

## UNIT 2 Nutrition and diet

	Learning Outcomes	Suggested Teaching Activities	Online Resources	Other resources
	<p>3 (a) List the major nutrients and state their sources and their uses in the body: carbohydrates: sugars and starch, digestible, and used as an energy source and for storage (glycogen); cellulose from plant cells, indigestible (fibre/roughage) proteins: used for growth and repair of tissues and as components of haemoglobin, insulin and enzymes fats (lipids): used in the formation of cell membranes, as an energy source and a storage material, and as a solvent for vitamins A and D</p> <p>Carry out Benedict's test for reducing sugars, the iodine test for starch, the biuret test for proteins and the grease spot test for fats.</p>	<p>(Have a look at the Healthy Eating materials (link opposite) for some good ideas for lessons on this.)</p> <p>Students should list/brain storm their normal favourite/ foods and the teacher can collate and group them. They should then be given a table of the major food types and their uses.</p> <p>A video of food types would help here e.g. "You are what you eat series"</p> <p>Students find it quite motivating to do the food tests on a meal rather than just odd foods.</p> <p>However the</p> <ul style="list-style-type: none"> <li>• Benedict's test for reducing sugars,</li> <li>• the iodine test for starch,</li> <li>• the biuret test for proteins and</li> <li>• the grease spot test for fats</li> </ul> <p>should all be done on pure foods first</p>	<p><a href="http://www.homehealth-uk.com/medical/healthybalanceddiet.htm">http://www.homehealth-uk.com/medical/healthybalanceddiet.htm</a></p> <p>What is a balanced diet?</p> <p><a href="http://www.irishgirlguides.com/adult/HealthInitiative/Docs/Healthy%20Eating%20Brownies.pdf">http://www.irishgirlguides.com/adult/HealthInitiative/Docs/Healthy%20Eating%20Brownies.pdf</a></p> <p>Healthy Eating</p> <p><a href="http://www.vegsoc.org/info/dogfood2.html">http://www.vegsoc.org/info/dogfood2.html</a></p> <p>Discussion of a Vegetarian Diet for dogs might look at things from a useful and different angle!</p>	<p>P.Gadd pg 26-35-summary boxes throughout and pg 28-Biuret and pg 29-Benedict's and Iodine practical and pg 30-Fat test pg 30-Summary table</p> <p>D. Mackean pg 32-35 and Pg 38-39-Experiment 3</p> <p>"You are what you eat" video</p>
	<p>3 (b) List the principal sources of vitamins A, C and D and of the inorganic elements calcium and iron</p> <p>3 (c) Relate vitamin C to the formation of epithelial tissues and thus to the healing of wounds</p> <p>3 (d) Relate vitamin D to the absorption of calcium ions from the ileum and to the prevention of rickets in children</p>	<p>Student should look at food labels to list the major vitamins and the foods that contain them.</p> <p>Then they should be given a table with the main ones listed with their source and function</p> <p>This table could be created by the students through research in books or on the internet.</p>	<p><a href="http://www.bbc.co.uk/schools/gcsebitesize/design/foodtech/nutrientsrev6.shtml">http://www.bbc.co.uk/schools/gcsebitesize/design/foodtech/nutrientsrev6.shtml</a></p> <p>The major vitamins</p> <p><a href="http://home.howstuffworks.com/vitamin-c.htm">http://home.howstuffworks.com/vitamin-c.htm</a></p> <p>Comprehensive information on Vit C, all aspects</p> <p><a href="http://www.purchon.com/biology/vitamins.htm">http://www.purchon.com/biology/vitamins.htm</a></p> <p>Basic facts on Vit D (and others)</p>	<p>P.Gadd pg 35-Table about vitamins</p> <p>D. Mackean pg 35-Table about vitamins</p>

	<p>3 (e) List the uses of calcium ions in the formation of bones and teeth, in blood clotting and in muscle contraction</p> <p>3 (f) State the use of iron in the formation of haemoglobin and relate iron deficiency to anaemia</p>	<p>Students could list mineral content of selected food labels which are known to contain iron and calcium. They can then research their function and add these to their vitamin table.</p> <p>Health posters could be produced for the school canteen on minerals and vitamins</p>	<p><a href="http://www.bbc.co.uk/schools/gcsebitesize/design/foodtech/nutrientsrev5.shtml">http://www.bbc.co.uk/schools/gcsebitesize/design/foodtech/nutrientsrev5.shtml</a> Basic Ca and Fe info, here</p>	<p>P.Gadd pg 31-Summary table</p> <p>D. Mackean pg 33</p> <p>P.Gadd pg 31</p> <p>D. Mackean pg 34</p>
	<p>3 (g) Outline the uses of water in the body: as a reagent in digestion (hydrolysis) of food, as a solvent, as a transport medium and as a component of body fluids and of cytoplasm</p>	<p>Students can discuss the role of water from their shared knowledge and then produce a set of notes on its properties and uses.</p>		<p>P.Gadd pg 35</p> <p>D. Mackean pg 34</p>
	<p>3(h) Describe the function of fibre in the evacuation of the large intestine</p>	<p>Very good resource in the old SATIS materials, teaches experimental design too. The video series "you are what you eat" has a good one on fibre. Other health videos exist on the role of fibre in the diet.</p>		<p>P.Gadd pg 30 SATIS <b>SATIS 14-16Publications:</b> Written by <a href="#">John S. Holman</a> Published by Association for Science Education (ASE)</p>
	<p>3 (i) Outline the relative values, as sources of nutrients, of foods obtained from animals (meat, fish, eggs, milk and milk products) and of foods obtained from plant roots, tubers, stems, seeds and fruits</p>	<p>Students should be given a table of the content of various foods to discuss the value of each. Formal questions could be asked on such data. See Gadd's table</p>		<p>P.Gadd pg 36-Summary table of foods</p> <p>D. Mackean pg 39-Table</p>
	<p>3 (j) Define a balanced diet as a diet supplying sufficient (but not too much) in quality and quantities of protein, carbohydrate, fat, vitamins, minerals, fibre and energy to sustain a healthy life</p> <p>3 (l) Define malnutrition as a lack of balance in the diet, either as a shortage of particular nutrients (vitamin D and rickets) or as an excess (excess carbohydrates leading to obesity and coronary heart disease)</p>	<p>SATIS materials (ref) are excellent on this topic.</p> <p>Students can be given a sheet with definitions on including a balanced diet and then a data interpretation exercise in answering questions from a data sheet on the requirements of different categories of people</p>		<p>P.Gadd pg 35 <b>SATIS 14-16Publications:</b> Written by <a href="#">John S. Holman</a> Published by Association for Science Education (ASE)</p> <p>D. Mackean pg 35</p> <p>P.Gadd pg 37 fig 51.8 and pg 38-Energy needs table and</p>

	3 (k) Compare the differences in quantity and proportions of nutrients needed in childhood, adolescence, maturity and old age, during pregnancy and whilst breast-feeding and in relation to active and sedentary living			pg 41-Table D. Mackean pg 36-37 fig 6.3- Energy graph
	List the food and drink consumed in one week, indicating the nutrients contained	Students can make their own food diary (see links opposite) over a 24 hour/week period and calculate their own nutrition over this time. Encarta has a good exercise on this.	<a href="http://www.netfit.co.uk/fatdia.htm">http://www.netfit.co.uk/fatdia.htm</a> Food diary pro forma	P.Gadd pg 38-39 pg 41-Summary table  pg 41-Practical Encarta <a href="http://www.microsoft.com/products/encarta/default.msp">http://www.microsoft.com/products/encarta/default.msp</a>  D. Mackean pg 37 and pg 38-39-Experiment 1
	3 (m) Discuss the value of breast milk in feeding babies	The class should discuss what a baby needs in its diet and debate the value of breast milk. Research on the internet, through text, reading articles and looking at health leaflets could stimulate this debate.	<a href="http://kidshealth.org/parent/growth/feeding/breast_bottle_feeding.html">http://kidshealth.org/parent/growth/feeding/breast_bottle_feeding.html</a> Discussion article on value of breast milk	P.Gadd pg 40  D. Mackean pg 34-35  Health leaflets
	3 (n) Explain the need for hygiene in handling and preparing food	Taught in E9		
	3 (o) State ways of conserving mineral ions and vitamins during the cooking of food.	Students should be reminded of the heat sensitivity of minerals and vitamins		P.Gadd pg 48 D. Mackean pg 37