Key terms
Proportion: The relative quantities of ingredients in a recipe, expressed in numbers e.g. the ratio of fat to flour in the rubbing in method is 1:2
Dextrinisation: When starch converts into a sugar
Curdling: Fat separates from the sugar and eggs when the egg is added

Raising agents – increases the volume of doughs, batters and mixtures by promoting gas release (aeration).

FACT About raising agents

Raising agents work by incorporating a gas into a mixture.
When you heat the gas it expands and then it rises. So the mixture has alight open texture.
Raising agents may be added by mechanical means such as sieving.
Can be included in the ingredients such as yeast and bicarbonate of soda.
Raising agents can be natural, chemical and biological.

Cake – making methods

- Rubbing-in
- Creaming –traditional and all in one
- Melting
- Whisking

The main ingredients in cake making are fat, sugar, eggs and flour. All methods use a raising agent and often a liquid such as milk is also added. Additional ingredients e.g. flavourings can be added to give the cake particular characteristics.

The functions of ingredients

Flour:
- Forms the **structure** of the cake
- As the cake is heated, protein (gluten) in the flour **sets** the framework and shape
- **Dextrinisation** occurs, starch converts into sugar. On heating the sugar caramelises resulting in a **golden** surface

Sugar:
- Sweetens and adds flavour
- When creamed with fat, helps to hold air in the mixture
- **Caramelisation** gives **colour**

Raising agents:
- Aerates the mixture increasing volume and resulting in a light texture

Fat:
- Adds **colour** and **flavour**
- Holds air bubbles (foam) which creates texture and **volume**
- Produces a short crumb or rich even **texture** dependent on the ratio of fat and method used
- Increases the **shelf life.**

Eggs:
- **Trap** air when whisked into a foam
- **Coagulate** (set) on heating
- **Emulsify** – holds the fat in emulsior and keeps it stable
- Add colour, flavour and nutritional value

The **3 gases** that make food mixtures rise are:

- Air
- Steam (from liquid in ingredients or added liquid)
- Carbon dioxide (CO_2)

Carbon dioxide can be produced biologically or chemically

Air: Air is incorporated into mixtures using mechanical methods such as:

- *Whisking*
- *Sieving*
- *Creaming fat and flour*
- *Beating*
- *Rubbing fat and flour*
- *Rolling and folding*

Steam: For steam to make a mixture rise it needs to have:

- *A high proportion of liquid in the mixture*
- *A high baking temperature*
- *As liquid reaches boiling point steam is given off. Steam forces its way up to stretch and rise to the mixture. This then cooks and sets in the risen shape.*

- *Foods that are raised mainly by steam have a very open and uneven texture.*

Carbon dioxide: Carbon dioxide is used as a raising agent when a biological raising agent like yeast is used or a chemical raising agent like bicarbonate of soda is used. It is produced in two different ways:

- **Biologically** – fermentation process of yeast
- **Chemically** – action of bicarbonate of soda with an acid

Fault	*Cause*
Peaked cracked top	Oven too hot, too much mixture for the size of tin, Baked on too high a shelf in oven, too stiff or too wet mixture
Cake sinks	Too much sugar causing collapse, too much raising agent, undercooking, caused by wrong temperature and time, disturbed during cooking causing structure to collapse
Sugary speckled crust	Too much sugar, wrong type of sugar used, insufficient creaming
Close heavy texture	Too much liquid, insufficient raising agent, a curdled creamed mixture holding insufficient air, eggs and sugar not beaten enough in whisked method
Coarse and open texture	Too much raising agent used, insufficient mixing of flour
Cake very dry	Overcooking the cake, insufficient liquid used, too much raising agent
Fruit has sunk	Too much liquid, sugar and raising agent