

# Unit 2: Non-exam assessment (9 hours)

## AC1.1 Nutrition: Describe functions of nutrients in the human body.

### Fruits & Vegetables

40%

- eat 5 portions a day!
- choose a variety
- provides fibre for healthy digestion
- provides vitamins and minerals for healthy body functions and immune system

### Fatty and Sugary Foods

0%

- these are the danger foods!
- they are not part of a healthy diet
- eat them only occasionally
- eating too much fatty and sugary processed food is linked to increased risk of weight gain/obesity, diabetes, tooth decay and cardiovascular disease

### Starchy Foods

38%

- provide slow release carbohydrate used by the body for energy
- choose wholegrains for increased fibre (good digestion, reduced risk of heart disease)



12%

8%

### Beans, Pulses, Eggs, Meat, Fish

- provide protein for growth, repair and maintenance of body cells
- choose a combination of plant proteins
- avoid eating too much processed meat like bacon and sausages as these are linked with increased risk of bowel and stomach cancer

### Dairy Foods

- provide calcium for healthy bones, teeth and nails
- the body needs Vitamin D to absorb calcium effectively

### Portion Control!

Healthy diets not only have the correct balance, but have the right portion sizes. Here is a 'handy' guide...

- vegetables** = double cupped palm.
- grains/starches** = clenched fist.
- protein** = palm of hand.
- fruits** = clenched fist.
- thumb** = fats.



### Water Intake

A balanced diet must include water, it is required for nearly all brain and other bodily functions. See slide 2 for more details on water.

### Oils & Spreads

1%

Provide fat soluble vitamins A,D,E & K. Are high in calories & energy so keep use to a minimum. It is recommended to choose unsaturated oils like olive oil.

The Eatwell Guide is the UK Healthy Eating Model. It shows what we should eat as a balanced diet. The size of the sections represents the proportion of our diet that particular food group should make up. The Eatwell Guide was updated in 2016 to take into account scientific opinion and public opinion. The main change was that sugary and fatty foods are shown off the plate as they are not part of a healthy diet.



## AC1.1 Nutrition: Describe functions of nutrients in the human body.

### Water intake

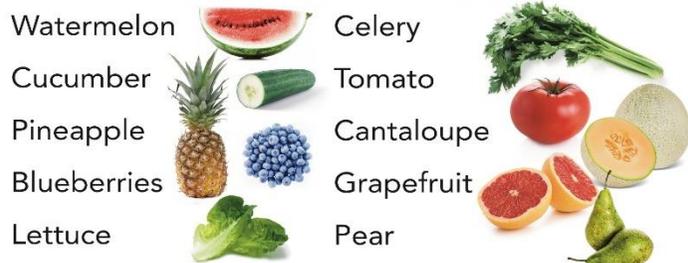
Click [here](#) to watch video on water

Water makes up just over 2/3 of the human body and is required for:

- maintain body temperature
- metabolise fat
- aid digestion
- lubricate organs
- transport nutrients
- flushes out waste and toxins



### Foods Rich in Water



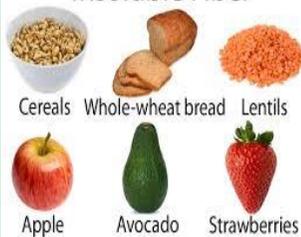
FIND OUT MORE HERE: <https://www.nhs.uk/live-well/eat-well/water-drinks-nutrition/>

Keeping hydrated is important. It is recommended that 6-8 glasses of water or other fluid are consumed everyday to replace normal water loss, rather than to obtain any broader health benefits.

### Soluble Fiber



### Insoluble Fiber



### The Bristol Stool Chart

The Bristol stool chart shows how the shape of different stools (poos) on a continuum.

Both dietary fibre and water play a HUGE role in keeping the digestive system functioning properly.

Too little water and/or fibre can result in constipation (the Type 1 and 2 stools)

### Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. Entirely Liquid

**Soluble fibre dissolves in water** and the insoluble kind doesn't.

**Insoluble** helps absorb water and bulk up stools. **Soluble** helps reduce blood cholesterol and sugar.

## Fibre intake

### What is it?

Fibre is found in fruits and vegetables, nuts, seeds, wholegrain cereal flours and products. It is not digestible and passes through the digestive system, forming the bulk of our stools (poo).

### Dietary fibre has many health benefits:

- it can reduce your risk of heart disease, diabetes and some cancers, and also help weight control.
- fibre is also important for digestive health - fibre bulks up stools and holds water in them, making them softer and easier to pass. it also makes waste move through the digestive tract more quickly, which is better for the gut and can help to prevent constipation.
- some types of fibre can be fermented by gut bacteria, producing substances that appear to be good for gut health. providing 'food' for gut bacteria can also help increase the number of healthy bacteria in the gut.

### How FIBRE Much do we Need?

#### 30g a day for adults

2-5 years 15g per day, 5-11 years 20g per day, 11-16 years 25g per day, 16-18 years 30g per day

### To increase your fibre intake you could:

- choose a high fibre breakfast cereal e.g. bran flakes, or porridge
- choose wholegrains like whole-wheat pasta, bulgur wheat or brown rice, wholemeal bread
- go for potatoes with skins
- for snacks try fruit, vegetable sticks, rye crackers, oatcakes, unsalted nuts or seeds
- include plenty of vegetables with meals – either as a side dish or added to sauces, stews or curries
- add pulses like beans, lentils or chickpeas to stews, curries and salads
- eat fruit!
- add nuts and seeds to recipes

# AC1.1: Reference Intake



The NHS recommends the following intake of each nutrient per day:

Nutrient	Amount	Calories per gram
Energy (calories)	2,000kcal	
Carbohydrate of which <b>sugars</b>	At least 260g 90g	4kcal
Protein	50g	4kcal
Fat of which <b>saturates</b>	Less than 70g Less than 20g	9kcal

As you can see below we need much less of the micronutrient: Vitamins and minerals. There are slight differences between males and females.

Nutrient	Males	Females
Vitamin A	0.7mcg	0.6mcg
Vitamin D	10mcg	
Vitamin E	4mg	3mg
Vitamin K	1mcg per kg of body weight	
Vitamin B	Thiamin: 1mg Riboflavin: 1.3mg Vitamin B12: 1.5mcg	Thiamin: 0.8mg Riboflavin: 1.1mg Vitamin B12: 1.5mcg
Vitamin C	40mg	
Sodium (Salt)	Less than 6g	
Iron	All (M) 8.7mg	(F) 19-50yrs 14.8mg / 50yrs+ 8.7mg
Calcium	700mg	

[What are Calories click here](#)

[Click here to find out more about food labels](#)

## Adult reference intakes

Unless the label says otherwise, RI values are based on an average-sized woman doing an average amount of physical activity. This is to reduce the risk of people with lower energy requirements eating too much, as well as to provide clear and consistent information on labels.

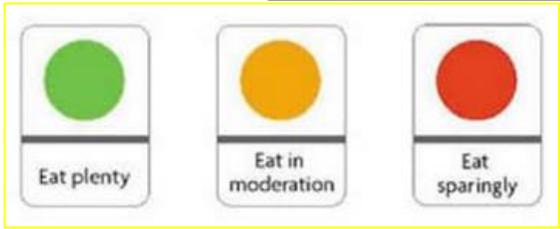
As part of a healthy balanced diet, an adult's reference intakes ("RIs") for a day are:

- Energy: 8,400 kJ/2,000kcal
- Total fat: 70g
- Saturates: 20g
- Carbohydrate: 260g
- Total sugars: 90g
- Protein: 50g
- Salt: 6g

**Red** colour coding means the food or drink is high in this nutrient and we should try to have these foods less often or eat them in small amounts.

**Amber** means medium, and if a food contains mostly amber you can eat it most of the time.

**Green** means low, and the more green lights a label displays the healthier the choice.



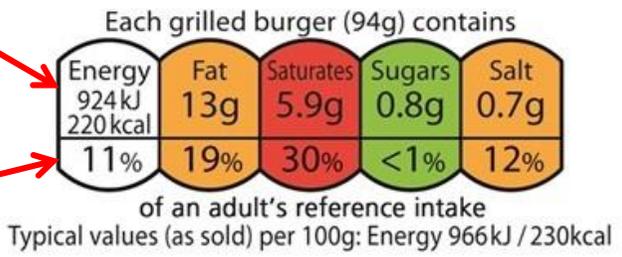
**Front of Pack label**

Portion/Serving size is indicated on the label.  
This is NOT always the whole pack!

Front of pack nutrition labelling is optional

Traffic light system indicates with colour how much of intake is needed.  
Easy to see, quick to take in

Energy intake as a percentage of RI





	Nutrient	Source	Function	Effects too little (deficiency)	Effect of too much (access)
<b>MACRONUTRIENTS</b>	Carbohydrates <a href="#">Click here to see a video.</a>	<p><b>Starches</b> – found in cereal grains such as rice, wheat, oats, plus starchy tubers (potatoes and sweet potatoes) and vegetables (carrots, beets, corn)</p> <p><b>Sugars</b> – lactose found in milk and dairy, fructose found in honey, fruits and some vegetables (peppers, tomatoes etc.)</p>	<p><b>Two types:</b></p> <p><b>1. Starchy (complex)</b> provide energy when broken down – slow release energy to the body (wholegrain provide slower release carbohydrates)</p> <p><b>2. Sugary (simple)</b> provide quick release energy to the body's' cells.</p>	<p>Deficiency of carbohydrates is extremely rare in the UK.</p> <p>Long term lack of carbohydrates in the diet can cause Ketosis – a condition where the body switches to using protein as an energy source.</p> <p><b>Visible symptoms-</b> lack of energy and weight loss.</p> <p><b>Non- visible symptoms-</b> Not enough fibre from wholegrains foods leads to constipation and other intestinal problems.</p>	<p>If not used for energy it becomes stored as fat. <b>Visible symptoms</b> weight gain and obesity.</p> <p><b>Non- visible-</b> eating too much non refined(white carbs) leads to tooth decay, raising blood sugar levels and type 2 diabetes.</p>
	Proteins <a href="#">Click here for video</a>	<p>High Biological Value (HBV) protein: Meat, fish, poultry, eggs,</p> <p>Low Biological Value (LBV) protein: Tofu, beans, nuts.</p>	<p>Protein is digested by the body into its component parts – called amino acids. There are 8 which are essential for adults and 12 for children. HBV protein foods contain all the essential amino acids.</p>	<p><b>Visible symptoms-</b></p> <ul style="list-style-type: none"> <li>Wasting of muscle &amp; muscle loss</li> <li>Oedema – build up of fluids in the body</li> <li>Slow growth in children</li> </ul> <p>Severe deficiency leads to kwashiorkor (bloating of the stomach)</p> <p><b>Non-visible symptoms-</b> weaker immune system which needs protein to function properly.</p>	<p><b>Visible symptoms</b> excess stored as fat, lead to weight gain and obesity.</p> <p><b>Non-visible symptoms-</b> Puts a strain on how well the kidneys work.</p>
	Fats <a href="#">Click here for video</a> <a href="#">Click here for more info</a>	<p>Butter, cheese, dairy foods including yogurt, crème fraiche, milk</p> <p>Oils, lard, suet, dripping.</p> <div data-bbox="360 1106 617 1282" style="border: 2px solid green; padding: 5px; margin-top: 10px;">  </div>	<p>Fat is a term used to describe lipids – this can refer to solid fats and oils. Fat is broken down by the body and used for energy, Also used to provide warmth when stored under the skin.</p> <p>Is a dietary carrier of fat soluble vitamins A, D, E &amp; K.</p> <p><b>Two types of fats:</b> Unsaturated and saturated.</p> <div data-bbox="638 1239 1065 1410" style="border: 2px solid red; padding: 5px; margin-top: 10px;">  </div>	<p><b>Visible symptoms-</b> Weight loss over time as the body uses stores of fat. Person feels cold as fat under skin acts as insulator.</p> <p><b>Non-visible symptoms-</b> Bruising of the bones as they are not protected. Lack of fat in the diet can lead to deficiencies of fat soluble vitamins A, D, E &amp; K.</p>	<p><b>Common issue in the UK</b></p> <p><b>Visible symptoms-</b> Stored under the skin in adipose tissue cells, which leads to disease such as type 2 diabetes, obesity and heart disease and high bloody pressure.</p> <p><b>Non-visible symptoms-</b> Internal organs store fat which prevents them working properly. Fat blocks arteries.</p>

**Unsaturated Fat:**

- **Liquid at room temperature.**
- **Mainly from non-animal (plant) sources.**
- **Can lower blood cholesterol.**

**Saturated Fat:**

- **Solid at room temperature.**
- **Mainly from animal sources. \*With the exception of palm and coconut oil.**
- **Causes high blood cholesterol.**

# AC1.1 Nutrition: Describe functions of nutrients in the human body - MICRONUTRIENTS

Click [here](#) to watch a video on Vitamins and minerals

Vitamins and Minerals are chemicals found naturally in food. With the exception of Vitamin D, which can be manufactured through the action of sunlight on the skin, vitamins cannot be made by the body, and must be provided by the diet. They are needed in minute (tiny) amounts to perform specific functions and fall into two different classes:

Water Soluble	Fat Soluble
C	A
B group	D
	E
	K



Free Radical

**Free Radicals**

Antioxidant  
(donating an electron)



Essentially, damaged oxygen molecules with an extremely unstable atomic structure. They attack fats and proteins all over the body, especially those in membranes that line the blood vessels, the skin and other connective tissue. They can make you age a lot quicker! Anything we do to raise our metabolic rate (like exercise) accelerates the production of free radicals.

Water Soluble	Needed For	Found In	Deficiency/ Excess AC1.3 Explain characteristics of unsatisfactory nutritional intake.
<b>C Antioxidant</b>	Normal structure and function of connective tissue e.g. collagen. Helps healing process. Antioxidant (protects from free radicals). Helps absorb iron in the body. Improves immune system.	main sources from plants – fruits and vegetables. milk and liver contain small amounts.	<b>Deficiency-</b> Scurvy, very rare symptoms include bleeding gums, wounds not healing properly, tiredness. Lack of vitamin C effects absorption of iron. <b>Excess</b> is eliminated from the body within 24 hours so not a problem.
<b>B1 Thiamin</b>	Normal function of the nervous system and heart	whole grains, meat, flour and breakfast cereals.	<b>Deficiency-</b> Beri-beri (disorder of the nervous system). <b>Excess-</b> body excretes it.
<b>B2 Riboflavin</b>	Release of energy from food.	milk, eggs, green vegetables, cererals.	<b>Deficiency-</b> Dry cracked skin around the mouth and nose. <b>Excess-</b> body excretes it.
<b>B3 Niacin</b>	Energy release, skin and membranes.	milk, eggs, cheese, meat.	<b>Deficiency-</b> disease pellagra. Symptoms can include dermatitis, dementia and diarrhoea. <b>Excess-</b> body excretes it.
<b>B9 Folate</b>	Red blood cells and nervous system.	green leafy vegetables.	<b>Deficiency-</b> can lead to anaemia. Symptoms can include insomnia, depression and forgetfulness. <b>Excess-</b> body excretes it.
<b>B12 Colbalbumin</b>	Cell division and blood formation. Normal structure of nerves.	animal sources – milk, meat and eggs. some algae and bacteria can produce b12.	<b>Deficiency-</b> Anemia (rare), may be found in vegetarians. <b>Excess-</b> body excretes it.



Fat Soluble	Needed For	Found In	Deficiency/ Excess
<p><b>A</b></p> <p><b>Antioxidant</b></p>	<ul style="list-style-type: none"> <li>needed for structure and functioning of the skin and mucous membranes,</li> <li>cell differentiation</li> <li>helps with vision in dim light and colour vision</li> <li>keeping the immune system healthy</li> </ul>	<ul style="list-style-type: none"> <li>dairy products</li> <li>dark green veg</li> <li>orange coloured fruit and veg</li> <li>fish oils and liver</li> </ul>	<p><b>Deficiency-</b> poor vision, night blindness.</p> <p><b>Excess-</b> stored in the liver and too much can be toxic.</p>
<b>D</b>	<p>Needed for the absorption of calcium and phosphorus from foods, to keep bones healthy.</p>	<ul style="list-style-type: none"> <li>fish oils</li> <li>dairy products</li> <li>sun light absorption</li> <li>often added to cereal and margarine.</li> </ul>	<p><b>Deficiency-</b> Rickets (soft deformed) Osteomalacia (weak bones)</p> <p><b>Excess:</b> build up of calcium, poor appetite, vomiting</p>
<p><b>E</b></p> <p><b>Antioxidant</b></p>	<p>Helps maintain healthy skin and eyes and strengthen the body's natural defence against illness and infection.</p>	<ul style="list-style-type: none"> <li>dairy products</li> <li>dark green veg</li> <li>nuts</li> </ul>	<p><b>Deficiency-</b> Rare- age quickly, wrinkles, skin loses elasticity.</p> <p><b>Excess-</b> in very large doses may interfere with absorption of vitamin A</p>
<b>K</b>	<p>Needed for clotting of blood and is also required for normal bone structure.</p> <p>Infants are given vitamin K at birth.</p>	<ul style="list-style-type: none"> <li>dark green veg</li> <li>fish</li> <li>liver</li> <li>fruit</li> </ul>	<p><b>Deficiency-</b> Hemorrhages- ruptured blood vessels.</p> <p><b>Excess-</b> unknown</p>



## AC1.1 Nutrition: Describe functions of nutrients in the human body - MICRONUTRIENTS

Click [here](#) to watch a video on Vitamins and minerals

AC1.3 Explain characteristics of unsatisfactory nutritional intake.

	Nutrient	Function	Source	Effects too little (deficiency)	Effect of too much (access)
<b>MINERALS</b>	<b>Iron</b>	<ul style="list-style-type: none"> <li>needed to make haemoglobin in red blood cells which transports oxygen around the body</li> <li>also removing waste substances from the body</li> </ul>	<ul style="list-style-type: none"> <li>red meat, offal</li> <li>non-haem iron found in wholegrain foods, leafy green vegetables, fortified breakfast cereals</li> </ul> <p><b>key fact</b></p> <ul style="list-style-type: none"> <li>iron is only absorbed in the presence of vitamin c</li> </ul>	<ul style="list-style-type: none"> <li>Iron deficiency anaemia is the most common dietary deficiency in the UK</li> <li><b>Visible symptoms</b> include tiredness, paleness, lethargy, weak and splitting nails</li> </ul>	<ul style="list-style-type: none"> <li>side effects of taking high doses (over 20mg) of iron include constipation, vomiting</li> <li>very high doses of iron can be <b>fatal</b>, particularly if taken by children, so always keep iron supplements out of the reach of children</li> </ul>
	<b>Calcium</b>	<ul style="list-style-type: none"> <li>needed by the body to build strong bones and teeth</li> <li>essential for blood clotting process and blood pressure</li> <li>essential for nerve signal transmission and muscle contraction</li> <li>the skeleton contains about 99% of the body's calcium</li> </ul>	<ul style="list-style-type: none"> <li>dairy foods including milk, yogurt, cheese, butter</li> <li>dark leafy green vegetables,</li> <li>fish with edible bones including sardines and pilchards</li> <li>non-dairy milks fortified with added calcium</li> </ul>	<p><b>Visible symptoms</b> Lack of calcium in children can cause rickets Osteoporosis (brittle bones) in adults later on in life when bone density is less. Rickets wear children's bones are weak and soft causing them to be deformed.</p> <ul style="list-style-type: none"> <li>To find out more click <a href="#">here</a></li> </ul> <p><b>Non-visible symptoms</b></p> <ul style="list-style-type: none"> <li>bones and teeth weaken,</li> <li>nerves and muscles don't work properly</li> <li>blood will not clot and form a scap after an injury</li> </ul>	Hypercalcemia is a condition in which you have too high a concentration of <b>calcium</b> in your <b>blood</b> .
	<b>Sodium</b>	<ul style="list-style-type: none"> <li>controls the amount of water in the body</li> <li>makes nerves and muscles work properly</li> </ul>	salted foods, yeast extract, stock cubes, gravies, seasonings, snack foods, canned fish, bacon, ham, fast foods, ready meals, baking powder and takeaway foods	<p><b>Visible symptoms:</b></p> <ul style="list-style-type: none"> <li>Unlikely, but can be caused by excessive sweating or vomiting and diarrhoea, muscle cramps, weakness.</li> </ul>	<ul style="list-style-type: none"> <li>water retention and swelling</li> <li>high blood pressure</li> <li>heart problems</li> <li>headaches</li> <li>guideline is 6g for adults</li> <li>4g for teenagers</li> </ul>

## AC1.2 Special Diets: Compare the nutritional needs of different groups of people.

**Nutrition** through life differs mainly due to the need for energy and protein for growth and development – in younger age groups, growth and development occurs, in older age groups only maintenance of the body is required, therefore protein and energy requirements are reduced.

**GENDER** affects nutritional requirements after puberty – before puberty male and female requirements are the same. Puberty causes girls to begin menstruation, increasing their iron needs, which remain higher than men until the menopause which occurs around 50 years of age. Generally males are physically larger than females and therefore need to consume more energy and protein on a daily basis.

**PHYSICAL ACTIVITY LEVEL** affects a person's energy requirements. The more active a person is, the more energy they need. It is recommended that extra energy requirements come from extra starchy carbohydrate in the diet. Increased PAL could be from having an active job or from playing lots of sport.

### Babies and Toddlers

- milk only for first 4-6 months
- weaning occurs from 6 months – introduce a wide variety of textures and colours
- avoid nuts (choking hazard), salt and sugar.

### Pre-school children

- balanced diet needed – in line with Eatwell Guide from 12 months
- high needs for energy and protein due to rapid growth and constant movement
- full fat dairy products should be consumed
- salt and sugar should be avoided

### Children

- balanced diet needed – in line with Eatwell Guide from 12 months
- high needs for energy and protein due to rapid growth and constant movement
- 5-a-day is recommended.
- energy requirements increase because they grow quickly and become active.
- good supply of protein, calcium, iron, vitamin A and D, as part of a healthy, balanced diet
- calcium and vit D for healthy tooth development, and strong bones.
- limit sugary carbohydrates such as sweets -tooth decay.
- fat: small amounts for energy and insulation.
- young children small stomachs, small and frequent meals. No room for junk food
- children cannot cut food and chew as easily so need easy to eat foods
- avoid nuts- choking and allergy risks.
- children need plenty of fluid and they should be encouraged to drink regularly, especially if they are very active.

### Teenagers

- Increased needs for iron in teenage girls due to menstruation
- Calcium intake & vitamin D are really important to ensure Peak Bone Mass is reached – setting up bone health for life.
- Boys need extra iron initially for growth and muscles but this need decreases after age 19.
- Boys need more protein and energy than girls due to their later growth spurt
- *Many UK teenagers are lacking in calcium, iron and vitamin A.*

### Adults

Requirements do not change much between the ages of 19 to 50, except during pregnancy and lactation. Well balanced diet modelled on the Eatwell Guide essential.  
*Many UK adults eat too much fat, too much salt and not enough fruit and vegetables.*

### Elderly

- older adults need protein to repair worn out body cells. they need a good supply of calcium and vitamin d in order to maintain healthy bones and teeth and iron to keep bloody healthy. in winter time, they may need a little more fat in their diet to provide body warmth. fresh fruit and vegetables are important for a good supply of vitamins and minerals.
- old people may have digestive problems or may have difficulty cutting food (because of arthritis) or chewing food (because of false teeth).
- examples of food suitable for the elderly = soft foods – boiled potatoes, stew, soup, casseroles, one pot meals.
- a good supply of fibre is needed to prevent constipation in the elderly who may be less active. Older adults may have a weaker sense of thirst. If necessary they should be helped and encouraged to drink regularly.

### Pregnancy & Lactation

Because the body becomes more efficient at absorption during pregnancy, normal nutritional requirements apply until the last third of pregnancy, when some extra energy and calcium is required. Pregnant and lactating ladies should eat a varied diet rich in fresh fruit and vegetables and wholegrains (in line with the Eatwell Guide).

There are some foods to avoid:

- unpasteurised milk products and undercooked meats/cured meat products – they may contain listeria which is harmful to unborn babies
- pate, liver and liver products – due to high vitamin A content (Vitamin A is harmful to unborn babies if eaten in large quantities)
- swordfish, marlin and shark as they are high in mercury which can be harmful to unborn baby

## AC1.2 Special Diets: Compare the nutritional needs of different groups of people.

Medical Diets	Religious Diets	Ethical Diets
<p><b>Nut &amp; other allergies</b> Must avoid particular allergen, otherwise an allergic reaction may occur. Serious allergic reactions can result in anaphylaxis and even death.</p> <p><b>The 14 common allergens which must be declared on menus and food packaging are:</b> celery, gluten, crustaceans, eggs, fish, lupin, milk, molluscs, mustard, nuts, peanuts, sesame, soya, sulphites.</p>	<p><b>Halal (Muslim)</b> Halal is Arabic for permissible. Halal food is that which adheres to Islamic law, as defined in the Koran. Haram is the opposite to Halal and describes food which is not permitted under Islamic law. Haram items that Muslims will not consumer include pork and all pork products as well a alcohol.</p>	<p><b>Vegetarian</b> Vegetarians do not eat any flesh – they do not eat meat, poultry or fish/shellfish. Vegetarians do eat dairy products and eggs (lacto-ovo vegetarian).</p>
<p><b>Lactose intolerance - <a href="#">Link to website here</a></b> People who are lactose intolerant do not make the digestive enzyme which is needed to digest lactose (a milk sugar found in dairy products). If they consume lactose, they will experience digestive discomfort including cramps, excess wind and diarrhoea. Lactose intolerant people can consumer lactose free milk and dairy products or dairy alternatives. They must be careful to ensure they get enough calcium in their diet.</p>	<p><b>Kosher (Judaism)</b> Judaism instructs its followers to observe a kosher diet, this means no pork. Kosher food also does not mix dairy products and meat in the same meal/course. Foe example, a burger must be served without cheese.</p> <div style="text-align: center;">  </div>	<p><b>Vegan</b> Vegans avoid consuming any animal products – including milk and dairy products, Protein is a nutrient which can be lacking in a badly planned vegan diet – vegans can eat wholegrain cereals, nuts, beans, lentils and tofu. Calcium may be lacking in a vegan diet – some vegans replace dairy with calcium fortified alternatives such as soya milk or almond milk.</p>
<p><b>Coeliac - <a href="#">Link to website here</a></b> Coeliac disease sufferers react to the presence of gluten, a protein found in wheat flour and wheat flour products. They must avoid consuming gluten. Gluten is present in any wheat flour – alternatives such as</p>	<p><b>Hindu</b> Followers of the Hindu religion do not eat Beef, as they believe it is a sacred animal.</p>	<p><b>Pescetarian</b> Pescetarians do not eat meat, but will eat fish and shellfish.</p>
<p><b>Coronary Heart Disease - <a href="#">Find out more click here</a></b> People who are diagnosed or at risk of Coronary Heart Disease are currently recommended to adopt a low sugar, low saturated fat, high fibre and fruit and vegetable Mediterranean style diet.</p>	<p><b>Buddhist</b> Buddhists are usually vegetarian and do not consume meat or fish.</p>	<p><b>Flexitarian</b> This is a new concept – followers of a flexitarian diet choose vegetarian or vegan diet meal choices for some parts of the week, in order to reduce their carbon foot print. Meat-Free Mondays campaign spearheaded this movement.</p>



Dairy free



## AC1.4 Cooking Methods

These techniques differ by water temperature:

- Poaching: Less than 82°C.
- Simmering: 85-93°C.
- Boiling: 100°C.

When the liquid from boiling is used in things like gravy, **100% of the minerals and 70-90% of B vitamins are retained.**

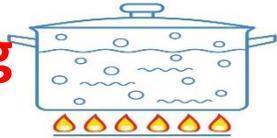
Steaming is one of the **best cooking methods** for **preserving nutrients, including water-soluble vitamins.**



## Nutrient Content Is Often Altered During Cooking

Cooking food improves digestion and increases absorption of many nutrients. For example, protein in cooked eggs is 180% more digestible than in raw eggs. However, several key nutrients are reduced with some cooking methods.

### Boiling



-100oC

- Loss of vitamins
- Softens vegetables
- Gelatinisation happens making food like pasta softer and easier for the body to use.

**Foods:** vegetables, fish, pasta, rice

### POACHING

- Enhance nutrients
- Add flavours
- Reuse nutrient stock

**Foods:** eggs, fish, white meat chicken and fruit

### STEAMING

- No direct heat
- Retains nutrients
- Adds flavour

**Foods:** vegetables, fish, meat, rice, Chinese food

### Effect on nutrition

- Up to **50% of Vit C** is damaged when **green vegetables** are boiled.
- Vitamins **B1, B2 and B3** are damaged by heat and dissolve in the water.
- Some **calcium and sodium** is also lost as it dissolves in boiled water.

**Starch (carbs)** is gelatinised when cooked in liquid making it easier for the body to use.

- **Boiling fish** was shown to preserve omega-3 fatty acid content significantly more than **frying or microwaving.**

### Effect on nutrition

- Vitamins **B1, B2 and B3** are damaged by heat and dissolve in the water.



### Effect on nutrition

- Best method for conserving Vit C, as only 15% is lost as the food is not in direct contact with the water.

### BOTTOM LINE:

While water-based cooking methods cause the **greatest losses** of water-soluble vitamins, they have **very little effect on omega-3 fats (essential fatty acids).**

## AC1.4 Cooking Methods

### Roasting

- Dry heat
- Cooking solid foods
- Food is often coated with oil and fat.

**Foods:** vegetables, fish, potatoes, joints of meat



### Baking

- Dry heat
- Not cooked in oil or covered with liquid

**Foods:** cakes, muffins and bread

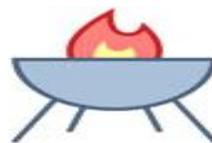


## Nutrient Content Is Often Altered During Cooking

### GRILLING

- Minimal oil
- Seal in flavour
- Reduce fat content

**Foods:** fish, burgers, chicken, vegetables, seafood, halloumi, tofu, fruit



### STIR-FRYING

- Minimal oil
- Nutrients intact
- Great texture

**Foods:** vegetables, chicken, fish, sea food



### Effect on nutrition

- High heat destroys most of Vit C.
- **Long cooking times** at high temperatures, **B vitamins in roasted meat may decline by as much as 40%.**

#### BOTTOM LINE:

Roasting or baking does not have a significant effect on most vitamins and minerals, with the exception of B vitamins.

### Effect on nutrition

- Heat can over cook protein making it difficult for the body to use.
- Damage caused to vitamin B and C.

### Effect on nutrition

- Up to 40% of Vitamin B can be damaged. Maintains other vitamin and minerals in grilling.
- High heat can easily over cook protein.

#### BOTTOM LINE:

Grilling and broiling provide **great flavour** but also **reduce B vitamins**. *Grilling generates potentially cancer-causing substances!*

### Effect on nutrition

- The fat used in cooking increases the amount of Vit A can absorb from some vegetables.
- Damage to Vitamin C and B is minimal due to short exposure to the heat.

#### BOTTOM LINE:

Sautéing and stir-frying improve the **absorption of fat-soluble vitamins**, but **they decrease the amount of vit C in vegetables.**

## Tips to Maximize Nutrient Retention During Cooking

1. Use as little water as possible for poaching or boiling.
2. Consume the liquid left in the pan after cooking vegetables.
3. Add back juices from meat that drip into the pan.
4. Don't peel vegetables until after cooking them. Better yet, don't peel at all to maximize fibre and nutrient density.
5. Cook vegetables in smaller amounts of water to reduce loss of vitamin C and B vitamins.
6. Try to finish cooked vegetables within a day or two, as vitamin C content may continue to decline when the cooked food is exposed to air.
7. Cut food after rather than before cooking, if possible. When food is cooked whole, less of it is exposed to heat and water.
8. Cook vegetables for only a few minutes whenever possible.
9. When cooking meat, poultry and fish, use the shortest cooking time needed for safe consumption.
10. Don't use baking soda when cooking vegetables. Although it helps maintain colour, vitamin C will be lost in the alkaline environment produced by baking soda.

# AC 2.1 Factors to consider- planning suitable dishes

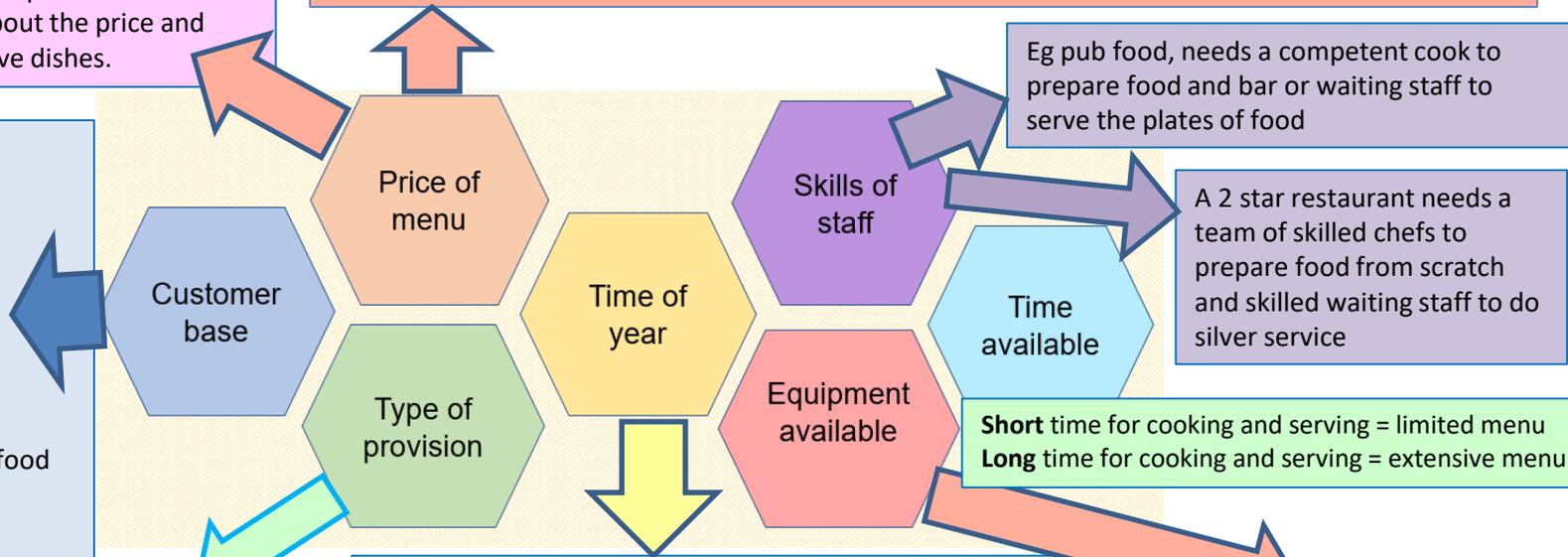
- The price for a meal in McDonalds would be less than in a 2 star restaurant. You are paying for the food, the service and the surroundings.
- Customers with lower disposable income are looking for good value meals at a reasonable price
- Customers with a higher disposable income may be less concerned about the price and want to try more expensive dishes.

- **Table D'Hote menu**- Fixed price for 2 or 3 courses with limited choices
  - **A la carte menu**- Dishes are individually priced and cooked to order
  - **Childrens menu**- Familiar foods in child size portions lower price
  - **Function menu**- Fixed price menu for parties and groups
- All costs must be taken into account when planning to make a profit including ingredient costs, portion sizes, staffing, heating and lighting, laundry . The establishment needs to make a profit

## Eat out for different reasons

- special occasions
- business
- family meal
- intimate meal
- meals on holiday
- regular
- tourists
- meal while travelling

All of these have different needs for food and service dependent on who the customer is and their needs.



- **The style of service**, i.e. Plate service, counter service, table service, silver service, gueridon service.
- **Affects the level of service** that the staff provide and the skills needed by the kitchen and front of house staff
- **What type of food is going to be served**, ie café, fine dining, fast food, family restaurant
- **Venue and environment** ie plastic tables and chairs would be ok in a fast food establishment but customers for fine dining would expect tables and tablecloths, napkins, cutlery condiments.

Food in season is readily available and peak of quality and taste, lower prices, less environmental impact in transport and storage

- e.g. strawberries are in season may- september
- e.g. spring lamb february- june
- new potatoes april-july
- bramley apples august-december
- runner beans july – september

[Caterer link](#)

[BBC link](#)

Foods not in season have to be imported or frozen, lower quality and taste different.

Customers prefer hot food in cold weather, cold food in

### hot weather.

**Seasonal events:** Valentines day, Easter, Christmas?

Some items on a menu may need specialist equipment

- pizza ovens
- deep fat fish fryers
- wok burners
- tandoor ovens

You can't offer food on a menu if you don't have a way of cooking it  
If you sell a lot of a dish, you may need to buy something to speed up preparation e.g. electric pasta maker

You need to comment on as many of these are you can for each of your dishes.

## AC 2.2 The environment

Hospitality and catering organisations need to be aware of environmental issues when running their businesses.

### Dishes

- Preparation and cooking methods
- Ingredients used
- Packaging

### Environmental issues

- Conserving energy and water when preparing food
- 3 Rs Reduce, Reuse, Recycle
- Food sustainability and provenance

### Using ingredients

- Have the ingredients travelled from far away by environmentally damaging transport?
- Have the ingredients been processed and purified using a lot of energy carbon footprint
- Ingredients locally produced – saving food miles and environmental damage
- Organic ingredients not using excess fertilizer, pesticide or artificial hormones for animals
- Animal welfare e.g. free range or barn eggs, free range meats, organic meats
- Fruits and vegetables and meat produced locally or sustainably
- Ingredients such as cocoa, coffee, syrup produced by fair trade farmers.

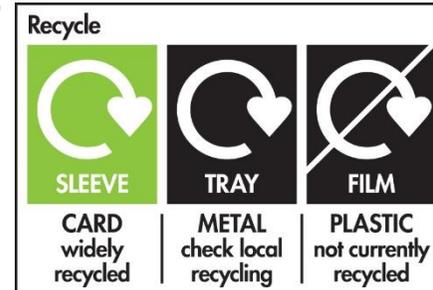
### Food miles/ Carbon footprint

The distance the food or ingredients travel from production/growing to where it is consumed or sold. Transporting food long distances is harmful to the environment CO2. Some foods can't be grown in this country due to climate. Click on the foot to watch a video. Click [here](#) to find out your carbon foot print for food items.



### Packaging

- When buying the ingredients, Look for ingredients that have minimum packaging
- Look for ingredients that have packaging that can be recycled
- Use reusable carrier bags to transport the ingredients after buying
- We can recycle the plastic food packaging materials – if the label says so
- We can also recycle glass from bottles and jars, paper and cardboard from packaging (recycled paper cannot be used for food products)
- Plastic and polystyrene does not biodegrade – so recycling is the best way to dispose of it
- Metal – aluminium and steel and foil from cans and foil used in food preparation can be recycled
- Use the recycling bins for packaging.



### Preparation and cooking methods

- First in first out with ingredients in the fridge
- Do not trim and peel too much off the food- wastes food
- Conserve energy, put more than one thing in the oven, put lids on saucepans, do not put hot food in the fridge, turn off equipment when not using
- Conserve water, use minimum water when boiling (conserves nutrients too) use a bowl or plug when washing up , turn off taps
- Save peelings, bones, carcass to make stock, soup or sauce
- Use leftover bread to make breadcrumbs
- Use leftover fruit to make sauce, coulis.

# AC 2.2 The environment

## Conserving Energy by:

- Keep equipment clean and maintained so it uses less energy including filters on ventilation and refrigeration
- Descale equipment used for boiling
- Keep lids on saucepans
- Energy efficient lighting, auto switch off
- Turn off equipment and lights when not in use
- Don't put hot food in fridges, uses more energy to cool down
- Energy efficient boilers etc for hot water, don't have water too hot (above 55 for legionella)
- Replace old equipment with more energy efficient models
- Gas heats up and cools down more rapidly but needs ventilation



ENERG  
энергия · energia

HOVER 31007920  
DXOA 49C3/1-80

A+++  
A++  
A+  
A  
B  
C  
D

Appliance ID:  
Test Date: Re-Test Due:  
Test Engineer: [Signature]

218 kWh/annum

10600 L/annum  
9 kg  
ABCDEFG

61 dB  
79 dB

2010/1061

EUROPEAN UNION  
Y UA  
IE BA



## Establishments can Reduce, Reuse and Recycle by:

- Only buy what is needed for preparation,
- Storage- check temperatures, use air tight containers label food with dates, use first in first out for ingredients
- Preparation- do not over trim, use carcasses and trimmings to make soups, stocks and sauces
- Portion sizes- do not offer excessive portion sizes people will leave lots of food, wastes energy in preparing food that is not going to be eaten
- Write menus that consider using offcuts such as chicken trimmings used to make a pie
- Turn dry fruit and veg into powders and seasonings
- Turn excess fruit and veg into chutneys, sauces, jams, pickles
- Freeze leftover food until it is used as ingredient- label
- ❖ Keep food in reusable containers
- ❖ Serve water in glass bottles or carafes
- ❖ Use refillable containers for condiments, salt and pepper, sauces etc instead of single serve
- ❖ Reusable table linens and serviettes that need washing instead of disposable ones
- ❖ Use food not served to make new meals e.g. colcannon with left over potato and green veg, stir fries with small pieces of veg, trifle with left over cake, meringue with left over egg white, soup with veg and meat leftovers, Bread and butter pudding or croutons with bread.
- Recycle sturdy containers for food storage
- Send food waste to be used for compost or animal feed instead of throwing it away
- Recycle used cooking oil. Some companies collect it for free and then turn it into bio diesel
- Recycle paper, cardboard, cans, glass bottles and jars, - councils collect for recycling
- Buy recycled glass, food grade plastic containers, recycled paper
- Use the recycling bins

## Conserving Water by:

- Taps that disperse only short bursts of water
- Motion sensor taps
- Only use minimum water to cook food
- Use a steamer instead of boiling in water
- Reduce flow of taps, use a spray head for washing
- Have taps which turn themselves off
- Use a bowl, keep the plug in when washing up
- Full loads for washing machines and dishwashers
- Serve water on tables at customer's request
- Reduce flow rate to equipment such as potato peelers
- Low flow toilets and showers
- Water metering



**Soil association**  
Less use of artificial fertilizers or pesticides. Crops are grown in rotation, so less fertilizer is added to the soil. No Genetically modified ingredients. Animals are not overcrowded and not given drugs to make them grow faster.

## Sustainability and Food Provenance

### Fair Trade foods

are bought directly from the farmer, cutting out the middle men. Farmers receive a fair and stable price for their products.



**The RSPCA Assured label** makes it easy to recognise products from animals that have had a better life. RSPCA inspect indoor as well as outdoor farms, including free range and organic. They require good water quality and careful handling which ensure the health and welfare of farmed fish.

## AC 2.3 How menu meets customer needs- Nutritional

### Cooking methods

Some cooking methods add fat, adding too much fat to food increase the calories (energy content) drastically and is also thought to be a risk factor in cardiovascular disease. Cooks should be minimise their use where possible.

These include:

- Frying - deep (submerging food in hot fat)
- Frying – shallow (frying food in 1cm or less of fat in a pan)
- Roasting (cooking in fat in the oven)



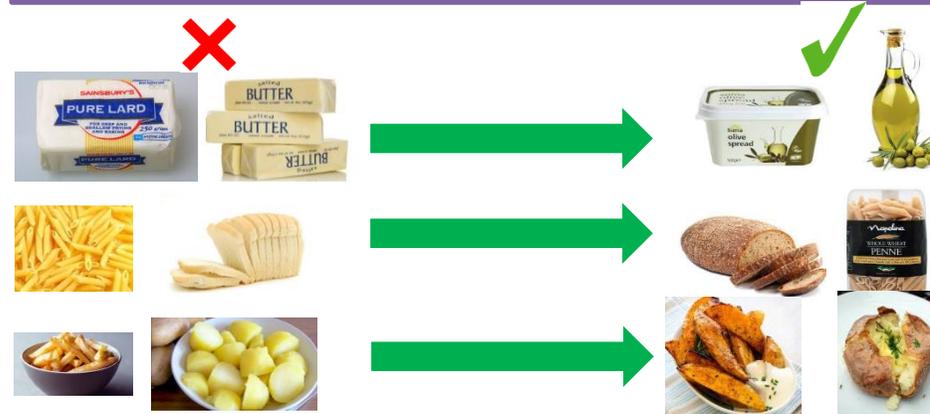
Healthier cooking methods only add small amounts of fat, or do not add fat to food at all. They can be dry (cooking without the use of water) or moist (cooking with water or steam). Healthier cooking methods include:

- stir frying (cooking quickly in a small amount of oil at v high temps)
- poaching (cooked gently in simmering liquid)
- boiling (cooking food submerged in vigorously boiling 'rolling boil' water)
- steaming (holding food above boiling water to be cooked by the steam)
- grilling – on a cooker or on a bbq (food cooked by radiant heat from a flame or glowing element)
- baking in the oven (dry heat)
- stewing (slow-cooking on hob or in slow-cooker with liquid)
- casseroles (slow-cooking in oven with liquid)
- braising (slow-cooking **pre-sealed** meat and vegetables in oven with liquid)



### Preparation methods

- Do not add too much extra fat when preparing/marinating or cooking
- Trim fat off excess fat from meat where possible (leaving some is fine for flavour)
- Do not add too much extra salt when seasoning/marinating foods before cooking
- Do not add too much sugar when marinating foods



### CHANGE THE INGREDIENTS USED:

- ✓ Avoid saturated fats such as butter, lard and dripping - Use heart healthy unsaturated fats such as olive oil, avocado oil
- ✓ Avoid using white flour where possible – use wholegrain or brown versions for extra fibre and B vitamins
- ✓ Leave the skin on potatoes for extra fibre and vitamin C
- ✓ Replace cream in recipes with reduced fat crème fraiche
- ✓ Replace mild cheeses with stronger ones, and use less
- ✓ REDUCE sugar content of recipes by using naturally sweet ingredients such as fruits
- ✓ Add **extra VEGETABLES, FRUITS, NUTS and SEEDS** into recipes where possible, **for extra fibre, vitamins and minerals** - these can be blended into sauces to 'hide' them for fussy eaters

## AC 2.3 How menu meets customer needs- ORGANOLEPTIC

Changes to make dishes healthier can affect OTHER aspects of the finished dishes in several ways...

**Organoleptic** means the qualities of food that people experience with their senses. There are 5 senses: sight, smell, taste and sound. To enable people to enjoy their food, it is important that the menu planning, preparation, cooking serving food is carried out well so that food is **appetising**.

### **SIGHT:** *Appearance and presentation of the meal*

- Adding vegetables to a dish to increase fibre, vitamins and minerals may also affect the **colour** of the dish.
- Adding greens such as green peppers or green beans will **create a fresher**, more vibrant look.
- Adding tomatoes/red peppers to a dish will make it look brighter. Remember – **contrast in colours** within a dish is good, makes dishes look more appealing and delicious!
- **Changing carbs to wholegrain or skin-on versions** may also change the colour of the dish, however this time may increase the presence of brown in the dish, which is considered a 'dead' or dull colour, and will need brightening up in other ways...
- Type of **servicing dishes**.
- **Garnishing**
- Think cut, shape and form of food.
- Make sure plates and dishes are clean
- before serving food, to remove drips and splashes.



### **TOUCH: Texture** *(how food feels in the mouth)*

- **Use fresh food**- stale food lose texture e.g. fruit, vegetables and fish.
- **Prepare food well to remove edible parts** e.g. shell, bones, stalk, tough skin.
- **Cook food well to avoid** unexpected textures e.g. lumps in a sauce, under cooked egg white, under cooked cake.
- **Cook food at correct temperature** and for correct time to allow textures to develop e.g. when melting chocolate, baking cake or bread, frying chicken.
- Reducing fat content in recipe may alter the texture, making it drier or more brittle.
- Adding vegetables or fruits to dishes can bring crunchiness, softness, chewiness.
- Changing the cooking method will also alter the texture – frying or roasting food in fat creates crispy crunchy textures, whereas replacing frying/roasting with the healthier methods of steaming, boiling, stewing etc will create soft textures. Grilling and barbecuing will also create chewy/crispy textures.

### TASTE

- There are 5 basic flavours: salty, sweet, bitter, sour and umami (savoury)
- Use fresh food- stale food loses its flavour.
- Cook food carefully to avoid damaging flavours.
- Reducing fat content in recipe may alter the taste – it can reduce creaminess aka ‘mouth feel’.
- Reducing the fat content of baked goods can also alter the taste – making them taste less rich.
- Adding vegetables to dishes can alter the taste in many ways depending on what fruit/vegetables is added – e.g. red peppers will bring sweetness, adding kale will bring an earthy taste, adding broccoli will add a fresh taste etc...
- Changing carbs to wholegrain or skin-on versions will affect the taste, making the dish have a more ‘nutty’ flavour
- Adapting the cooking method may also change the taste of a dish:
  - Steaming or poaching will preserve the flavours of the original food whereas barbecuing or grilling food will also impart charred flavours.
  - Sautéing vegetables in butter or oil bring out the flavour.
  - Making stock from meat, poultry or fish bones plus vegetables, herbs and spices.
  - Roasting root vegetables intensifies their flavour by evaporating water and caramelising the natural sugars they contain.
- Using natural flavours e.g. citrus fruit zest, fresh herbs and spices.
- Avoid using too much flavouring
- Take care with delicate foods like fresh- less is more.

**Top tip: always taste test before serving- REMEMER FOOD HYGIENE!**

Umami



Sour



Sweet



Salty



Bitter



### Five Basic tastes



### SOUND

- The sound of food can make it more appealing.
- Certain foods you expect to sound in a particular way e.g. crisp to crunch, biscuits to snap and food being fried to make a sizzling sound.
- To preserve these sounds food needs to be cooked and stored correctly to maintain its texture.



### SMELL - Aroma

- Use fresh ingredients- stale ones lose ability to produce aromas.
- Using natural foods that produce a strong aroma e.g. fresh/ dried herbs and spices, garlic orange and lemon zest and cooking methods that develop aromas e.g. grilling, roasting, baking and frying.
- Plan and select combination of foods to produce a mixture of aromas, but avoid using too many, as the overall effect will be spoiled.

## AC 2.3 How menu meets customer needs- Cost

For this part you need to explain how you will keep the costs of the dishes reasonably low . Your reasons could be....

- Buy **food in season** so it is not imported and expensive
- Buy **food locally** so that you don't have to travel too far to buy it and reduces carbon footprint e.g. support local business.
- **Minimise the waste** produced in both food and resources.
- **Control the portion** size so that you do not waste food that people are not going to eat and everyone gets the same size portion.
- **Not buying ready prepared** ingredients because it is cheaper to prepare them from scratch.
- **Buying cheaper** cuts of meat, this can effect the quality and fat content.
- Buy **non branded** food- supermarket own brands are cheaper.
- **Freeze left** over foods or use in other dishes.
- Store the ingredients at the **correct temperature** so they don't go off.
- **Buying organic, free range, fair trade** foods will cost more but is better for the environment and improved taste e.g. free range eggs, chicken, chocolate, bananas.

### Portion control

Portion control is extremely important. Customers need to feel they are getting '**value for money**' and having the same size portion as everyone else.

It helps the caterer when **planning** (how many portions will these ingredients make?) **calculating selling price** (how much should I charge to cover costs and make a profit?) and **avoids waste**.

Using **standard recipes** can help a caterer by determining how many ingredients will make 10, 20, 30 or more portions.



ASDA Butcher's  
Selection Beef  
Mince (Typically  
Less Than 20% Fat)  
1kg Price £4.00



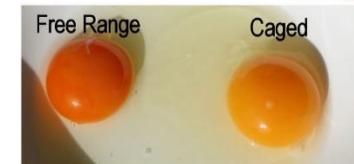
ASDA Butcher's  
Selection Lean  
Beef Mince  
(Typically Less  
Than 5% Fat)  
1kg Price  
£6.19



ASDA Extra Special  
Aberdeen Angus  
Mince  
500g Price £4.00



The **quality of the product** can affect its price and therefore can affect which people choose to purchase it. To the left are three minced beef packets from ASDA. The cheapest is a 20% fat mince, the next a 5% fat mince and the most expensive is made from an Aberdeen angus cow – one of the most luxurious beef products.



# AC 2.4 Production Plan – 2 dishes dovetailed together

## Example of Production Plan



**Mise en pace (preparation)**

- Wash hand, tie up hair/ hair net, remove all jewellery
- Clean apron on
- Collect ingredients from the fridge, freezer, store cupboard.
- Weigh and measure
- Wash vegetables
- Peel and chop
- THINK everything before you **combine ingredients.**



**Special points**

- Coloured chopping board – use correct colour
- High risk food in fridge until ready e.g. chicken
- Use bridge and claw technique to prevent injury.
- Wash hands to prevent cross-contamination.
- Dough should bounce back when pressed, if not, continue kneading.
- Make sure knives are cleaned separately to prevent cuts.
- Use hot washing up liquid to kill off bacteria such as E. Coli. Temperature of water needs to be
- Use oven gloves to prevent burns.
- Dough needs to double in size, if not prove longer
- Ensure plate is clean to prevent food poisoning.
- Ensure garnishes are free from soil to prevent contamination from Clostridium Botulinum. Are they cut evenly?
- Wash all vegetable to remove soil and prevent E.coli
- Ensure table top is clean before rolling to prevent cross contamination.
- Temperature of cooked food 75 c for at least 2 minutes using a food probe (kills bacteria)
- Correct storage- fridge, freezer when and why
- Food waste- scrap all mixture off the bowl to prevent this.

**Contingences:**

- Include spare ingredients encase it goes wrong, a range of serving dishes to choose from.
- Explain what you would do if its not cooked properly i.e. cook it for 5 minutes longer and then test.

**Plating and severing** (last box on plan)

- Allow at least ten minutes at the end.
- Explain what you will serve it on.

**Ingredients for dish 1**  
**Starter: Carrot soup with crotons**

- 450g carrots peeling and chopped, etc,

**Ingredients for dish 2**  
**Main: Sheppard's pie**

- 250g white potatoes
- Etc.

**Equipment**

- Chopping board, peeler, Saucepan, Peeler etc.
- You need to list everything you will use. Even better if you can colour code.

Time	Method	Special points & contingences
8.30	<b>Mise en place.</b> Set up table. Collect serving dishes. Peel and chop potatoes. Prepare garnishes and decorations (whip cream, fan strawberries). Chop parsley. Peel and chop onion, dice bacon, chop mushrooms. Tidy table for starter.	Refrigerate perishables (chicken and cream). Potatoes in water to prevent discolouration. Light oven Gas 6 or 200C.
9.00	Gateaux- make sponge using whisking method. (Whisk eggs and sugar till thick, fold in flour). Divide between 2 tins.	Fold in gently. Bake- Gas 6 – 20 mins.
9.20	Chicken chasseur, fry chicken to seal. Remove and place on plate. Fry bacon and onion, add flour, tomatoes, stock, puree etc. Re-add chicken pieces and mushrooms. Simmer.	Use tongs to turn chicken. Very low heat for at least 45 mins.
9.40	Check gateaux base- remove from oven if cooked. Turn onto wire rack.	Should feel 'springy' in centre. Use oven gloves.
9.45	Wash up. Put potatoes onto boil, once boiling reduce the heat and simmer. Simmer 20 mins on low heat.	Stir chasseur. Add tsp salt.