TOPIC EXPLORATION PACK

PROVISIONAL

Theme: Cooking and Food Preparation

September 2015

GCSE (9–1) Food Preparation and Nutrition

OCR
Oxford Cambridge and RSA

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Section C – Cooking and Food Preparation

Introduction

This section of the specification covers a wide range of topics including why we cook food, cooking methods, how these methods affect the nutritional properties and palatability of food, functions of ingredients and food safety. Students will use the knowledge they gain in this section of the specification when completing the non-examined assessments and in the written examination. The resources in this pack, focus on and are linked to the topics, why we cook food, methods of cooking and the effect of heat on a range of foods. This pack also includes ideas for practical activities, work sheets for students and samples of types of questions which could be used to prepare students for the written examination.

Activity 1 – Why we cook food

The activities and resources for this topic include ideas for work sheets which could be used, practice exam papers and practical investigations. This activity is an introduction to the topic of cooking foods and methods of cooking. Having completed this short introduction, students will go on to learn about different cooking methods.

Objectives

- To understand why we cook foods
- To be able to explain why some foods need to be cooked and other foods can be eaten raw or cooked

Resources

- **Resource Sheet 1** - Why we cook food
- **Resource Sheet 2** - Which foods can be eaten raw and which need to be cooked

Activities

Activity 1.1 Why cook food?

Students need to understand that food is cooked for a variety of reasons including the following:

- To make it safe to eat
- To stop food from decaying
- To destroy harmful toxins in food
- So that food can be digested
- To make food look more attractive and appealing
- To develop the flavour in food
- To provide variety in the diet - e.g. different textures.

Ask students to complete **Resource Sheet 1.** This will give them the resources / information to enable them to answer the longer type questions which are seen in the exam paper.
Resource Sheet 3 has some sample questions which could be completed by the students as either homework or the shorter ones could be plenaries to the lesson to check understanding from the lesson.

Activity 1.2

Pupils also need to understand that some foods must be cooked and others can be eaten either raw or cooked. See **Resource Sheet 2.**

Use the eatwell plate as the model for this. Make a list of foods which can be eaten raw / need to be cooked / or could be eaten either raw or cooked. Students could either do this on a large piece of paper in groups each taking responsibility for one of the areas of the Eatwell plate or they could have their own sheets to record their ideas on.

The class can then share their ideas. This will allow opportunities to clarify ideas based on the previous activity of why we need to cook food. When discussing the foods which do not need cooking - links can be made to the advantages of not cooking some foods - e.g. higher amounts of water soluble vitamins in vegetables. Questioning can check understanding from the previous task. Make sure more able students are able to give reasons for what they say. Emphasise the importance of this as part of exam preparation.

Activity 2

This second activity introduces students to the different methods of heat transference and methods of cooking. It will provide students with the opportunities to explore this element of the specification through practical work, investigations and there are work sheets to support the theory. Additionally exam type questions are provided in **Resource Sheet 4.**

Objectives

Students will be able to:

- Explain what the three different methods of heat transfer are (conduction, convection and radiation)
- Identify which methods of heat transfer are used for the different methods of cooking.
- Describe the advantages and disadvantages of the different methods of cooking
- Demonstrate the different methods of cooking when carrying out practical work.

Resources

- **Resource Sheet 3** and answer sheet for information
- Foods suitable for boiling, steaming and grilling.

Activity 2.1 Methods of heat transference

Students need to understand that heat is a type of energy and when it is applied to food the food changes its state.

There are three different types of transference of heat:

- Conduction
- Convection
- Radiation.

The method of cooking chosen to cook the foods will depend on the following:

- The food which is to be cooked
- Facilities which are available
- The amount of time available
- Individual needs for example someone on a low fat diet would not want fried food
- Skill of the cook.

Depending on the group size and ability this activity can be approached in different ways. Either it could be done as a teacher-led activity demonstrating and explaining how heat is transferred or students could work in groups and investigate / work out how heat is transferred when:

1. Boiling water on a hob – Conduction.
2. Grilling a piece of toast – Radiation.
3. Steaming some vegetables – Convection.

See completed sheet with information. Need to emphasise that some methods of cooking involve more than one methods of heat conduction. This will then link to the work completed later on the advantages and disadvantages of different methods of cooking.

Activity 3 – Cooking Methods

In this activity students will transfer their knowledge of methods of heat transfer to look at how this is applied to the different methods of cooking. Students will be able to demonstrate how to carry out the different methods of cooking when completing practical activities and to be able to understand and be able to explain the advantages and disadvantages of the different methods of cooking.

Objectives

Students will be able to:

- Demonstrate the different methods of cooking and to produce high quality finished food products / dishes.
- Recognise the different methods of heat transfer used in the different methods of cooking.
- Explain the advantages and disadvantages of different methods of cooking.

Resources

- **Resource Sheet 3** - Methods of cooking.
- **Resource Sheet 4** - Comparing micro-waved products with cooked products cooked in the oven or by another method of cooking.
- **Resource Sheet 5 -** Practical activity.

Activity 3.1 Methods of cooking and heat transference

Students are to reflect on the different methods of cooking which they know about and to link this to the work done on heat transfer. In groups work out which methods of heat transference is used for each method. Students will need to consider the advantages and disadvantages of the different methods of cooking. Use **Resource Sheet 3** to complete this work.

This work can also link to Section A - Nutrition, topic areas: healthy diets. Section C- topic area: How cooking methods affect the nutritional value of Food.

For methods of cooking which have not been covered in prior class practical demonstrations can be given on the different methods.

Activity 3.2 Investigating microwaves

Microwave ovens are found in most households in the UK today.

Class discussions

Points to discuss:

- How do you use your microwave at home?
- How are microwaves used in your food lessons?
- What are the advantages and disadvantages of using microwaves?
- How often are microwaves used for re-heating foods?
- Would you use a microwave to cook food from raw?

Discuss with students why they use microwaves - responses can be linked to the advantages of microwaves already completed. Answers may include:

- More time efficient
- Limited cooking skills
- Easy to use
- Lots of foods can be reheated in the microwave

Discuss with the students how often they use the microwave just for reheating a food and when and hat do they cook from raw foods in a microwave.

Student Investigation – (group work)

Take one product and investigate the difference between cooking this in the microwave and on a conventional cooker.

Examples of foods which could be compared include:

- Baked potatoes
- Chocolate cake
- Rice
- Pastry.

Results and evaluation

Students to compare and share results. An exemplar proforma that students could fill in is shown in **Resource Sheet 5.**

Discussion with the students that the length of time it takes for food to cook in the microwave will depend on the wattage of the microwave.

Dependent on the facilities in school if a combination oven is available a third variant could be introduced to the table.

Students can also develop their use of sensory analysis skills when evaluating the different food products. When writing the conclusions as to which way was the best way to cook the foods encourage the students to give reasons for what they are saying - linking this to the higher level of responses required for the higher level grades.
Ask the question can all foods be successfully cooked in a microwave? More able students to be encouraged to give reasons for what they say.

Activity 3.3

Looking at methods of cooking allows students to develop their practical skills and to demonstrate their knowledge about the methods of cooking they are using when preparing foods.

This activity allows students to demonstrate their practical skills, but also to identify the methods of cooking and how the heat has been transferred when cooking the food.

Student Activity

Students to be given a task -
Prepare and cook a main course, savoury dish or meal, which demonstrates a range of different cooking methods.

Students to complete **Resource Sheet 6** Practical activity to show their understanding of how to apply the methods of cooking in their practical work. The last column in the resource will enable students to notice what effect the heat has on the food.

Resource Sheet 7 has some practice exam style questions which will test students' understanding of methods of cooking.

Resource Sheet 1 – Why we cook food

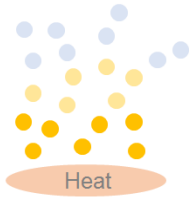
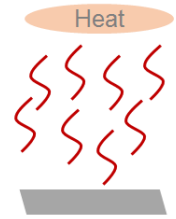
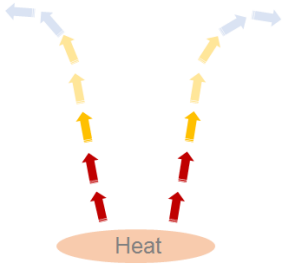
Statement why we cook food	Reason / additional information	Examples to support statement and reasons

Statement why we cook food	Reason / additional information	Examples to support statement and reasons

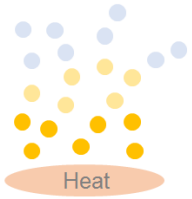
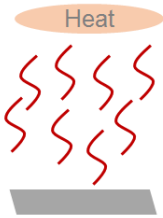
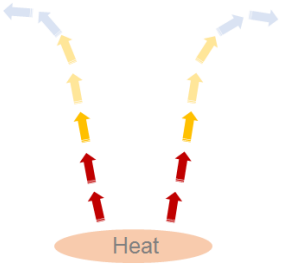
Resource Sheet 2 – Which foods need to be cooked?

Food Group	Must be Cooked	Can be eaten raw or cooked	Can be eaten raw
Bread, rice, potatoes and other starchy foods			
Fruit and vegetables			
Milk and dairy foods			
Meat, fish, eggs, beans and non-dairy sources of protein			
Foods and drinks high in fat and/or sugar			

Resource Sheet 3 – Different methods of heat conduction

Method of heat transfer	Diagram	Explanation of heat transfer	Examples of methods of cooking that uses this method of heat conduction
			
			
			

Resource Sheet 3 – Different methods of heat conduction

Method of heat transfer	Diagram	Explanation of heat transfer	Examples of methods of cooking that uses this method of heat conduction
Conduction		Heat is transferred through a solid material e.g. the base of the pan when boiling water.	Boiling Baking Frying Microwaving Roasting
Radiation		The heat energy is passed directly to the food	Barbequing Grilling Microwaving
Convection		The heat moves through the convection currents. Hot air rises and cool air falls. This means in an oven it is hotter at the top of the oven (unless it is a fan oven and then the heat is even throughout)	Baking Boiling Frying Roasting Steaming

Resource Sheet 4 – Methods of Cooking

Method of Cooking	How heat is transferred	Examples of foods cooked by this method	Advantages	Disadvantages
Boiling				
Simmering				
Poaching				
Steaming				

Method of Cooking	How heat is transferred	Examples of foods cooked by this method	Advantages	Disadvantages
Baking				
Grilling				
Roasting				
Frying - dry				
Frying - shallow				

Method of Cooking	How heat is transferred	Examples of foods cooked by this method	Advantages	Disadvantages
Frying - deep				
Frying - Stir				
Microwaving				

Resource Sheet 5 – Comparing foods cooked in the microwave with other methods of cooking the same food

Food cooked		Time taken to cook	Colour	Texture	Flavour	Conclusion
	Microwave					
	Microwave					

Food cooked		Time taken to cook	Colour	Texture	Flavour	Conclusion
	Microwave					
	Microwave					

Resource Sheet 6 – Practical activity methods of cooking

Name of dish(es) to be made: _____

Method of Cooking	How heat is transferred	What happens to the food when the heat is transferred?

Resource Sheet 7 – Sample exam style questions

1. Explain why foods are cooked.

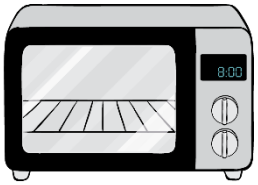
....[8]

2. State two foods which must be cooked before they can be eaten.

1. ....
2. ....[2]

3. Consumers are being encouraged to reduce the amount of energy they use in the home.

Name the pieces of equipment below which can help to reduce the amount of energy used when cooking



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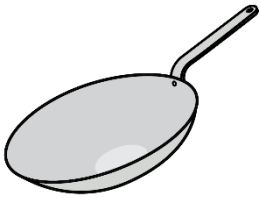


……

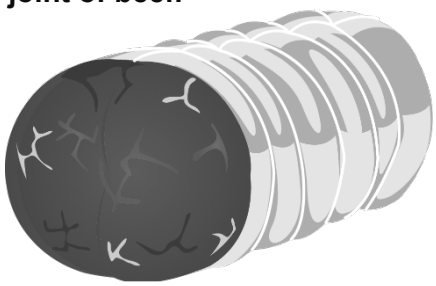
……

[3]

4. Give two methods of cooking which would be good for a person on a calorie controlled diet.

1. .....
2. .....**[2]**

5. The diagram below shows a joint of beef.



(i) State **one** method of cooking a joint of beef.

..... **[1]**

(ii) Give **one** reason for choosing this method

..... **[1]**

6. Microwaving is one method of cooking vegetables.

Give two advantages of microwaving vegetables

1. .....

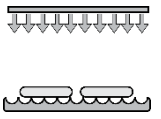
.....

2. .....

..... **[2]**

7. Radiation is one way heat is transferred when cooking food.

(i) Label the diagram below to show the methods of heat transference. The first one has been done for you.



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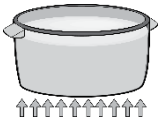

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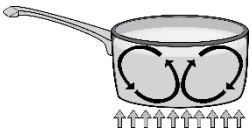


.....

[2]

(ii) Explain two methods of heat transfer used when cooking food.

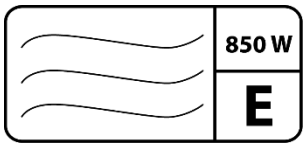
1. .....

.....

2. .....

.....**[2]**

8. The label shows information from the front of a microwave oven.



Give two reasons why this information is useful to the consumer when using a microwave.

Reason 1.....

.....

Reason 2 .....

.....

Resource Sheet 7 – Sample exam style questions (suggested mark scheme)

1. Explain why foods are cooked.

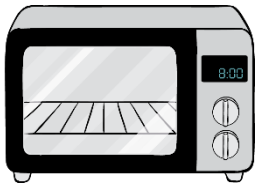
Quality of candidates written responses to be considered - to gain full marks they must be giving clear reasons for what they are saying. If they write in bullet point or a list a maximum of two marks to be awarded.

- ✓ To destroy harmful bacteria in foods - gives relevant examples / consequences for consumers if these foods are eaten.
- ✓ To develop flavour in food - relevant examples given
- ✓ To ensure foods are safe to eat - destroy toxins in foods e.g. toxins found in kidney beans
- ✓ To make food more appealing to consumers - describes the effect of heat on foods e.g. foods in the oven will brown where as they will not in a microwave. Links to foods which can and cannot be eaten raw
- ✓ To make foods easier to chew, bite, swallow and digest - gives relevant examples / methods of cooking certain foods, reference to needing to cook foods to get the correct texture e.g. Sauces thicken, biscuits become crisp once cooled after cooking
- ✓ To provide hot food - in cold weather - satisfying

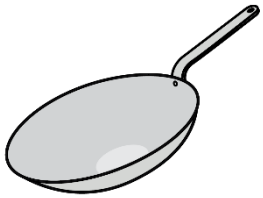
2. State two foods which must be cooked before they can be eaten.

- ✓ Any two correctly identified foods e.g. flour, rice, dried pulses etc.

3. Consumers are being encouraged to reduce the amount of energy they use in the home.



Microwave



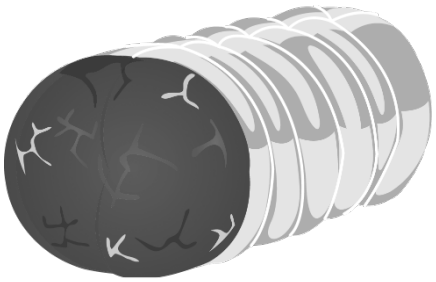
Wok

Slowcooker

4. Give two methods of cooking which would be good for a person on a calorie controlled diet.

- ✓ Baking
- ✓ Boiling
- ✓ Dry frying
- ✓ Grilling
- ✓ Microwaving.
- ✓ Poaching
- ✓ Slow cooking
- ✓ Smoking
- ✓ Steaming
- ✓ Stir Frying

5. The diagram below shows a joint of beef.



(i) State one method of cooking a joint of beef.

- ✓ Boiling
- ✓ Braising
- ✓ Microwaving
- ✓ Pot roasting
- ✓ Pressure Cooking
- ✓ Roasting
- ✓ Slow Cooking

(ii) Give one reason for choosing this method

- ✓ Microwaving– lower cost/may have limited equipment.
- ✓ Pot roasting/braising – low temperature method/develops the flavour/makes it more tender/moist method
- ✓ Pressure cooking – cooks quickly/tenderises/moist method/lower fat method
- ✓ Roasting – suitable for dry heat/develops the flavour/moisture/crisp outside and tender meat/beef needs long slow cooking/can cook other foods at same time

✓ Slow cooking – low energy/low cost/tenderises/cooks vegetables as well/moist method

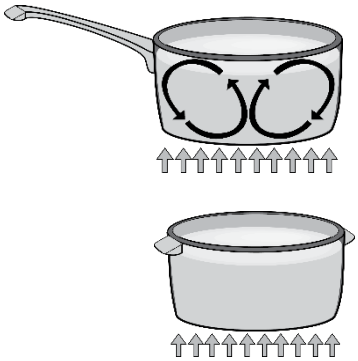
6. Microwaving is one method of cooking vegetables. Give two advantages of microwaving vegetables.

✓ Less likely to boil dry/less skill required
✓ No steamy kitchen
✓ Quicker than other methods
✓ Reduces cost/less energy used
✓ Reduces vitamin and mineral losses
✓ Retains the flavour
✓ Saves washing up/can serve in same dish

Do not accept "healthier" or loss of nutrients on its own.

7. Radiation is one way heat is transferred when cooking food.

(i) Label the diagram below to show the methods of heat transference



✓ Convection

✓ Conduction

(ii) Explain two methods of heat transfer used when cooking food.

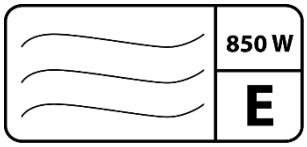
✓ **Conduction** - Heat is conducted from one molecule to another in solid or liquids. Heat is conducted round a metal pan and through a joint of meat as it roasts. Wood and plastic are poor conductors whereas metal is a good conductor.

✓ **Convection** - Heat travels round liquids and air by convection current. Convection currents heat ovens. Hot air rises and cold air falls, which is why a traditional oven is hotter at the top and a fan-assisted oven, has a constant heat throughout. Boiling food in a saucepan and baking in the oven are examples of convection.

✓ **Radiation**- Heat travels in waves or rays that heat up the food. Toasted or grilled food is cooked by radiation with the direct rays heating up the food.

Some foods are cooked by a combination of methods e.g. a baked potato is cooked by convection with the heat around the oven and by conduction through the potato. Therefore candidates can use the same foods as examples as long as the method is explained correctly.

8. The label shows information from the front of a microwave oven.



Give two reasons why this information is useful to the consumer when using a microwave.

- ✓ Heating category of the microwave
- ✓ Match the symbol and cooking instructions / safe reheating of food
- ✓ Shows the power level of the microwave / amount of watts
- ✓ The higher the power level / wattage the quicker it cooks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