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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 its 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

- ______________________________________________
- ______________________________________________
- ______________________________________________
Rice

Rice is one of the most popular staple foods eaten by the world's 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 ingredient 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

- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________

- ____________________________________________
Food Commodities
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 prepare 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)
Food Commodities
Fruit

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:

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

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

<table>
<thead>
<tr>
<th>Vegetable group</th>
<th>Example of vegetables</th>
<th>Above or below ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roots</td>
<td></td>
<td>Below</td>
</tr>
<tr>
<td>Bulbs</td>
<td></td>
<td>Below</td>
</tr>
<tr>
<td>Tubers</td>
<td></td>
<td>Below</td>
</tr>
<tr>
<td>Stems</td>
<td></td>
<td>Above</td>
</tr>
<tr>
<td>Leaves</td>
<td></td>
<td>Above</td>
</tr>
<tr>
<td>Flowers</td>
<td></td>
<td>Above</td>
</tr>
<tr>
<td>Fruits and seeds</td>
<td></td>
<td>Above</td>
</tr>
<tr>
<td>Fungi</td>
<td></td>
<td>Above</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Type of milk</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole milk</td>
<td></td>
</tr>
<tr>
<td>Semi-Skimmed milk</td>
<td></td>
</tr>
<tr>
<td>Skimmed milk</td>
<td></td>
</tr>
<tr>
<td>Evaporated milk</td>
<td></td>
</tr>
<tr>
<td>Condensed milk</td>
<td></td>
</tr>
<tr>
<td>Dried milk powder</td>
<td></td>
</tr>
<tr>
<td>Alternative milks</td>
<td></td>
</tr>
</tbody>
</table>

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
- ___________________________________________________________________________________________________
- ___________________________________________________________________________________________________
- ___________________________________________________________________________________________________
- ___________________________________________________________________________________________________
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:

<table>
<thead>
<tr>
<th>Type of cheese</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard pressed cheese</td>
<td></td>
</tr>
<tr>
<td>Soft cheese (ripened)</td>
<td></td>
</tr>
<tr>
<td>Unripened cheese (soft, fresh cheese)</td>
<td></td>
</tr>
<tr>
<td>Blue veined cheese</td>
<td></td>
</tr>
<tr>
<td>Processed cheese</td>
<td></td>
</tr>
</tbody>
</table>

**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.
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:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td></td>
</tr>
<tr>
<td>Carbohydrate</td>
<td></td>
</tr>
<tr>
<td>Vitamins</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
</tbody>
</table>

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)
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 fay in meat is classed as ____________ or ____________________.

Visible fat: __________________________________________________________________________________________

Invisible fat: ________________________________________________________________________________________

<table>
<thead>
<tr>
<th>Animal</th>
<th>Subtypes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows</td>
<td>Beef, veal</td>
<td>Steaks-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joints-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cuts-</td>
</tr>
<tr>
<td>Sheep</td>
<td>Lamb, mutton</td>
<td>Steaks-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joints-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cuts-</td>
</tr>
<tr>
<td>Pigs</td>
<td>Pork, bacon,</td>
<td>Steaks-</td>
</tr>
<tr>
<td></td>
<td>gammon, ham</td>
<td>Joints-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cuts-</td>
</tr>
</tbody>
</table>
Food Commodities - Meat cont.

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.
Food Commodities - Poultry

__________, ____________, ____________, ____________, _______________ 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:

• ____________________________________________________________________
• ____________________________________________________________________
• ____________________________________________________________________
• ____________________________________________________________________
• ____________________________________________________________________

• ____________________________________________________________________
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:

- __________________________________________________________________________________________
- __________________________________________________________________________________________
- __________________________________________________________________________________________
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 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 an inexpensive 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 differences between butter and margarine (2 marks)
11. Suggest 3 different uses for olive oil when preparing and cooking foods. (3 marks)
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:

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

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.

Golden syrup is the most familiar syrup to many people. It can be bought in various styles including the traditional tin, in a squeezy 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 __________.
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.
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 do 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 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 or 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)

<table>
<thead>
<tr>
<th>Typical values</th>
<th>Per 100g</th>
<th>Per 40g bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>1181kJ</td>
<td>724kJ</td>
</tr>
<tr>
<td></td>
<td>432kcal</td>
<td>173kcal</td>
</tr>
<tr>
<td>Protein</td>
<td>6.1g</td>
<td>2.4g</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>59.4g</td>
<td>23.8g</td>
</tr>
<tr>
<td>Of which sugars</td>
<td>29.9g</td>
<td>11.9g</td>
</tr>
<tr>
<td>Fat</td>
<td>18.8g</td>
<td>7.5g</td>
</tr>
<tr>
<td>Of which saturates</td>
<td>9.5g</td>
<td>3.8g</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.06g</td>
<td>0.02g</td>
</tr>
<tr>
<td>Salt</td>
<td>0.15g</td>
<td>0.06g</td>
</tr>
</tbody>
</table>
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 included 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.

<table>
<thead>
<tr>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
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<tbody>
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</tbody>
</table>
**Vitamin E** – has the chemical name tocopherol.

Vitamin E is not destroyed by normal cooking processes.

<table>
<thead>
<tr>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
</table>

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

Vitamin K is not destroyed by normal cooking processes.

<table>
<thead>
<tr>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
</table>
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.

<table>
<thead>
<tr>
<th>B group vitamins</th>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B1 (also called thiamin)</td>
<td></td>
<td></td>
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<tr>
<td>Vitamin B2 (also known as riboflavin)</td>
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<tr>
<td>Vitamin B3 (also called niacin)</td>
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<tr>
<td>B group vitamins</td>
<td>Function (what it does in the body)</td>
<td>Where it is found in our food</td>
<td>What happens if we do not eat enough (deficiency)</td>
<td>What happens if we eat too much (excess)</td>
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<td>------------------</td>
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<tr>
<td>Vitamin B6</td>
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<tr>
<td>(also known as pyridoxine)</td>
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<tr>
<td>Vitamin B9</td>
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<tr>
<td>(also known as folate or folic acid)</td>
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<tr>
<td>Vitamin B12</td>
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<tr>
<td>(also called cobalamin)</td>
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</table>

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.

<table>
<thead>
<tr>
<th>Function (what it does in the body)</th>
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<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
</table>

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 lose 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 ______________________________________________________________________________________
___________________________________________________________________________________________________
___________________________________________________________________________________________________
• __________________________________________________________________________________________________
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<table>
<thead>
<tr>
<th>Mineral</th>
<th>Function (what it does in the body)</th>
<th>Where it is found in our food</th>
<th>What happens if we do not eat enough (deficiency)</th>
<th>What happens if we eat too much (excess)</th>
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<tbody>
<tr>
<td>Iron</td>
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<tr>
<td>Mineral</td>
<td>Function (what it does in the body)</td>
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<td>What happens if we do not eat enough (deficiency)</td>
<td>What happens if we eat too much (excess)</td>
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<tr>
<td>Calcium</td>
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<td>Potassium</td>
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<tr>
<td>Mineral</td>
<td>Function (what it does in the body)</td>
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<tr>
<td>Magnesium</td>
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<tr>
<td>Iodine</td>
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</tr>
<tr>
<td>Fluoride</td>
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</table>
## Minerals

<table>
<thead>
<tr>
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<th>What happens if we eat too much (excess)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td></td>
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</tr>
<tr>
<td>Zinc</td>
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<tr>
<td>Phosphorus</td>
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</table>
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 its 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:

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

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. Therefore 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.

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

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

<table>
<thead>
<tr>
<th>Amount of increase</th>
<th>Activity needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15</td>
<td>30 minutes of moderate activity 5 or more days a week</td>
</tr>
<tr>
<td>0.2</td>
<td>60 minutes brisk walking daily</td>
</tr>
<tr>
<td>0.3</td>
<td>60 minutes active sport, like jogging, 5 times a week</td>
</tr>
<tr>
<td>0.4</td>
<td>60 minutes jogging at 9km per hour daily</td>
</tr>
<tr>
<td>0.5</td>
<td>Intensive aerobic activity</td>
</tr>
</tbody>
</table>
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 Estimated Average Requirement (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.)

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

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.

<table>
<thead>
<tr>
<th>Age</th>
<th>Basal Metabolic Rate (BMR) Kilocalories per day</th>
<th>Estimated Average requirements Kilocalories per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>1 Year</td>
<td>550</td>
<td>500</td>
</tr>
<tr>
<td>2 Years</td>
<td>720</td>
<td>660</td>
</tr>
<tr>
<td>3 Years</td>
<td>820</td>
<td>770</td>
</tr>
<tr>
<td>4 Years</td>
<td>870</td>
<td>820</td>
</tr>
<tr>
<td>5 Years</td>
<td>920</td>
<td>860</td>
</tr>
<tr>
<td>6 Years</td>
<td>980</td>
<td>920</td>
</tr>
<tr>
<td>7 Years</td>
<td>1030</td>
<td>970</td>
</tr>
<tr>
<td>8 Years</td>
<td>1100</td>
<td>1030</td>
</tr>
<tr>
<td>9 Years</td>
<td>1160</td>
<td>1090</td>
</tr>
<tr>
<td>10 Years</td>
<td>1190</td>
<td>1100</td>
</tr>
<tr>
<td>11 Years</td>
<td>1200</td>
<td>1150</td>
</tr>
<tr>
<td>12 Years</td>
<td>1280</td>
<td>1200</td>
</tr>
<tr>
<td>13 Years</td>
<td>1380</td>
<td>1275</td>
</tr>
<tr>
<td>14 Years</td>
<td>1500</td>
<td>1330</td>
</tr>
<tr>
<td>15 Years</td>
<td>1600</td>
<td>1360</td>
</tr>
<tr>
<td>16 Years</td>
<td>1800</td>
<td>1400</td>
</tr>
</tbody>
</table>
### Energy requirements of individuals

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

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

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

**Recommended guidelines for a healthy diet**

Most people do not have the time or the knowledge to work out exactly what they need to eat to have a balanced diet. The government have created ways in which it is easy to see roughly how much of each food group you need to have a balanced diet.

The Eatwell Guide shows the proportion of foods you should have on your plate for every meal. The amounts are recommended for individuals over the age of 5 years.
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:

<table>
<thead>
<tr>
<th>Age</th>
<th>RDI (in grams)</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 years</td>
<td>15g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 years</td>
<td>20g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10 years</td>
<td>28g</td>
<td>70g</td>
<td>220g</td>
<td></td>
</tr>
<tr>
<td>11-14 years</td>
<td>42g</td>
<td>70g</td>
<td>220g</td>
<td></td>
</tr>
<tr>
<td>15-18 years</td>
<td>55g</td>
<td>70g</td>
<td>230-300g</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>45g</td>
<td>70g</td>
<td>230g</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>55g</td>
<td>95g</td>
<td>300g</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Base your meals on starchy food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating lots of fruit and vegetables</td>
</tr>
<tr>
<td>Two portions of fish</td>
</tr>
<tr>
<td>Cutting down on saturated fat and sugar</td>
</tr>
<tr>
<td>Eating less salt</td>
</tr>
<tr>
<td>Drink plenty of water</td>
</tr>
<tr>
<td>Don’t skip breakfast</td>
</tr>
<tr>
<td>Get active.</td>
</tr>
</tbody>
</table>
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
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 many 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)
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 ____________________________________________________________________________________________
___________________________________________________________________________________________________
___________________________________________________________________________________________________
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**

<table>
<thead>
<tr>
<th>Foods to avoid</th>
<th>Reasons why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pate and soft cheeses</td>
<td></td>
</tr>
<tr>
<td>Soft blue cheeses</td>
<td></td>
</tr>
<tr>
<td>Raw or partly cooked eggs</td>
<td></td>
</tr>
<tr>
<td>Raw or undercooked meat</td>
<td></td>
</tr>
<tr>
<td>Liver; liver pate</td>
<td></td>
</tr>
<tr>
<td>Certain types of fish, fresh tuna, shark etc</td>
<td></td>
</tr>
<tr>
<td>shellfish</td>
<td></td>
</tr>
</tbody>
</table>

**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: __________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________
**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
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 whole grain 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:

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

<table>
<thead>
<tr>
<th>Source of energy</th>
<th>Energy value in kJ</th>
<th>Energy value in kcal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1g of pure carbohydrate</td>
<td>15.7</td>
<td>3.75</td>
</tr>
<tr>
<td>1g of pure fat</td>
<td>37.8</td>
<td>9.0</td>
</tr>
<tr>
<td>1g of pure protein</td>
<td>16.8</td>
<td>4.0</td>
</tr>
</tbody>
</table>

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 from protein = 25.5 x 4 = __________ kcal

Total energy from fat = 35 x 9 = __________ kcal

Total energy from carbohydrate = 0.1 x 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:

<table>
<thead>
<tr>
<th>Lunch</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food</strong></td>
<td><strong>Weight in grams</strong></td>
</tr>
<tr>
<td>2 slices of wholemeal bread</td>
<td>90g</td>
</tr>
<tr>
<td>1 slice of ham</td>
<td>30g</td>
</tr>
<tr>
<td>1 tomato</td>
<td>25g</td>
</tr>
<tr>
<td>1 apple</td>
<td>180g</td>
</tr>
<tr>
<td>Carton of apple juice</td>
<td>150ml</td>
</tr>
</tbody>
</table>

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.
### 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:

<table>
<thead>
<tr>
<th>Reduce fat</th>
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<table>
<thead>
<tr>
<th>Reduce sugar</th>
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<td>•</td>
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<td>•</td>
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<table>
<thead>
<tr>
<th>Reduce salt</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Increase fibre</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td></td>
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<tr>
<td>•</td>
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<td>•</td>
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</tr>
</tbody>
</table>
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 an adaption for someone who is lactose intolerant.

<table>
<thead>
<tr>
<th>Cauliflower cheese: normal recipe</th>
<th>Cauliflower cheese: normal recipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cauliflower</td>
<td>1 cauliflower</td>
</tr>
<tr>
<td>500ml semi skimmed milk</td>
<td>500ml soya milk</td>
</tr>
<tr>
<td>50g margarine</td>
<td>50g lacto-free margarine, e.g. Pure</td>
</tr>
<tr>
<td>50g flour</td>
<td>50g flour</td>
</tr>
<tr>
<td>150g cheddar cheese</td>
<td>150g lacto-free cheese</td>
</tr>
</tbody>
</table>

**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.
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. (8 marks)

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? (4 marks)

3. Identify three ways in which someone could reduce the amount of saturated fat in their diet. (3 marks)

4. a) State why it is important that we reduce the amount of salt we are eating. (2 marks)
   b) Explain what is meant by the term ‘hidden salt’. (3 marks)

---

Menu

Breakfast
- Bowl of sugary cereal with semi-skimmed milk
- Glass of orange juice
- Cup of coffee with milk and 1 teaspoon of sugar

Snack
- Cup of coffee with 1 teaspoon of sugar
- 2 chocolate digestive biscuits

Lunch
- Ham and tomato sandwich on white bread
- Packet of crisps
- Can of fizzy drink

Afternoon snack
- Cup of tea with 1 teaspoon of sugar
- Slice of fruitcake

Supper
- Beef lasagne with salad
- Ice cream with strawberries
- Cup of coffee with 1 teaspoon of sugar

Late night snack
- 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 denaturisation 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 reactions 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 ______________. _________________________.

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 _________________________.

79
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:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Boiling/simmering:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Deep-frying/roasting/shallow-frying:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Grilling:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Microwaving:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Slow cooking:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
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.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>How easily is it destroyed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td></td>
</tr>
<tr>
<td>Carbohydrate</td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td></td>
</tr>
<tr>
<td>Fat-soluble vitamins A, D, E &amp; K</td>
<td></td>
</tr>
<tr>
<td>Water-soluble vitamins B &amp; C</td>
<td></td>
</tr>
<tr>
<td>Minerals</td>
<td></td>
</tr>
</tbody>
</table>

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: 
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
__________________________________________

Vitamin D: __________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
__________________________________________

Vitamin E: __________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
__________________________________________

Vitamin K: __________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
_________________________________________________________________________________  
__________________________________________

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:

•
•
•
•

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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.
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:

<table>
<thead>
<tr>
<th>The function of eggs</th>
<th>Why egg is used</th>
<th>Examples of recipes using this function</th>
</tr>
</thead>
<tbody>
<tr>
<td>To bind ingredients together</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To trap air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To thicken products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To coat products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To create an emulsion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To glaze products</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Type of flour</th>
<th>Reason for use</th>
<th>Examples of recipes showing this function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-raising flour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft plain flour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong plain flour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durum wheat flour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

- ____________________________________________
- ____________________________________________

<table>
<thead>
<tr>
<th>Function of sugar</th>
<th>Reason for use</th>
<th>Examples of recipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>To add sweetness and enhance the flavour of sweet foods such as fruits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To add texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To add colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To trap air</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Function of fats</th>
<th>Reason for use</th>
<th>Examples of recipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>To make cakes, biscuits and pastry (fats are sometimes called ‘shortenings’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To trap air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To give flavour and moisture to recipes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To make frostings and toppings for cakes and pastries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spread on bread, putting on vegetables, such as potatoes before serving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To add nutrients in the form of fat-soluble vitamins</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## The effect of cooking food

### Uses of oils in cooking

<table>
<thead>
<tr>
<th>Function of oils</th>
<th>Reason for use</th>
<th>Examples of recipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>For roasting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For sautéing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For shallow-frying, stir-frying or deep-frying foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To make salad dressings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a dip for breads</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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:

1. _____________________________________________________________________
2. _____________________________________________________________________
3. _____________________________________________________________________
4. _____________________________________________________________________

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

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cake has sunk in the middle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cake has risen to a peak and the top has cracked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The effect of cooking food

Cake making cont.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cake has a heavy texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cake has an open and course texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cake has risen unevenly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cake has a hard sugary crust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cake has not risen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The dried fruit has sunk to the bottom of the cake</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pastry is sticky, soft and difficult to handle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cooked pastry is hard and tough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cooked pastry is dry and crumbly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pastry shrinks when it is cooked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Pastry making cont.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pastry is oily and soft when cooked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pastry is soft and crumbly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pastry blisters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pastry is pale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pastry is too dark</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The effect of cooking food

Bread making

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

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread has not risen well and is course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bread has a dense texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The dough collapses while baking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The bread is uneven in texture and has large holes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 |  |  

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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.

<table>
<thead>
<tr>
<th>Sauce</th>
<th>Fault</th>
<th>Cause of fault</th>
<th>How to avoid or remedy the fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayonnaise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hollandaise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinaigrette</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________

Top shelves and middle shelves

Bottom shelves

Salad drawer

CORRECT FRIDGE TEMPERATURE 0-5°C

Fill in the fridge – what foods should go where?
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:

• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
• __________________________________________________________________________
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)
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)

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

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

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________
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:

<table>
<thead>
<tr>
<th>Micro-organism</th>
<th>Growth conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yeast</td>
<td></td>
</tr>
<tr>
<td>Moulds</td>
<td></td>
</tr>
<tr>
<td>Bacteria</td>
<td></td>
</tr>
</tbody>
</table>
Food spoilage

Enzyme action

Mould growth
**Exam Practice questions**

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

1. Name the three different types of microorganisms (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.
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
Exam Practice questions

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

_________________________________________________________________________________________________
_________________________________________________________________________________________________

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

_________________________________________________________________________________________________
_________________________________________________________________________________________________
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

<table>
<thead>
<tr>
<th>Type of bacteria</th>
<th>Food poisoning symptoms</th>
<th>Food sources</th>
<th>Where the bacteria is found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonella</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campylobacter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-coli</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staphylococcus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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

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

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 __________________________________________
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 _________________ (CO2) 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.
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)

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
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

<table>
<thead>
<tr>
<th>Type of packaging material</th>
<th>Examples of food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card/paper</td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
</tr>
<tr>
<td>Metal, foil and cans</td>
<td></td>
</tr>
<tr>
<td>Ovenable paperboard</td>
<td></td>
</tr>
</tbody>
</table>
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)
   __________________________________________________________________________________________________________
   __________________________________________________________________________________________________________
   __________________________________________________________________________________________________________

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

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

• _______________________________________________________________________________________

• _______________________________________________________________________________________

• _______________________________________________________________________________________

• _______________________________________________________________________________________

• _______________________________________________________________________________________

• _______________________________________________________________________________________
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)
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
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.

<table>
<thead>
<tr>
<th>Type of cuisine</th>
<th>Example dishes</th>
<th>Key ingredients</th>
<th>Cooking methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of cuisine</td>
<td>Example dishes</td>
<td>Key ingredients</td>
<td>Cooking methods</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Italian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexican</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 or 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)
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.
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:

<table>
<thead>
<tr>
<th>Primary food</th>
<th>Secondary process</th>
<th>The product after secondary processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>Pasteurisation</td>
<td>Cheese</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yoghurt</td>
</tr>
<tr>
<td>Fruit</td>
<td>Heating/stewing</td>
<td>Jam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jelly</td>
</tr>
</tbody>
</table>

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

_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________
Food manufacturing

When certain foods, for example some meats, go through the secondary processing stage they can also undergo treatment, 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:

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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:

1. Weighing of raw ingredients
2. Combining of ingredients to form a dough or mixture
3. Dividing of dough or portioning of ingredients
4. Baking of food products
5. 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)

_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________


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.

<table>
<thead>
<tr>
<th>Type of additive</th>
<th>Why used</th>
<th>Example foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preservative</td>
<td>• to extend shelf life</td>
<td></td>
</tr>
<tr>
<td>Flavour intensifier</td>
<td>• To improve the taste of food by adding flavour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To restore flavours lost in processing</td>
<td></td>
</tr>
<tr>
<td>Stabilisers and emulsifiers</td>
<td>• To help products mix together and prevent ingredients from separating out when the product is being stored</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To give foods a smooth and creamy texture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To extend shelf life of baked goods</td>
<td></td>
</tr>
<tr>
<td>Colourings</td>
<td>• To make foods look attractive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To boost the colour of foods already present</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To add colour to food lost during processing</td>
<td></td>
</tr>
</tbody>
</table>
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)
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.
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
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:

- __________________________________________________________________________
- __________________________________________________________________________
- __________________________________________________________________________
- __________________________________________________________________________
- __________________________________________________________________________
- __________________________________________________________________________
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 potions 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 website that can be used to find this information are: www.ukfoodguide.net and 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)