Food Preparation and Nutrition



REVISION BOOKLET 2 PRINCIPLES OF NUTRITION

Name: Tutor Group:

The Principles of Nutrition

Nutrients are chemicals found in food which give the body nourishment and are needed for the maintenance of life. The body needs nutrients to perform its daily **function**s properly. Health problems might occur if any one of these nutrients is lacking in a person's diet.

Macronutrients Refer to carbohydrates, protein and fat which the body needs in large amounts. They are measured in grams. Macronutrients Carbohydrates Protein Gat	Micronutrients Micronutrients Micronutrients Micronutrients Micronutrients Micronutrients Micronutrients Micronutrients They are measured in mg (milligram) or microgram.
Cal	lories
Watch the video then answer the questions below. A	II the answers are mentioned somewhere in the video.
What is a calorie?	How is the energy used?
How do we achieve a healthy balance of calories?	What is the basal metabolic rate?
What happens if we eat more calories than we burn?	What is the average number of calories needed by a man and a woman
What happens if we burn more calorie than we replenish?	each day? what factors affect this?
How is a calorie defined?	How do the energy needs of people differ?
How many calories are there in: a) A pizza slice b) A slice of bread	What factors affect an individual's ability to extract energy from food?
c) An apple	

Macronutrients Keywords

Complete the table below with an overview of the key words of macronutrients.

Ca	Carbohydrate		Protein		Fat
Keyword	Definition	Keyword	Definition	Keyword	Definition
Dietary fibre		Amino acids		Fatty acids	
Photosynthesis		Essential amino acids		Glycerol	
Monosaccharides		High Biological Value (HBV)		Saturated fats	
Disaccharides		Low Biological Value (LBV)		Unsaturated fats	
Non-Starch Polysaccharide (NSP)		Complementary Proteins		Fat-soluble vitamins	
Constipation		Kwashiorkor		Cholesterol	
Diverticular disease				Hydrogenation	
				Trans fats	

The Role of Nutrients

Complete the table below with an overview of key macronutrients, their function and sources.

Macronutrient	Needed For	Found In	Symptoms of Deficiency	Symptoms of Excess
Carbohydrate				
Protein				
Fat				

Sugar V Starch

Sugar and starch are both carbohydrates.

Sugary foods are simple carbohydrates that release energy quickly; they can cause uneven blood sugar levels.

Starchy foods are complex carbohydrates that provide slow release energy. Starch-based foods should be consumed as a source of energy, not sugary foods.

Starch Sugar Monosaccharides Disaccharides Polysaccharides Glucose absorbed directly into the Formed when two monosaccharide molecules Starch is a complex carbohydrate bloodstream during digestion are joined Glucose Sucrose (Glucose+Fructose) Starch Lactose (Glucose+Galactose) Cellulose Fructose Galactose Maltose (Glucose+Glucose) Pectin What is the difference between intrinsic and extrinsic sugars?

Complete the table below with examples of types of sugars and starches.

Hidden Sugar

Sugar is often described as having **empty calories**, meaning that it adds no nutrients to the diet. Yet in the UK the average person eats 38kg of sugar a year. **Hidden sugar** can be found in readymade foods such as bread, soups, sauces, fruit-flavoured yogurts and breakfast cereals. Hidden sugars are ingredients that are present in food and drink but may not be recognised as sugar because they do not taste sweet. Even so, they can contribute to excess calories and can cause tooth decay.

If you read the nutritional labels on food packaging you will see how much sugar there is in any food product. Remember that there are different names for 'sugar' such as glucose syrup, corn syrup or sucrose.

Rethink your Drink

Tips to Reduce Sugar Intake

Match the drink to the sugar content per 100ml:

List 10 ways to reduce sugar intake in the diet:

Coca Cola – Juicy Water – Monster Ripper – Innocent Smoothie – Lucozade – Coconut Water – Vitamin Water – Strawberry Volvic Water

3g	4.8g	5g	6.8g
8.3g	8.4g	10g	10.6g

On average, how often do you drink sugary drinks? Sugary drinks include juices (including 100% fruit juice), soda, sports drinks, energy drinks, lemonade, and sweetened coffee or tea drinks.

_ Only at special events __ Daily __ Once a week __ 3 times a week

What is a realistic goal for how many sugary drinks, including 100% juice; you could limit yourself to each day?

1. _____ 2. 3. 4. 5. 6. 7. 8. 9. 10.

Protein

Protein is a very important macronutrient in the diet. It is essential for the growth and repair of the body and for the maintenance of good health. It is also needed in the production of body chemicals such as enzymes and hormones.

Animal Sources (HBV)

Amino Acids

Proteins are made up of chains of smaller building blocks called **amino** acids.

Amino acids can be categorised as essential amino acids (indispensible)these are amino acids that must be supplied to us through our diet, and non-essential amino acids (dispensable)- that can be made in the body.

Essential Amino Acids (Adults)

For adults, 8 amino acids have to be provided in the diet:

Isoleucine	Leucine	Lysine	Methionine
Phenylalanine	Threonine	Tryptophan	Valine

Essential Amino Acids (Children)

Children are unable to make enough of the amino acids to meet their needs. These amino acids are referred to as 'conditionally' essential.

Arginine	Cysteine	Glutamine	Glycine
Histidine	Proline	Tyrosine	

How Much Protein Do We Need?

Children		Adults	
1-3 years		19-50 years	
4-6 years		50+ years	
7-10 years		Why does the amount of prote needed vary with age?	
11-14 years			
15-18 years			

Vegetable Sources (LBV)

Complementary Protein

Nutritiona Fats play an important part in our diet. They provid	Il Value of Fat	and fatty acids
Why do we need fat in our diet?	E us with chergy and essential vitamins	into two main types:
As well as providing energy, foods containing fat also perform the		into two main types.
following functions:	1. Satur	rated Fat
	Saturated fats come mostly from ar	nimal sources and are often referre
	to as unhe	ealthy fats.
	2. Unsati	urated Fat
	Unsaturated fats are the healthi	er fats and are mostly from plant
	sou	rces.
	They are often liquid at room tem	perature and help to promote the
	healthier type of cholesterol in our blood (HDL). There are two main types. Give examples of each:	
	Monounsaturated	Polyunsaturated
	How much energy do	bes 1g of fat provide?
-		
	ns-rats	en de servele Devide ettertete te e U. J.
irans-rais are vegetable on which have been processed to make the	in nard. This is done by passing hydrogo	en unrough liquid oll, this is called
Hydrogenation . Explain why trans lats are unnearthy, v	my they are used and what products th	



Micronutrients Keywords and Key Points

Complete the table below with an overview of the key words of macronutrients.

Vitamins		Minerals		
Key Words	Meaning	Key Words	Meaning	
Fortified		Peak bone mass		
Rickets		Haemoglobin		
Osteomalacia		Anaemia		
Antioxidant		Thyroid		
Thiamin		Dehydration		
Riboflavin		Lactating		
Spina bifida				
Cobalamin				
Ascorbic acid				

Vitamins and Minerals

You have seen the claims on drinks and breakfast cereals: 'Rich in vitamin C'; 'Good source of calcium'. Vitamins and minerals are essential for our health.

Vitamins and minerals are called **micronutrients** which means they are needed in smaller quantities than the macronutrients. If you eat a variety of foods and a balanced diet you will get most of the nutrients you need.

Vitamins

There are two groups of vitamins: fat-soluble and water-soluble.

The fat-soluble vitamins – A, D, E, and K – dissolve in fat and are stored in your liver.

The water-soluble vitamins – C and the B-complex vitamins – dissolve in water so that your body can absorb them. Your body can't store these vitamins and any vitamin C or B that your body doesn't use is passed out in your urine. You need a supply of these vitamins every day. Minerals are found in the soil and water, and pass into plants and animals that we eat for food.

Your body needs small amounts of minerals to grow and stay healthy.

Minerals are necessary for three main reasons:

- Building strong bones and teeth
 - Controlling body fluids
 - Turning food into energy

You need to know:

Vitamins	Minerals	Trace Elements
A – C – D – E – K	Calcium	Iodine
B Group:	Iron	Fluoride
B1 Thiamin	Potassium	Selenium
B2 Riboflavin	Phosphorous	Zinc
B3 Niacin	Magnesium	
B5 Pantothenic Acid	Sodium	
B6 Pyridoxine		
B7 Biotin		
B9 Folic Acid		
B12 Cobalamin		

Minerals

	Vitamins				
A Needed for:	C Needed for:	D Needed for:	E Needed for:	K Needed for:	
Found in:					
Symptoms of Deficiency:					
Symptoms of Excess:					

	B Group	Vitamins	
B1 Thiamin Needed for:	B2 Riboflavin Needed for:	B3 Niacin Needed for:	B5 Pantothenic Acid Needed for:
Found in:	Found in:	Found in:	Found in:
Symptoms of Deficiency:	Symptoms of Deficiency:	Symptoms of Deficiency:	Symptoms of Deficiency:
Symptoms of Excess:	Symptoms of Excess:	Symptoms of Excess:	Symptoms of Excess:
B6 Pyridoxine Needed for:	B7 Biotin Needed for:	B9 Folic Acid	B12 Cobalamin
Found in:	Found in:	Found in:	Found in:
Symptoms of Deficiency:	Symptoms of Deficiency:	Symptoms of Deficiency:	Symptoms of Deficiency:
Symptoms of Excess:	Symptoms of Excess:	Symptoms of Excess:	Symptoms of Excess:

Minerals and Trace Elements					
Calcium Needed for:	Iron Needed for:	Potassium Needed for:	lodine Needed for:	Fluoride Needed for:	
Found in:	Found in:	Found in:	Found in:	Found in:	
Phosphorous Needed for:	Magnesium Needed for:	Sodium Needed for:	Selenium Needed for:	Zinc Needed for:	
Found in:	Found in:	Found in:	Found in:	Found in:	

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Water

Water is essential for life. The human body is 50-75% water, and it is an important component of blood, digestive juices, urine and perspiration.

Fill the bottles below with key facts about water in the diet.



Fibre- Non-Starch Polysaccharide (NSP)

Fibre is needed to keep the gut healthy and prevent constipation. Fibre is not digested when we eat it. In the UK most people eat far too little fibre, on average about 12 grams a day or less. Ideally, adults should aim for 18 grams a day, or a little more. All plant-based foods contain fibre. Good sources of fibre are fruit, vegetables, wholegrain rice and pasta, wholemeal bread, many breakfast cereals, nuts, seeds and bran.

Serving portions of a selection of foods with NSP content				
Food	Serving size (weight)	NSP content (g)		
All Bran	1 medium bowl (40g)	9.8		
Weetabix	2 biscuits (40g)	3.9		
Porridge	1 medium bowl (160g)	1.3		
Cornflakes	1 medium bowl (30g)	0.3		
Wholemeal bread	1 medium slice (36g)	0.5		
Brown bread	1 medium slice (36g)	1.3		
White bread	1 medium slice (36g)	0.5		
Wholemeal flour	1 tbsp. (30g)	2.7		
White flour	1 tbsp. (30g)	0.9		
Whole-wheat pasta	Medium portion (230g)	8.1		
White pasta	Medium portion (230g)	2.8		
Brown rice	Medium portion (180g)	1.4		
White rice	Medium portion (180g)	0.2		
Orange	1 medium (160g)	2.7		
Apple	1 medium (100g)	1.7		
Banana	1 medium (100g)	1.1		
Baked potato skin	1 medium (180g)	4.9		
Baked beans	3 tbsp. (120g)	4.4		
Frozen peas	2 tbsp. (60g)	3.1		
Lentils, boiled	3 tbsp. (90g)	1.7		
Tomato	Medium (85g)	0.9		

Meal Planning

Use the chart on the left, showing the dietary fibre (NSP) content for serving sizes for different foods.

Plan a day's menu for yourself to include some of these foods. The aim is to provide around 18 grams of dietary fibre (NSP). Give examples for breakfast, lunch and evening meal as well as a snack. Give reasons for your choice.

