The Appleton School

KS4 FOOD PREPARATION AND NUTRITION

AQA

PERSONAL LEARNING CHECKLISTS

2022

Food Preparation and Nutrition

RAG Rate each section in the first column

Red = Not at all confident – needs major revision focus, Amber = requires more revision until confident. Green = Confident.

Use remaining columns to colour code when you have revised and tested your knowledge and understanding over several weeks.

Key Idea	**Key Knowledge to understand**	**RAG**					
3.2 Food, nutrition and health							
3.2.1 Macronutrients							
3.2.1.1 Protein •• low and high biological value proteins •• protein complementation •• protein alternatives eg textured vegetable protein (TVP), soya, mycoprotein and tofu.	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values •• *Modify recipes for vegetarian diets.* •• *Knife skills – meat, fish or their alternatives (S2).* •• *How acids denature and coagulate protein (S9).*						
3.2.1.2 Fats •• saturated fats •• unsaturated fats (monounsaturated and polyunsaturated).	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values •• *Make a pastry, shape and finish a pastry (S10).* •• *Use food processor to make pastry (S5).* •• *Adapt methods of cooking to reduce fat, eg grilling instead of frying, baking instead of roasting (S4).* •• *Modify a recipe to reduce total fat.*						

3.2.1.3 Carbohydrates •• starch (polysaccharides) •• sugars (monosaccharides/ disaccharides) •• dietary fibre.	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values. •• *Use starch to set a mixture (S12).* •• *Demonstrate proving to make bread rolls using high fibre flour (S10).* •• *Modify a recipe to increase fibre.*						
3.2.2 Micronutrients							
3.2.2.1 Vitamins Fat soluble •• vitamin A •• vitamin D •• vitamin E •• vitamin K.	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values. *Knife skills – fillet and slice fish and/or fruits and vegetables (S2).*						
Water soluble •• B group – B1 (thiamin), B2 (riboflavin), B3 (niacin), folic acid, B12 •• vitamin C (ascorbic acid) •• loss of water soluble vitamins when cooking (B group and Vitamin C).	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values. •• how preparation and cooking affects the nutritional properties of food. •• *Cooking methods – water based using the hob – steaming, boiling, simmering and poaching (S6).* •• *Knife skills – cut fruit and vegetables into even size pieces (ie batons, julienne) (S2).*						
Antioxidant functions of vitamins •• vitamin A •• vitamin C •• vitamin E.	The role of antioxidants in protecting body cells from damage. *Preparing fruit and vegetables eg making different salads inclusive of vegetables, nuts or eggs which contain antioxidant vitamins (S2/S3).*						

3.2.2.2 Minerals •• calcium •• iron •• sodium (salt) •• fluoride •• iodine •• phosphorus.	•• the functions •• main sources •• effects of deficiency and excess •• related dietary reference values. •• *Preparing vegetables, meats or alternatives which are high in iron (S2).* •• *Preparing dairy foods, which are high in calcium, for example when making a white sauce (S8).* •• *Reducing the salt in recipes eg when tasting and seasoning, replace salt with herbs and spices.*						
3.2.2.3 Water	The importance of hydration and the functions of water in the diet. •• functions of water to eliminate waste from the body, cooling and for digestion •• how water is lost from the body •• how much water/fluid is needed each day •• occasions when extra fluids are needed. Preparing fruit and vegetables, for example in soup making – scissor snip, crush, grate, peel. Make juices and smoothies (S3).						
3.2.3 Nutritional needs and health							

3.2.3.1 Making informed choices for a varied and balanced diet •• the current guidelines for a healthy diet •• portion size and costing when meal planning •• how peoples' nutritional needs change and how to plan a balanced diet for different life stages •• how to plan a balanced meal for specific dietary groups •• how to maintain a healthy body weight throughout life.	•• the current guidelines for a healthy diet eg eatwell guide •• nutritional needs for the following life stages: young children, teenagers, adults and the elderly •• how to plan a balanced meal for specific dietary groups: vegetarian and vegan, coeliac, lactose intolerant and high fibre diets. •• Consideration of the nutritional needs and food choices when selecting recipes, including when making decisions about the ingredients, processes, cooking methods and portion sizes. •• To plan, prepare, cook, modify, and create recipes to meet different dietary groups and life stages.						
3.2.3.2 Energy needs **•• the basal metabolic rate (BMR) and physical activity level (PAL) and their** **importance in determining energy requirements** **•• the recommended percentage of energy intake provided by protein, fat and carbohydrates (starch and sugar).**	•• factors which affect the BMR, such as age, gender and PAL. Their importance in achieving energy balance •• the percentage of recommended energy sources from nutrients: •• protein 15 % •• fat 35 % or less •• carbohydrate 50 % (of which 45 % from starches, lactose in milk and fruit sugars and a maximum of 5 % from free sugars). •• General practical skills (S1). •• Demonstrate portion sizes according to life stage/PAL level.						
3.2.3.3 How to carry out nutritional analysis How to plan and modify recipes, meals and diets to reflect the nutritional guidelines for a healthy diet.	how to use current nutritional information and data eg food tables, nutritional analysis software to calculate energy and nutritional value. Plan, make and modify dishes calculating energy and nutritional values						

3.2.3.4 Diet, nutrition and health •• the relationship between diet, nutrition and health •• the major diet related health risks.	how diet can affect health and how nutritional needs change in relation to: •• obesity •• cardiovascular health (coronary heart disease (CHD) and high blood pressure) •• bone health (rickets and osteoporosis) •• dental health •• iron deficiency anaemia •• Type 2 diabetes. Select and adjust cooking process to match the recipe and take account of dietary group eg grill meat rather than fry to reduce the fat content as a high saturated fat intake is a risk factor for CHD (S1).						
3.3 Food science							
3.3.1 Cooking of food and heat transfer							
3.3.1.1 Why food is cooked and how heat is transferred to food •• the reasons why food is cooked •• the different methods of heat transfer.	•• food is cooked to: •• make food safe to eat •• develop flavours •• improve texture •• improve shelf life •• give variety in the diet •• how preparation and cooking affect the appearance, colour, flavour, texture, smell and overall palatability of food •• how heat is transferred to food through: •• conduction •• convection •• radiation. *For sauce making:* *•• how conduction and convection work to cook a sauce and the need for agitation (S6)* *•• how radiation works using the grill for a range of foods such as vegetables, meat, fish or alternatives such as halloumi, seeds and nuts, to char, toast and grill (S4).*						

3.3.1.2 Selecting appropriate cooking methods Selection of appropriate preparation, cooking methods and times to achieve desired characteristics.	•• how the selection of appropriate preparation and cooking methods can conserve or modify nutritive value or improve palatability: •• water based: steaming, boiling, simmering, blanching, poaching, braising •• dry methods: baking, roasting, grilling, dry frying •• fat based: shallow frying, stir fry •• how preparation and cooking affect the appearance, colour, flavour, texture, smell and overall palatability of food eg the use of marinades to denature protein. •• Using the oven for baking, roasting, braising, casseroles and/or tagines (S4). •• Dry heat and fat based methods using the hob; dry frying, shallow frying and stir frying (S6). •• Use of the microwave oven (S5). •• Water, dry heat and fat based cooking methods using the hob – to conserve nutritive value eg steaming, stir frying (S6). •• General practical skills – judge and modify sensory properties – awareness of the effect of preparation and cooking on the sensory characteristics of food – appearance, colour, flavour, texture, taste and season adding herbs, spices etc. Use browning and glazing to change texture and flavour. Improve aesthetic qualities of foods by garnishing and decorating (S1). •• The use of marinades to tenderise and flavour meats and alternatives (S9). •• The boiling of vegetables to alter texture (S6).						
3.3.2 Functional and chemical properties of food							

3.3.2.1 Proteins •• protein denaturation •• protein coagulation •• gluten formation •• foam formation.	•• the scientific principles underlying these processes when preparing and cooking food •• the working characteristics, functional and chemical properties of proteins. •• *Demonstrate how acids denature protein and marinades add flavour and moisture when preparing vegetables, meat, fish and alternatives (S9).* •• *Setting of egg mixtures eg in quiche (S12).* •• *Gluten formation – pasta making using a pasta machine, bread making using a bread machine (S5 and S10).* •• *The use of marinades to tenderise and flavour meats and alternatives (S9).* •• *Whisking eggs to produce a gas-in-liquid foam eg whisked sponge.*						
3.3.2.2 Carbohydrates •• gelatinisation •• dextrinisation •• caramelisation.	•• the scientific principles underlying these processes when preparing and cooking food •• the working characteristics, functional and chemical properties of carbohydrates. •• Make a blended white sauce showing starch gelatinisation such as either a roux or all-in-one blended sauce, infused sauce, velouté or béchamel to demonstrate how liquid/starch ratios affect viscosity (S8). •• Demonstrate how conduction and convection work to cook the sauce and the need for agitation. •• Caramelisation of vegetables (S6). •• Dextrinisation eg browning of bread when baking (S4).						

3.3.2.3 Fats and oils •• shortening •• aeration •• plasticity •• emulsification.	•• the scientific principles underlying these processes when preparing and cooking food •• the working characteristics, functional and chemical properties of fats and oils. •• *Use of fats/oils to demonstrate these processes.* •• *Shortening and plasticity, eg pastry making (S10).* •• *Aeration eg using the creaming method with a food mixer for a cake (S1, S4, S5 and S11).* •• *Make an emulsion sauce such as a salad dressing, mayonnaise or hollandaise (S8).*						
3.3.2.4 Fruit and Vegetables •• enzymic browning •• oxidation.	the scientific principles underlying these processes when preparing and cooking food. •• *When preparing fresh fruits such as apples and pears, preventing enzymic browning by using lemon juice (S2) and (S3).* •• *Oxidation eg preventing water soluble vitamin loss when preparing and cooking vegetables (S3) and (S6).*						
3.3.2.5 Raising agents •• chemical (baking powder, bicarbonate of soda, self-raising flours which produce carbon dioxide) •• mechanical (whisking, beating, folding, sieving, creaming and rubbing in – all incorporate air into the mixture) •• steam is produced when the water in any moist mixture reaches boiling point •• biological (yeast).	•• the scientific principles underlying these processes when preparing and cooking food •• the working characteristics, functional and chemical properties of raising agents. •• Using chemical raising agents such as self-raising flour and baking powder (S11). •• Use steam in a mixture to raise choux pastry or batter. •• Use egg as a raising agent to: •• create a gas-in-liquid foam •• whisk egg whites •• whisking savoury roulade. •• Yeast in bread making.						

3.4 Food safety							
3.4.1 Food spoilage and contamination							
3.4.1.1 Microorganisms and enzymes	•• the growth conditions for microorganisms and enzymes and the control of food spoilage •• bacteria, yeasts and moulds are microorganisms •• high risk foods •• enzymes are biological catalysts usually made from protein. •• growth conditions for microorganisms: role of temperature, moisture, food and time •• control of microorganism growth: temperature control, pH, water availability •• high risk foods: ready to eat moist foods, usually high in protein that easily support the growth of pathogenic bacteria and do not require any further heat treatment or cooking •• control of enzymic action: blanching of vegetables before freezing, use of acids to prevent enzymic browning. •• *Bread making (S4 and S10).* •• *Water based methods using the hob – blanching of vegetables to demonstrate the destruction of enzymes in foods (S6).* •• *Oxidation – eg preventing water soluble vitamin loss when preparing and cooking vegetables (S3, S6 and S2).*						

3.4.1.2 The signs of food spoilage •• enzymic action •• mould growth •• yeast action.	•• enzymic action: ripening of bananas, browning of some fruits •• mould growth: eg on bread and cheese. Recognise the signs of mould growth on foods •• yeast action on fruits eg grapes, strawberries and tomatoes. •• *Preparing fruit and vegetables – mash, shred, scoop, segment, juice and blanch fruits and vegetables to control enzymic browning (S3).* •• *Preparing fruit and vegetables which sustain yeast and mould growth, wash and chill to prevent their growth. Demonstrate the following techniques: deseed, de-skin (for example, tomatoes).*						
3.4.1.3 Microorganisms in food production The use of microorganisms in food production.	•• moulds in the production of blue cheese •• yeasts to raise bread •• bacteria in yoghurt and cheese production. *Make a bread dough, finish and shape a bread dough for use in flat breads, pizza or calzone (S4 and S10).*						
3.4.1.4 Bacterial contamination •• the different sources of bacterial contamination •• the main types of bacteria which cause food poisoning •• the main sources and methods of control of different food poisoning bacteria types •• the general symptoms of food poisoning.	Contamination from: •• other contaminated foods including the following raw foods: meat, poultry, eggs, seafood and vegetables •• work surfaces and equipment •• the people cooking •• pests •• waste food and rubbish •• campylobacter •• e-coli •• salmonella •• listeria •• staphylococcus aureus.						
3.4.2 Principles of food safety Note: All temperatures and guidance in accordance with current Food Standards Agency (FSA) guidelines.							

3.4.2.1 Buying and storing food The food safety principles when buying and storing food.	•• temperature control: •• freezing: -18°C •• chilling: 0 to below 5°C •• danger zone: 5 to 63°C •• cooking: 75°C •• reheating: 75°C •• ambient storage •• temperature danger zone •• correct use of domestic fridges and freezers •• date marks •• 'best before' and 'use by' dates •• covering foods. To apply food safety considerations when preparing, storing and cooking.						

3.4.2.2 Preparing, cooking and serving food The food safety principles when preparing, cooking and serving food.	•• personal hygiene •• clean work surfaces •• separate raw and cooked foods and use of separate utensils •• correct cooking times •• appropriate temperature control including: defrosting and reheating •• appropriate care with high risk foods •• correct use of food temperature probes. •• Knife skills: preventing cross contamination (S2). •• Washing and drying vegetables during preparation to prevent food poisoning (S3). •• Using a blender to make fruit coulis as a decoration, focusing on good hygienic practice, washing and drying fruit and ensuring cleanliness of equipment (S5). •• Preparing, combining and shaping, for example wet mixtures (such as falafels, fish cakes or meatballs) whilst demonstrating technical skills of preventing cross contamination and handling high risk foods correctly (S7). •• General practical skills – test for readiness. Use a temperature probe, knife/ skewer, finger or 'poke' test, 'bite', visual colour check or sound to establish whether an ingredient or recipe is ready, to ensure the food is safe to eat (S1).						
3.5 Food choice							
3.5.1 Factors affecting food choice							

3.5.1.1 Factors which influence food choice To know and understand factors which may influence food choice.	he following factors in relation to food choice: •• physical activity level (PAL) •• celebration/occasion •• cost of food •• preferences •• enjoyment •• food availability •• healthy eating •• income •• lifestyles •• seasonality •• time of day •• time available to prepare/cook. Students must be able to cost recipes and make modifications. •• When selecting recipes students could explain and justify their reasons for choice. •• When preparing recipes and meals consider lifestyle, consumer choice etc. •• When planning recipes and dishes carry out costing of the dishes.						
3.5.1.2 Food choices Food choice related to religion, culture, ethical and moral beliefs and medical conditions.	•• food choice linked to the following religions and cultures: Buddhism, Christianity, Hinduism, Islam, Judaism, Rastafarianism and Sikhism •• food choice linked to the following ethical and moral beliefs: animal welfare, fairtrade, local produce, organic, Genetically Modified (GM) foods •• food choice linked to food intolerances (gluten and lactose) and the following allergies: nuts, egg, milk, wheat, fish and shellfish. •• *When selecting some recipes students should explain* *and justify their reasons for choice.* •• *Select, modify and make recipes for different religions,* *cultures and dietary groups.*						

3.5.1.3 Food labelling and marketing influences How information about food available to the consumer, including labelling and marketing, influences food choice.	•• mandatory information included on food packaging in accordance with current European Union and Food Standards Agency (FSA) legislation •• non-mandatory information: provenance, serving suggestions •• how to interpret nutritional labelling •• how food marketing can influence food choice eg buy one get one free, special offers, meal deals, media influences, advertising, point of sales marketing.						
3.5.2 British and international cuisines •• food products from British tradition and two different cuisines •• schools or colleges/students can select different cuisines to study. Cuisine is defined as: 'a style characteristic of a particular country or region where the cuisine has developed historically using distinctive ingredients, specific preparation and cooking methods or equipment, and presentation or serving techniques'.	•• distinctive features and characteristics of cooking •• equipment and cooking methods used •• eating patterns •• presentation styles •• traditional and modern variations of recipes. •• *Students should have the opportunity to prepare and cook recipes from a range of countries and cuisines, using different equipment and cooking methods.* •• *Skills demonstrated will be relevant to the task selected and demonstrate food preparation and cooking skills across groups (S1 to S12).*						

3.5.3 Sensory evaluation •• sensory testing methods •• how taste receptors and olfactory systems work when tasting food.	importance of senses when making food choices: sight, taste, touch and aroma •• preference tests: paired preference, hedonic •• discrimination tests: triangle •• grading tests: ranking, rating and profiling •• how to set up a taste panel •• controlled conditions required for sensory testing •• evaluating how senses guide •• evaluating a wide range of ingredients and food from Britain and other countries •• how to test sensory qualities of a wide range of foods and combinations. •• *General practical skills - judge and manipulate sensory properties. How to taste and season during the cooking process. Change the taste and aroma through the use of infusions, herbs and spices, paste, jus and reduction (S1).* •• *Test sensory qualities of a wide range of foods.* •• *Evaluate and apply the results of sensory testing.*						
3.6 Food provenance							
3.6.1 Environmental impact and sustainability of food							
3.6.1.1 Food Sources Where and how ingredients are grown, reared and caught.	•• grown ingredients: fruits, vegetables and cereals •• reared ingredients: meat and poultry •• caught ingredients: fish an understanding of: •• organic and conventional farming •• free range production •• intensive farming •• sustainable fishing •• advantages and disadvantages of local produced foods, seasonal foods and Genetically Modified (GM) foods.						

3.6.1.2 Food and the environment	Environmental issues associated with food. •• seasonal foods •• sustainability eg fish farming •• transportation •• organic foods •• the reasons for buying locally produced food •• food waste in the home/food production/retailers •• environment issues related to packaging •• carbon footprint. •• Consider the seasons when selecting ingredients for recipes using fruits and vegetables (S2 and S3). •• Using left over food to avoid wastage, whilst considering food waste.						
3.6.1.3 Sustainability of food	he challenges to provide the world's growing population with a sustainable, secure, supply of safe, nutritious and affordable high quality food. Students must have an awareness of: •• climate change •• global warming •• sustainability of food sources •• insufficient land for growing food •• availability of food •• fairtrade •• problems of drought and flooding •• Genetically Modified (GM) foods •• food waste.						
3.6.2 Food processing and production							

3.6.2.1 Food production •• primary and secondary stages of processing and production •• how processing affects the sensory and nutritional properties of ingredients.	•• primary processing related to the: rearing, fishing, growing, harvesting and cleaning of the raw food material (milling of wheat to flour, heat treatment of milk, pasteurised, UHT, sterilised and micro-filtered milk) •• secondary processing related to: how the raw primary processed ingredients are processed to produce a food product (flour into bread and/ or pasta, milk into cheese and yoghurt, fruit into jams) •• loss of vitamins through heating and drying •• the effect of heating and drying on the sensory characteristics of milk. •• Make dough for pasta, shape and finish dough using a pasta machine, shape and finish pasta (S5 and S10). •• Water based cooking methods using the hob to boil the pasta (S6).						
3.6.2.2 Technological developments associated with better health and food production Technological developments to support better health and food production including fortification and modified foods with health benefits and the efficacy of these.	•• cholesterol lowering spreads •• health benefits of fortification •• fortified foods: thiamin, niacin, calcium and iron added to white flour •• folic acid and iron added to breakfast cereals •• vitamins A and D added to fats and low fat spreads •• the positive and negative aspects of the use of additives: colourings, emulsifiers and stabilisers, flavourings, and preservatives •• the positive and negative aspects of Genetically Modified (GM) foods. *To examine, carry out sensory analysis and evaluate existing products that have been modified and fortified.*						