

## Key points to learn: Food Science

### Why is Food Cooked?

To make it safe	Bacteria can be killed if food is cooked i.e. chicken, thus preventing illness
Improve shelf life	Bacteria and mould is destroyed when heated to very high temperature, preserving the food i.e. pasteurised milk and cheese
Develop flavour	Reactions that take place when food is cooked can change the flavour of the food i.e. caramelisation.
Improve Texture	Cooking makes it easier to chew, swallow and digest your food.
Give variety	Foods can be cooking in different ways .i.e. beef (fried, stewed, minced)

### Raising Agents

#### Chemical

**Bicarbonate of Soda** breaks down to produce Carbon Dioxide bubbles when heated. Has a soapy taste so needs a strong flavour to mask it.  
**Baking Powder** is a mix of bicarb (alkali) and cream of tartare (acid) it neutralises in the oven and gets rid of the soapy flavour  
**Self Raising Flour** is a mix of baking powder and plain flour

#### Biological

**Yeast** ferments in dough releasing alcohol and carbon dioxide, causing the dough to rise. The yeast is killed in baking., leaving the CO2 to continue expanding.

#### Steam

When heated mixtures that contain a lot of liquid will create steam, rising the mixture i.e. choux, batters and puff pastry.

#### Mechanical

**Folding, beating or whisking** air into a mixture. i.e. Lamination of dough, Whisking egg whites, beating egg and sugar .  
**Sieving** is also used to trap air between flour particles.

## KS3 Food Preparation and Nutrition

### Knowledge Organiser Year 9. Autumn 1

#### Big picture: Food Preparation and Nutrition Exam

#### Food Science

1. Why is Food Cooked?

2. Cooking Methods

3. Changing Properties

4. Raising Agents

#### Revision Questions

1. Explain why chicken should be cooked before it eaten
2. Why would you not use Bicarbonate of Soda to raise a sponge cake?
3. Explain how profiteroles are risen.

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### Cooking Methods

#### Heat transfer

<u>Conduction</u>	The transfer of energy through the vibration of particles. i.e. frying
Convection	The transfer of energy through gases or liquids i.e. boiling and ovens
Radiation	The transfer of energy through waves of radiation i.e. grilling and microwaving

#### Dry Cooking Methods

Baking	Uses dry heat to cook food i.e. bread, pastries and potatoes
Roasting	Uses dry heat, but fat is added. i.e. large cuts of meat and potatoes
Grilling	Uses dry heat at a very high temperature. Fat drips off the food i.e. sausages, steaks and vegetables
Frying	Uses hot fat or oil. Examples are stir frying, shallow frying and deep fat frying

#### Wet Cooking Methods

Steaming	Cooking food with steam from boiling water or stock. i.e. fish, chicken, vegetables
Boiling	Cooking food in a pan of boiling water i.e. meat, potatoes, rice
Braising	Slowly cooking food in a ovenproof pot with the lid on, covered with liquid i.e. tough cuts of meat

#### Proteins

Denature

The chemical bonds that hold proteins together are broken through whisking, beating, heat or acidity

Coagulation

Denatured proteins join together and water becomes trapped., thus holding everything together. i.e. quiche

Foams

Formed when air is trapped after denaturing and coagulation. i.e. meringue and mousse.

#### Carbohydrates

Gelatinisation

Thickens sauces that contain starch i.e. custards and gravies.

Dextrinization

Occurs when starch is exposed to dry heat i.e. bread, biscuits and cakes

Caramelisation

Occurs when sugars reach a high temperature and turns the food brown i.e. crème brulee and onions

#### Fats

Aeration

When fats are beaten with sugar air becomes trapped . Aeration gives cakes a spongy, fluffy texture

Shortening

When fat is rubbed into flour, the fat gives the flour a waterproof coating. This prevents long gluten molecules forming. Giving the dough a 'short' texture

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#### Revision

- Describe the changes of protein in an omelette
- Explain how bread becomes so stretchy (**Gluten** – A protein found in wheat)
- Suggest reasons a sponge cake might fail to rise