of using additives

The positive reasons for using additives during food manufacture include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Disadvantages of using additives

There are some disadvantages to using additives. These include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Due to the amount of additives used in different food products and the different types that are used, there is a concern that the consumption of these on a daily basis could have an impact on health, in particular children's health. An example of this would be the linking of additives to the occurrence of hyperactive behaviour in children.

## Exam Practice question

1. Some food products contain additives. Describe the benefits of using additives when manufacturing food products. (6)

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# Factors affecting food choice

## How sensory perception guides the choices that people make

Sensory perception is the way we recognise flavour in our food. Flavour is the sum of all the sensory stimulators. Our brains receive flavour as a mixture of a foods \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ in one single sensation. These sensory stimulators have an influence on our food choices.

## Taste

Taste is constantly thought of as the major influence on how we select and enjoy food. From an early age, taste and familiarity influence our food choices. A liking for sweet foods and a dislike of bitter foods are thought to be an innate part of human nature, i.e. something you're born with.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## How taste receptors work

Taste buds are found on your tongue. Your tongue is covered in tiny hair-like structures called \_\_\_\_\_ (each one is called a lingual papilla). There are four types of papillae on the human tongue; three of these are associated with taste buds.

The surface of the tongue has tiny holes, or pores, in it. As you chew the food you are eating, the food dissolves in the saliva you produce. It enters the pores and comes into contact with the taste receptors. These are located at the top of the taste buds. The taste receptors send information via the nervous system to the brain, and flavours are identified.

The average life of a taste bud is ten days, so they are continually replaced by the body

The taste buds detect the five elements of taste:

Sweetness: \_\_\_\_\_

Sourness: \_\_\_\_\_

Saltiness: \_\_\_\_\_

Bitterness: \_\_\_\_\_

Umami: \_\_\_\_\_

Through the combination of these five elements of taste, we detect flavours.

# Factors affecting food choice

Smell

Sight

Feel

## Exam Practice questions – complete on separate lined paper

1. Explain why someone who has reduced sense of smell cannot experience such a heightened sense of taste as someone with a normal sense of smell. (3 marks)
2. Describe how the taste buds in the mouth detects the flavour of the food you are eating. (3 marks)
3. Name the five elements of taste and give an example of a food for each one. (5 marks)

# Factors affecting food choice

## Sensory qualities of foods and taste testing

When we talk about the sensory qualities of food we are referring to the look or \_\_\_\_\_, the smell or \_\_\_\_\_, the \_\_\_\_\_ and the \_\_\_\_\_ (also known as mouthfeel) and if applicable the sound of the food.

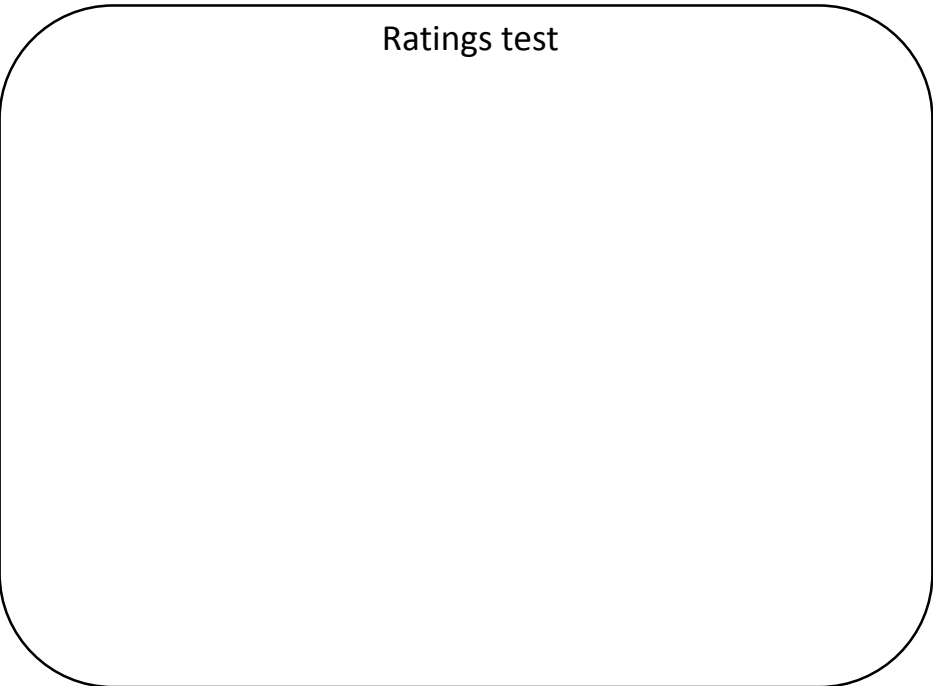
In schools many students will evaluate the \_\_\_\_\_ of the food products they have made; this is called \_\_\_\_\_ and involves the taste testing of the food products. By carrying out taste testing you are able to:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

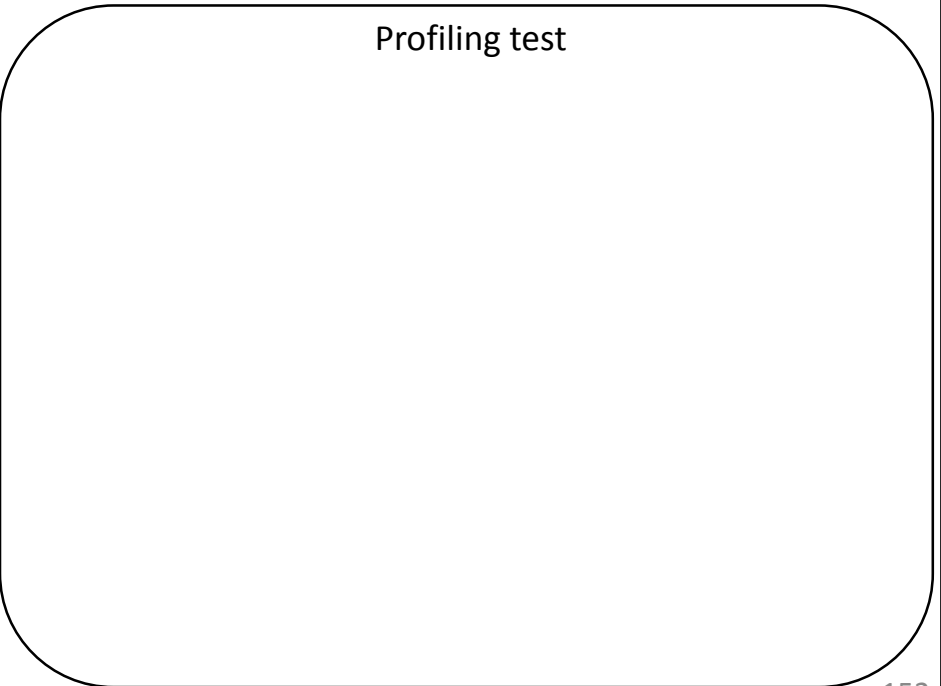
## Taste tests

There are many different taste tests that are used to evaluate the sensory qualities of food products as well as establish if food products are liked or disliked by other people.

Ratings test



Profiling test





# Factors affecting food choice

Star profile

Setting up tasting panels for preference testing

Exam Practice questions – complete on separate lined paper

1. State two reasons for carrying out taste testing. (2 marks)
2. Explain the difference between a ratings test and a star profile. (4 marks)
3. List 3 controlled conditions a food manufacturer would have to consider when setting up a tasting panel. (3 marks)

# Factors affecting food choice

## The range of factors that influence food choice

The major determinates of food choice are:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Enjoyment

Preferences

# Factors affecting food choice

Seasonality

Costs

# Factors affecting food choice

Availability

Time of day

# Factors affecting food choice

What activity you have planned

celebrations, occasions and culture

## Exam Practice questions – complete on separate lined paper

1. Explain why someone living in a small village, who relies on a daily bus service to get to the local town, will have less opportunity to buy a large range of food. (6 marks)
2. Identify the type of snack that someone walking home after a night out with friends might buy. Discuss why they select a product like this to buy.

# Factors affecting food choice

The choices that people make about foods according to religion, culture or ethical belief

## Religions and cultures

We have talked about the different religions and all the foods that Muslims, Jews and Hindus are allowed to eat and those that they must avoid because of their religious rules.

Muslims \_\_\_\_\_

Jews \_\_\_\_\_

Hindus \_\_\_\_\_

## Ethical beliefs

Many people become vegetarian or vegan because of ethical beliefs. Some of the reasons include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Medical reasons

The medical conditions that require special or restricted diets are:

Pregnancy \_\_\_\_\_

Coeliac disease \_\_\_\_\_

Type 2 Diabetes \_\_\_\_\_

Cardiovascular disease \_\_\_\_\_

Coronary Heart Disease \_\_\_\_\_

Stroke \_\_\_\_\_

Obesity \_\_\_\_\_

Allergies and intolerances \_\_\_\_\_

Personal choices can be extremely varied and based on upbringing, religion, peer pressure, income and all other points we have discussed above.

# Factors affecting food choice

## How to make informed choices about food and drink to achieve a varied and balanced diet, including an awareness of portion size and costs

A balanced diet will contain a variety of foods that provide the necessary nutrients. All processed food is labelled with information to allow the consumer to make informed choice of what to eat.

Portion sizes can be calculated by looking at recipes, which usually give the number of servings for the finished dish, or by checking the packaging of a ready meal, which will state the number of servings per product. It is possible to calculate the total number of calories per portion by adding up the total calorie values of foods used in recipes and dividing by the number of portions you are serving. All this information can be used to find and plan balanced diets for individuals.

### Food labelling

In December 2014, food labelling regulations changed to make food manufacturers include further information on food labels by law. Food labels must have the following information on them by law:

The name of the product \_\_\_\_\_

A Best-before or Use-by date \_\_\_\_\_

Quantity information \_\_\_\_\_

A list of ingredients \_\_\_\_\_

Allergens \_\_\_\_\_

# Factors affecting food choice

Name and address of the manufacturer, packer or seller \_\_\_\_\_

The lot number of the food \_\_\_\_\_

Any special storage conditions \_\_\_\_\_

Instructions for cooking, if necessary

Country of origin \_\_\_\_\_

A warning if the product contains GM ingredients \_\_\_\_\_

A warning if it has been irradiated

The words 'packaged in a protective atmosphere' \_\_\_\_\_

Any necessary warnings \_\_\_\_\_

From December 2016, the law states that mandatory nutritional information must be included on food labels.

## What other information is on food labels and why?

Many manufacturers choose to put added information on food labels. This is to inform the consumer, but also to attract customers to the product and persuade them to buy them.

### Nutritional information

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Factors affecting food choice

## 'May contain'

Some products state that they 'may contain' a product, for example \_\_\_\_\_. This is because the manufacturer may not be able to guarantee the product is free from this allergen.

## Nutritional and health claims

These are also covered by European regulations, but are a separate regulation to the labelling laws. To use a health claim on a food or drink, it must be authorised and listed on the European register of claims and it must meet certain conditions. For example, if a food says it is a good source of fibre, it must have at least 3g of fibre per 100g of product.

Examples of nutritional claims are:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Health claims are claims that suggest there is a relationship between the product and good health. Examples of health claims are:

- \_\_\_\_\_
- \_\_\_\_\_

The health claim of the company must be reviewed by a panel of experts (the European Food Safety Authority) who assess whether the claim is supported by scientific evidence. They then decide whether to authorise the claim and how it should be worded.

## E numbers, antioxidants and preservatives

These are listed ingredients. They can be checked against lists found on the internet that will identify the names of the chemicals used. Two websites that can be used to find this information are: [www.ukfoodguide.net](http://www.ukfoodguide.net) and [www.nutrition.org.uk](http://www.nutrition.org.uk)

# Factors affecting food choice

## Flavourings, flavour enhancers, sweeteners, emulsifiers and gelling agents

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

All additives used in the EU must have undergone rigorous safety testing.

## Marketing terms

Terms such as \_\_\_\_\_ and \_\_\_\_\_ are often used to describe foods, but do not have legal definitions, and do not really mean anything. The use is checked, so you can not use 'natural' for a product that contains artificial additives, or 'fresh' for a juice that is made from fruit concentrates.

## Vegetarian and vegan labelling

If a food is labelled vegetarian, it should not contain any \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_, or animal-derived additives such as \_\_\_\_\_. Vegan-labelled products should not contain any animal products.

## Made with real fruit or contains real fruit juice

There is no law to say how much fruit should be in a product, so you will need to check the ingredient list to find out how much fruit is contained in the product.

# Factors affecting food choice

## Wholegrains

Refined white flour with a touch of whole wheat added to it can be listed as wholegrain. You will have to check the ingredients list to see how much wholegrain is in the product. Variations include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Celebrity endorsement

Many companies will pay well-known celebrities to advertise and appear on the packaging of their products. This is used as a marketing tool to persuade people to buy their products.

## Cartoons

Lots of products that are aimed at children will use cartoon characters to decorate the packaging of the product. This is to attract children to the product, and make them pester their parents to buy the product when shopping.

## Free gifts

Lots of manufacturers will offer free gifts such as discounts for entry to theme parks or child-friendly venues on children's products, fitness equipment on products that help you to lose weight, free toys inside the packaging, or any other marketing campaigns that will encourage you to buy a certain product over a rival product.

## Claims of 'new' or 'improved' recipes or ingredients

Once a product has been well-established, a manufacturer may change the recipe or ingredients slightly to try to attract new customers.

### Exam Practice questions – complete on separate lined paper

1. List 3 things that are required by law to be on a food label. (3 marks)
2. Explain why it is necessary to put both storage and cooking instructions on a packaged food. (4 marks)
3. Discuss reasons why manufacturers put traffic light symbols on their products when it is not a legal requirement. (4 marks)
4. Identify one product that you know has been endorsed by a celebrity, or uses a cartoon character to advertise a product, and explain why you think this would encourage someone to buy the product. (4 marks)