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SECTION 1
Food Preparation Skills

This section includes a range of food preparation and cooking skills that you will need to use throughout the GCSE course. You are not expected to work your way through this section from start to finish, but you may find it useful to refer to it when completing the practical activities that appear throughout the book, or when preparing for your Food investigation and Food preparation assessment.

This section also includes examples of recipes that use each of the different skills.

The following food preparation skills are covered in this section:

- **Skill 1** General practical skills
- **Skill 2** Knife skills
- **Skill 3** Preparing fruit and vegetables
- **Skill 4** Use of the cooker
- **Skill 5** Use of equipment
- **Skill 6** Cooking methods
- **Skill 7** Preparing, combining and shaping
- **Skill 8** Sauce making
- **Skill 9** Tenderising and marinating
- **Skill 10** Dough
- **Skill 11** Raising agents
- **Skill 12** Setting mixtures
Introduction to sauces

A sauce is a well-flavoured liquid which has been thickened. The properties and characteristics of a sauce are influenced by the way in which they are made and the proportion of ingredients used.

There are many reasons why sauces are added to food. They:

- add colour, flavour and texture
- bind different ingredients together
- make the dish look more appetising and attractive (more aesthetically pleasing)
- add nutrients
- balance the richness of some foods.

Starch-based sauces

Starch-based sauce making

Starch-based sauces are usually thickened by one of these ingredients:

- Flour
- Cornflour
- Arrowroot

The process of using starch to thicken the sauce is known as gelatinisation. You will learn about gelatinisation in Topic 3.2 Functional and chemical properties of food.

Starch-based sauces can be made by the roux method, the all-in-one method or the blended method (see Table 1.1).

The thickness or consistency of the sauce will be determined by the proportion of starch compared to the proportion of liquid. The higher the ratio of starch to liquid, the thicker the sauce.

The consistencies of sauces are different depending on what they are being used for. For example, custard is designed to be poured on to a dessert such as apple pie. A coating sauce has to coat food such as pasta, and a really thick sauce would be needed to bind the ingredients together to make fish cakes.
The roux method is the traditional way to make a basic white sauce.

1. Melt the fat in a saucepan over gentle heat. (Make sure the butter doesn’t brown.)
2. Add the flour and stir it in using a wooden spoon. Cook the roux gently for 1–2 minutes, stirring all the time to prevent browning.
3. Remove the pan from the heat. Gradually add the milk to the roux, beating all the time to avoid any lumps.
4. Return the pan to the heat. Bring the sauce to the boil, stirring all the time. Once the sauce has boiled, turn the heat down and simmer for 2 minutes to allow the sauce to become glossy.
5. Remove the sauce from the heat. Add seasoning and any other chosen ingredients (for example, cheese).

The all-in-one method is a quick and simple way to make a white sauce.

1. Place all the ingredients in a saucepan.
2. Heat gently, whisking all the time to avoid any lumps forming, until the mixture comes to boil.
3. Turn down the heat and simmer for 3 minutes to allow the sauce to become glossy.
4. Remove the sauce from the heat. Add seasoning and any other chosen ingredients (for example, cheese).

Blended sauces are usually sweet and made with cornflour or arrowroot.

1. Mix the arrowroot or cornflour with a small amount of liquid to make a thin, smooth paste. (Sugar and fruit blended together with some juice or water can be used.)
2. Bring the remainder of the liquid to the boil in a small saucepan. Pour over the paste, stirring well.
3. Return the mixture to the pan and bring to the boil, stirring all the time.
4. Remove the sauce from the heat once it has thickened. If cornflour is used, sugar and flavouring can be added at this stage.

<table>
<thead>
<tr>
<th>Type of sauce</th>
<th>Ratio of ingredients</th>
<th>Description of the sauce</th>
<th>Example of dish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pouring</td>
<td>500ml milk, 30g fat, 30g flour</td>
<td>A pouring sauce, at boiling point, should just thinly coat the back of a spoon, and should pour freely.</td>
<td>Custard</td>
</tr>
<tr>
<td>Coating</td>
<td>500ml milk, 50g fat, 50g flour</td>
<td>A coating sauce, at boiling point, should coat the back of a spoon.</td>
<td>Macaroni cheese</td>
</tr>
<tr>
<td>Binding/panada</td>
<td>500ml milk, 100g fat, 100g flour</td>
<td>A binding sauce or panada should be thick enough to bind dry ingredients together.</td>
<td>Fish cakes</td>
</tr>
</tbody>
</table>

Table 1.1 The three methods of making starch-based sauces

Table 1.2 Different types of sauce for different uses
Variations
Other ingredients can be added to starch-based sauces to change their flavour and use. For example, béchamel and infused velouté sauces are often used as the fillings for vol au vents.

**Béchamel sauce**

| 1 carrot  |
| 1 small onion  |
| 6 whole peppercorns  |
| 1 bay leaf  |
| milk  |

1. Place one small piece of carrot, a small onion, six whole peppercorns and one bay leaf into the milk. Bring to the boil very slowly and leave to infuse for about 20 minutes.
2. Strain the milk, and make the sauce following the roux method (see page 3).

**Velouté sauce**

Velouté sauce is a white sauce made with stock instead of milk. It is made by the roux method, but often simmered for a longer time to allow the flavours to infuse.
Reduction sauces

Reduction sauces are made when liquid is simmered over the heat so that the water content evaporates, resulting in a concentrated sauce. This process thickens the sauce and intensifies the flavour.

Reduction sauces can be made from the cooking liquid in which meat, fish or vegetables have been cooked, or by deglazing the brown sediment from the bottom of a pan with water, stock or wine after pan frying.

Reduction sauces take time to cook – some can take up to an hour. The time depends on how much liquid has been used. Using a sauté pan, which is wider and shallower than a conventional saucepan, allows the sauce to heat and evaporate more quickly.

Reduction sauces include red and white wine sauces, pan sauces and many cream sauces.

Figure 1.8.5 Tomato sauce (a reduction sauce)
Emulsion sauces

Sauces such as mayonnaise and hollandaise are emulsions. An emulsion is formed when two liquids that would not normally mix are mixed together. This process is called emulsification. You will learn about emulsification in Topic 3.2 Functional and chemical properties of food.

Emulsions are made by forming a suspension of tiny droplets of fat, such as oil or melted butter, in a liquid such as water or vinegar.

Stable emulsions
Sauces such as mayonnaise and hollandaise are stable.

Mayonnaise

3 egg yolks
2 teaspoons vinegar or lemon juice
½ teaspoon English mustard
250ml olive oil
Small pinch of salt
1 teaspoon boiling water

1 Separate the egg yolks from the egg whites.
2 Place the egg yolks in a large bowl and add the vinegar, salt and mustard.
3 Whisk with a balloon whisk.
4 Add a small amount of the oil and whisk until it has blended in.
5 Continue adding the oil and whisking until the sauce thickens and reaches the desired consistency. If the mayonnaise is too thick you can thin it by adding boiling water.
6 Add more vinegar or mustard if you need to adjust the flavouring; season with salt.
**Hollandaise**

500ml white wine vinegar  
1 tablespoon peppercorns  
3 large egg yolks  
200ml melted and skinned unsalted butter  
Salt and pepper  

1. Place the peppercorns and white wine vinegar in a pan and boil. Reduce by half.  
2. Place the egg yolks in a heatproof bowl and beat using a whisk. Add 2 teaspoons of the reduced white wine vinegar.  
3. Bring a large pan of water to the boil and then allow to simmer.  
4. Place the bowl containing the beaten eggs over the pan of simmering water and whisk continuously until a golden foam-like mixture forms.  
5. Remove the mixture from the heat and gradually whisk in the melted butter until you have a thick mayonnaise-like consistency.  
6. Season with salt and pepper. A little warm water can be added if the mixture is too thick.

**Unstable emulsions**

Salad dressings such as vinaigrette are unstable emulsions.

For more information on stable and unstable emulsions, see Topic 3.2 Functional and chemical properties of food.

**Vinaigrette**

3–6 tablespoons olive oil  
1 teaspoon English or French mustard  
1 tablespoon vinegar  
Salt and pepper  

Combine all of the ingredients together.

**Key terms**

**Aesthetically pleasing:** looks appealing.  
**Deglazing:** loosening the browned juices on the bottom of a pan by adding a liquid to the hot pan and stirring while the liquid is boiling.  
**Emulsification:** the process of using an emulsifier (such as egg yolk) to stabilise an insoluble mixture.  
**Emulsion:** tiny drops of one liquid spread evenly through another.  
**Infuse:** to flavour a liquid with an ingredient by slowly heating to boiling point and then allowing to cool. The flavoured liquid is then called an infusion.  
**Reduction:** simmering a liquid over heat until it thickens.  
**Sauce:** a well-flavoured liquid that has been thickened.
Introduction to tenderising and marinating

Tenderising and marinating are ways in which we can make food more tender, moist and flavoursome.

**Marinating** involves soaking foods such as fish, meat, poultry and vegetables in a *marinade* to help develop the flavour, tenderise and in some instances colour the food before it is cooked.

A marinade is a highly seasoned liquid that is used to give flavour, keep food moist and help to tenderise foods. The liquid can be acidic (e.g. lemon juice or vinegar), alkaline (e.g. yogurt, sugars like honey, or some fruit and vegetable juices) or a salt solution.

Meat, poultry, fish and vegetables can all be marinated.

**Tenderising** is a process by which the tough muscle fibres are broken down in order to make the meat more tender to eat.

Tenderising meat and poultry

Meat can be tenderised in three different ways:

- By cooking it at a low temperature for a long time. (You will learn about this in Topic 3.1 Cooking of food and heat transfer)
- By mechanical action, i.e. physically breaking down the muscle fibres by pounding them with a hammer, mincing, or cutting larger pieces of meat into chunks
- Chemically by marinating.

**Tenderising meat and poultry by mechanical action**

Tougher cuts of meat can be tenderised by hammering the meat using a meat mallet. The hammering action flattens the meat and breaks up some of the fibres and connective tissues, making the meat more tender. It is a good idea to do this between some waxed paper or cling film.

*Figure 1.9.1* Tenderising meat by hammering it with a meat mallet
Tenderising meat and poultry by marinating

Meat is marinated to give it flavour and to soften its texture. If an acidic marinade, such as a citrus marinade, is used then the acidic ingredients denature the protein in the meat, making the meat more tender.

You will learn about denaturation in Topic 3.2 Functional and chemical properties of food.

The marinated meat is then usually cooked by barbecuing, grilling or roasting. When grilling, barbecuing or roasting, the marinade can also be basted on to the food, or it can be cooked separately in a saucepan to make an accompanying sauce.

**Citrus marinade**

Grated zest and juice of one lemon
3 tablespoons vegetable oil
2 tablespoons honey
1 tablespoon soy sauce
1 teaspoon Dijon mustard
Ground black pepper

Put all of the ingredients into a jam jar, screw on the lid and shake until well mixed.

It is also possible to use fruit (for example kiwi, pineapple and papaya) and natural yogurt as meat tenderisers. Natural yogurt tenderises as well as adding flavour (for example, chicken tikka).

**Yogurt marinade**

50ml natural yogurt
1 small onion, finely chopped
1 crushed garlic clove
1 tablespoon soy sauce
$\frac{1}{2}$ teaspoon coriander, cumin and turmeric

Put all of the ingredients into a small bowl and mix with a fork.
Tenderising fish by marinating

Fish can be marinated to add flavour and moisture. It can also be ‘cooked’ by marinating it in acid (for example, lemon, lime or orange juice). The acid in the juice denatures the proteins in the fish. The fish will then change its texture and colour by changing from translucent to opaque and becoming firm. An example of this is ceviche.

Ceviche

1/2 red onion, finely sliced  
250g skinless and boneless sea bass fillets  
1/2 teaspoon salt  
Juice of 4 limes  
Juice of 1/2 orange  
1 red chilli, deseeded and finely chopped  
Small bunch of coriander, roughly chopped

1. Cut the fish into 2cm cubes and rub with salt.  
2. In a large mixing bowl combine the fish with the onion, lemon juice, lime juice and chilli.  
3. Cover and leave to marinate for 10 minutes.  
4. Check the seasoning and adjust if necessary. Garnish with coriander.

Figure 1.9.2 Ceviche
Marinating vegetables and alternatives

Marinades are easy to prepare and will add zest and flavour to fruit, vegetables and alternatives such as tofu and mycoprotein (e.g. Quorn®).

Figure 1.9.3 Marinated tofu

Marinades suitable for vegetables and alternatives can be made of a variety of ingredients such as oil, wine, vinegar, soy sauce, garlic, herbs and spices. The marinades will not only add flavour to the food but they will add moisture when the liquid is absorbed. Tofu and mycoprotein (for example, Quorn®) readily absorb flavours from other ingredients. Fruit can also be marinated.

**Key terms**

**Marinade:** highly seasoned liquid used for marinating, to give flavour and keep food moist.

**Marinating:** soaking foods such as fish, meat, poultry or vegetables in a marinade to help develop the flavour, tenderise and in some instances colour the food before it is cooked.

**Tenderising:** a process by which the tough muscle fibres of meat are broken down in order to make the meat more tender to eat.

**Marinated peaches**

4 peaches
2 tablespoons clear honey
2 tablespoons orange juice
A squeeze of lemon juice

Mix the marinade ingredients in a cup with a fork and pour on to the peach slices. Leave for at least 2 hours.
SECTION 2
Food, Nutrition and Health

This section includes the following topics:

Topic 2.1 Macronutrients
Topic 2.2 Micronutrients (and water)
Topic 2.3 Nutritional needs and health
End of section practice questions
TOPIC 2.1
MACRONUTRIENTS

Protein

Learning objectives
In this topic you will learn about:
- the function of protein in the body
- the main sources of protein and protein alternatives
- the terms low and high biological value protein and protein complementation
- the amount of protein required each day to remain healthy (the Dietary Reference Value)
- the effects of a deficiency and excess of protein.

The functions of protein
Protein is present throughout the human body.
Protein is needed for:
- the growth of all body cells and tissue
- the repair and maintenance of all body tissue
- providing an energy source.

Key words
Amino acids: the basic components of all proteins.
Essential amino acids: amino acids that cannot be made by the body; they must come from food.
High biological value (HBV) protein: protein that contains all ten essential amino acids.
Low biological value (LBV) protein: a protein that lacks one or more essential amino acids.
Protein complementation: combining LBV protein foods to form a HBV protein meal.

The biological value of protein
Proteins are big molecules and form long chains. These chains are made up of building blocks called amino acids. There are 20 different amino acids. Amino acids combine in different ways to make all the proteins in your body.

Some amino acids can only be obtained from food; these are called essential amino acids. In the UK most of our protein comes from plant and animal sources. Children need ten essential amino acids and adults need eight.
Different foods contain different amounts of amino acids. Foods which contain all the essential amino acids are called **high biological value (HBV)**. Generally, the HBV proteins come from animal products such as meat, fish, dairy produce and eggs. The only plants that contain all the essential amino acids are soya beans and soya products, and a grain called quinoa.

Foods which lack one of more of the essential amino acids are called **low biological value (LBV)**. LBV proteins include beans, pulses, nuts and seeds and cereals.

### Sources of protein

Proteins are available from animal and plant sources. In the UK most of our protein comes from animal sources.

<table>
<thead>
<tr>
<th>High biological value sources of protein</th>
<th>Low biological value sources of protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat and meat products</td>
<td>Cereals (e.g. wheat, rice, oats, barley)</td>
</tr>
<tr>
<td>Fish and seafood</td>
<td>Cereal products (e.g. bread, pasta, chapattis)</td>
</tr>
<tr>
<td>Milk, yoghurts, cheese, cream</td>
<td>Sweetcorn</td>
</tr>
<tr>
<td>Eggs</td>
<td>Peas, beans and lentils</td>
</tr>
<tr>
<td>Soya beans and soya products</td>
<td>Nuts and nut products (e.g. peanut butter)</td>
</tr>
<tr>
<td>Quinoa</td>
<td>Seeds</td>
</tr>
<tr>
<td></td>
<td>Mycoprotein (e.g. Quorn)</td>
</tr>
</tbody>
</table>

**Table 2.1.1 Protein sources**

**Figure 2.1.1** HBV protein foods

**Figure 2.1.2** LBV protein foods
**Protein complementation**

When protein foods are mixed together the biological value will increase. Combining LBV protein foods to form a HBV protein meal is known as **protein complementation**.

Examples of protein complementation include:
- Lentils with chapattis
- Peas and rice
- Baked beans on toast
- Hummus (mashed chickpeas) with pitta bread.

They all combine LBV protein food to improve the biological value of the meal.

Protein complementation is needed to ensure that vegetarians get all the essential amino acids. It can also save money because LBV protein foods tend to be cheaper than HBV protein foods.

**Practical activity**

1. Prepare and make a high-protein snack using vegetable sources of protein.
2. Identify the main sources of protein in your snack.

**Activity**

The graph shows the sources of protein in the diet.

- Eggs and egg dishes: 3%
- Fish and fish dishes: 7%
- Vegetables, fruit, nuts and seeds: 10%
- Milk and milk products: 14%
- Cereal and cereal products: 23%
- Meat and meat products: 37%

![Figure 2.1.3 Hummus + pitta bread = protein complementation](image)

Use the graph to answer the following questions.

1. Which food group provides the largest source of protein?
2. Which food group provides 3% of protein?
3. Which foods would be found in the cereals and cereal products group?
4. Which foods would be found in the milk and milk products group?
5. Explain how a vegetarian can meet their dietary needs for protein.
Protein alternatives

Food manufacturers have developed products that can be used in food preparation as an alternative to animal protein.

There are three main products: soya, mycoprotein and quinoa.

Soya

Soya beans are eaten as an alternative to meat. Soya beans are known as edamame beans when eaten fresh. Soya is used in many products, which include:

- **Textured vegetable protein (TVP)** in the form of mince and chunks that have been developed from the soya bean. TVP is added to recipes to replace meat or used to make burgers, sausages and ready meals.
- **Tofu** is bean curd made from soya milk. The proteins set, producing a cheese-like product. Tofu is either soft or hard, and can be smoked or marinated.
- **Soya milk** is made from soaking soya beans in water. Soya cheese, yogurts, shakes and cream are available.
- **Tempeh** is a mass of soya beans made by cooking and dehulling the beans to form a solid ‘cake’, which can be sliced.
- **Miso** is a fermented paste made from soya beans, rice or barley grains with salt and water.

Mycoprotein

The product Quorn® is made from mycoprotein. **Mycoprotein** is a type of fungus that is grown under special conditions similar to those used for growing yeast in bread. It can be made into a wide range of products but is not suitable for very strict vegans because egg white is used during its production.

Quinoa

Quinoa are tiny, bead-shaped seeds that originated in South America. The seeds are cooked in the same way as rice and can be used in a wide range of dishes. Unlike wheat or rice, quinoa is an HBV protein containing all eight of the essential amino acids.
Dietary Reference Values for protein

Different groups of people need different amounts of protein. The amount of each nutrient our bodies need is called the Dietary Reference Value (DRV).

The table below shows the amounts of protein needed each day by different groups of people.

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3 years</td>
<td>14.5g</td>
<td></td>
</tr>
<tr>
<td>4–6 years</td>
<td>19.7g</td>
<td></td>
</tr>
<tr>
<td>7–10 years</td>
<td>28.3g</td>
<td></td>
</tr>
<tr>
<td>11–14 years</td>
<td>42.1g</td>
<td>41.2g</td>
</tr>
<tr>
<td>15–18 years</td>
<td>55.2g</td>
<td>45g</td>
</tr>
<tr>
<td>19–49 years</td>
<td>55.5g</td>
<td>45g</td>
</tr>
<tr>
<td>50 years+</td>
<td>53.3g</td>
<td>46.5g</td>
</tr>
<tr>
<td>Pregnant women</td>
<td></td>
<td>6g extra</td>
</tr>
<tr>
<td>Breastfeeding women</td>
<td></td>
<td>11g extra</td>
</tr>
</tbody>
</table>


Table 2.1.1 The different requirements for protein (grams per day).

The amount of protein needed is not the same for everyone:
- Men older than 11 years require a greater amount of protein than women of the same age. This is because men usually have more body tissue than women. Generally, they are taller and have larger muscles.
- Babies and children require protein because they are growing.
- Teenagers need protein to support their rapid growth spurt.
- Pregnant women need extra protein to support the growing baby.
- Breastfeeding women need extra protein to make breast milk.

Deficiency and excess of protein

Protein deficiency (having too little protein) is very rare in the developed world. Most people eat a wide range of foods that contain protein so even if you are a vegetarian you are likely to be getting all the amino acids your body needs.

Protein deficiency is more common in the developing world. Kwashiorkor is a deficiency of protein and energy. It usually occurs in children in developing countries where there is famine or an unstable food supply. Children that have a deficiency of protein:
- have poor growth rates
- retain water in their body tissues
- suffer hair loss
- suffer from persistent infections.

Too much (excess) protein in the diet can be harmful to the kidneys and liver because they have to break the protein down. If we don’t use the extra protein we consume for energy it will be stored as fat, and therefore having excess protein in the diet can lead to weight gain.
Check your knowledge and understanding

1. State two reasons why the body needs protein.
2. What is an essential amino acid?
3. Name three high biological value proteins.
4. Name three low biological value proteins.
5. Explain the difference between high biological value proteins and low biological value proteins.
6. Describe what is meant by protein complementation.
7. Name three products that can be used as alternatives to animal protein.
8. Name three products that can be made from soya beans.
9. Explain why pregnant and breastfeeding women require more protein.
10. What is the effect of having too much protein in your diet?

Practical activity
Plan and make one of the following:

1. A two-course meal for a teenager aged 15–18 years. This meal should provide about 18g of protein (one third of their daily needs). Prepare one dish from the meal.
2. A lunch for a vegetarian adult that includes ingredients that show protein complementation.
3. A snack for a pregnant woman that contains high biological value proteins.
Learning objectives
In this topic you will learn about:
- current guidelines for a healthy diet
- how to consider portion size and cost when planning meals
- how the nutritional needs of people change and how to plan a balanced diet for different life stages
- how to plan a balanced meal for specific dietary groups.

What are the current guidelines for a healthy diet?
To help us to choose a healthy diet that is balanced, the Food Standards Agency (FSA), which is a government department, has produced eight tips for eating well.

The eatwell plate
Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.

Figure 2.3.1 The eatwell plate shows how the eight tips for eating well can be followed
1 **Base your meals on starchy foods:** starchy foods include bread, rice, cereals, pasta, potatoes and cassava. Starchy foods should provide most of our energy. As well as energy they provide calcium, iron and the B group vitamins. Choose wholegrain varieties if you can, as these will provide more fibre as well as extra vitamins and minerals.

2 **Eat lots of fruit and vegetables:** we should try to eat at least five portions of fruit and vegetables every day. One portion is 80g, which is, for example, one apple, banana, orange or pear. Frozen, canned and dried fruits and vegetables count as a portion. A glass of fruit juice counts as a maximum of one portion per day, because juices contain a lot of **free sugars.**

3 **Eat more fish, including a portion of oily fish each week:** we should all aim to eat at least two portions of fish each week. One of these should be an oily fish, for example: salmon, mackerel, sardines or fresh tuna (tinned tuna does not count, as the canning process reduces the fish oils to similar levels to white fish). Oily fish are rich in Omega 3 fatty acids that may help to prevent coronary heart disease. White fish includes cod, haddock, coley and plaice.

4 **Cut down on saturated fat and sugar:** we all need some fat in our diet as it provides the important fat-soluble vitamins, A, D and E, but if we eat too much saturated fat this raises the amount of cholesterol in the blood, which can lead to heart disease. However, if we eat unsaturated fat, this can help to lower the cholesterol in our blood. Unsaturated fats can be found in vegetable oils such as olive oil, sunflower oil and rapeseed oil. Oily fish, avocados, nuts and seeds are also useful sources. Foods high in saturated fats include hard cheese, meat pies, sausages, pastry, cakes and biscuits. Most of us eat too much sugar. Sugary foods include sweets, cakes and biscuits as well as fizzy drinks. Too many sugary foods can cause tooth decay, especially if they are eaten in between meals.

5 **Try to eat less salt:** for adults this is no more than 6g a day. Most people eat too much salt as it is added to many everyday foods such as breakfast cereals, bread, sauces and ready meals. Eating too much salt can raise your blood pressure and make a stroke or heart disease more likely.

6 **Get active and try to be a healthy weight:** it is not healthy to be either overweight or underweight. Being active every day helps your muscles to develop and also helps to strengthen your bones. It also helps your digestive system to work properly, which helps to prevent constipation. People who don’t exercise very much are more likely to put on weight and develop illnesses as they get older.

7 **Drink plenty of water:** it is recommended that adults drink about 6–8 glasses of water per day, which is about two litres. Other fluids such as tea, coffee, milk and fruit juices count towards the daily total, but tap water is the healthiest and easiest choice. We get water from our food as well as our drinks.

8 **Don’t skip breakfast:** breakfast is a very important meal as it is many hours since your last meal. Breakfast gives you the energy you need to concentrate at school or work and provides important nutrients that you need for good health, for example protein in milk and vitamin C in fresh fruits. Try to choose breakfast cereals without too much sugar and top them with fresh fruit instead.
Where can we find advice on good nutrition?

There are many different sources of advice on nutrition. It is important when looking for advice that we use trusted sources of information. Guidelines for a healthy diet do sometimes change, so it is important to use the latest guidelines available.

Reliable advice on nutrition may come from:

- **The COMA Report**: COMA stands for Committee on Medical Aspects of Food Policy. It is a government report that sets the Dietary Reference Values (DRVs). Scientists and health professionals worked out how much of each nutrient you need to stay healthy and grow properly based on your age, gender and, for females, whether they are pregnant or breastfeeding.

- **The Scientific Advisory Group on Nutrition**: this group took over from the COMA Committee to advise the government on nutrition and related health issues. This includes advice on the nutrient content of individual foods and on the diet as a whole, including what a balanced diet is. They also monitor the nutritional status of people in the UK and report on diet-related health problems.

- **The Food Standards Agency** is responsible for food safety and hygiene in England, Wales and Northern Ireland. They give consumers information they need to make informed choices about where and what they eat. Their aim is to improve public health.

- **The National Health Service (NHS)** gives advice on nutrition through campaigns such as the ‘5 A Day’ campaign. They provide up-to-date information on many food-related health issues, and provide advice on healthy eating habits.

- **The British Nutrition Foundation (BNF)** is a charity that educates the public in food and nutrition. The information it provides is based on scientific evidence. ‘Food – a fact of life’ (www.foodafactoflife.org.uk) is a website for schools that provides up-to-date nutrition advice for children.

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**Practical activity**

1. Plan a day’s meals for an adult based on the eatwell plate.
2. Make one of the meals in a practical lesson.
3. Carry out sensory and nutritional analyses on the meal made.
4. Suggest improvements to the meal based on the sensory and nutritional analyses.

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*Figure 2.3.5* The Food Standards Agency helps to ensure the food we eat is safe
Meal planning

Portion size

When serving up meals, make sure the **portion size** is adjusted for each person. Remember, everyone has individual nutritional and energy needs.

- In recent years plates have become bigger and portion sizes can be too large, especially for children.
- Larger portions encourage you to eat more and can change your opinion on what is a normal amount to eat.
- It is best to serve children’s meals on plates that are smaller than the rest of the family’s to prevent over-eating.
- Teenagers will need larger portion sizes to provide for their **growth spurts** and increased physical activity.
- Many elderly people will need smaller portion sizes than they ate as younger adults due to reduced levels of physical activity and reduced amounts of lean muscle tissue.

![Figure 2.3.6 Adjust portion sizes depending on the age and physical activity level of each person](image)

Cost of food

The cost of food has increased in recent years and has become a larger part of the **family budget**. This price rise is more difficult for low-income families, as it means that they spend a larger proportion of their income on food. It is important that the cost of food is considered when planning meals, especially for those on a limited income, such as students and the elderly.

You can use online **price comparison sites** to compare the cost of shopping baskets at different shops. This can save money, especially if you are prepared to shop in different stores.

**Practical activity**

1. Plan and make a main meal for a family of four.
2. Serve one portion of the meal for a four-year-old child on a plate of the appropriate size.
3. If possible, photograph this meal and include a reference to the image as part of your evaluation of the practical session.
Research activity

1 Find a recipe for a meal for a family of four.
2 Use a price comparison site to compare the cost of the ingredients at different retail outlets. Which outlet is the cheapest?

It is usually cheaper to plan meals in advance so that there is less food wasted, and so that the same ingredient may be used for different recipes (for example, a fresh pineapple can be used for a fruit salad and later for a pizza topping).

Money may be saved when meal planning by investigating special offers (including buy one, get one free) and making a shopping list for the weekly items and only buying items on the list.

If you shop at the end of the day, shops often reduce items, but these usually have a short date mark on them, and may need to be used immediately or frozen (if the food is suitable for home freezing).

It is also best not to shop when you are hungry, as this can lead to impulse buying.

Many supermarkets sell value lines that can also help to save money.

With the increase in internet shopping for food, it can be easier to avoid impulse purchases and ‘pester power’ from children. However, there is an increasing amount of advertising on websites, which may prompt impulse food purchases.

Check your knowledge and understanding

1 List the eight tips for eating well.
2 Which two sections of the eatwell plate are the biggest?
3 How many grams is one portion of fruit/vegetables that counts towards your five a day?
4 Why are oily fish especially good for you?
5 Why are unsaturated fats better for you than saturated fats?
6 Why is exercise important as part of a healthy lifestyle?
7 Name two organisations that give accurate advice on nutrition, and describe some of the things they do.
8 Why is it important when serving up a meal to adapt the portion size for individual members of the family?
9 Explain why a teenager would require a larger portion than an elderly person.
10 Give three examples of how money may be saved when meal planning.
Section A: Practice questions

1 Which of these foods is a high biological value source of protein? [1 mark]
(a) Lentils
(b) Bread
(c) Peanuts
(d) Beef

2 Which one of the following foods is a vegetable fat? [1 mark]
(a) Cheese
(b) Rice
(c) Sunflower oil
(d) Chocolate

3 Which of these foods is high in fibre? [1 mark]
(a) Oats
(b) Cheese
(c) Milk
(d) Eggs

4 Which of these foods is a good source of vitamin A? [1 mark]
(a) Liver
(b) Bananas
(c) Pulses
(d) Nuts

5 What is the function of calcium in the diet? [1 mark]
(a) It strengthens teeth and bones.
(b) It provides energy.
(c) It forms haemoglobin and gives blood its red colour.
(d) It controls the amount of water in the body.

6 (a) Name two foods that contain saturated fatty acids. [2 marks]
(b) Explain the difference between saturated and polyunsaturated fatty acids. [6 marks]

7 This is an example of the daily diet of a teenage girl who is a vegetarian.

| Breakfast          | Sugar-coated cereal bar
|                   | Black coffee
| Lunch              | Pizza slice
|                   | Chips
|                   | Fizzy drink
| Supper             | Vegetarian sausages
|                   | Mashed potato
|                   | Carrots
|                   | Doughnut
| Snacks             | Salted crisps
|                   | Fizzy drink

(a) Name two nutrients that may be low in this diet. [2 marks]
(b) Explain four ways in which this diet could be improved to meet current dietary guidelines. [8 marks]

8 (a) Suggest ways a family on a low income can save money when buying food. [6 marks]
(b) Discuss the nutritional needs of the elderly. Give examples of how you could make sure the elderly receive the right nutrients. [10 marks]

Answers to these questions are provided on page 00.
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p.25: question 6 taken from AQA Home Economics: Food and Nutrition Unit 1 Written paper 45851 June 2014 (question 3); question 7 taken from AQA Home Economics: Food and Nutrition Unit 1 Written paper 45851 May 2013 (question 5); question 8 taken from AQA Home Economics: Food and Nutrition Unit 1 Written paper 45851 June 2014 (question 8)

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