Y10 – KO8c - GCSE FOOD PREPARATION AND NUTRITION: FOOD SCIENCE: FATS AND OILS

A EMULSIFICATION

	TERM	EXPLANATION
1	**EMULSIFICATION**	• Emulsions are formed when oily and watery liquids are shaken together. • Oil and water do not mix together so emulsions separate out again unless you keep shaking or stirring them – or you use an **emulsifier**. • The molecules in an emulsifier have two different ends : one is a **hydrophilic** (attracted to water). one is a **hydrophobic** (repulsed by water). • When you add an emulsifier, the water molecules bond to the hydrophilic side and the oil molecules bond to the hydrophobic side. This holds the water and oil together preventing them from separating. • Emulsions can either be **oil in water** or **water in oil**. • Egg yolks contain a natural emulsifier called **lecithin**.
2	**EXAMPLES OF EMULSIFICATION IN COOKING**	• Mayonnaise. • Hollandaise Sauce.

B AERATION

	TERM	EXPLANATION
1	**AERATION**	• When fats such as butter are beaten with sugar air becomes trapped in the mixture to make the mixture fluffier and lighter in colour. • The aeration gives cakes a spongy and light texture when they are cooked. • Foods can be aerated in many different ways e.g. whisking and beating.
2	**WHAT CAUSES AERATION**	• Incorporating air into a mixture.
3	**EXAMPLES OF AERATION IN COOKING**	• Cakes e.g. Victoria Sponge. • Whisking egg whites for a meringue pie.

C SHORTENING

	TERM	EXPLANATION
1	**SHORTENING**	• Rubbing fat into flour allows the flour particles to be coated with fat – this gives the particles a waterproof coating. • This coating prevents long gluten molecules forming when water is added – this means the dough cannot become stretchy. • Shortening gives food a crumbly texture.
2	**WHAT CAUSES SHORTENING**	• Rubbing fat into flour.
3	**EXAMPLES OF SHORTENING IN COOKING**	• Bases of filled pies and tarts. • Shortbread. • Scones.

D PLASTICITY

	TERM	EXPLANATION
1	**PLASTICITY**	• Fats have plasticity – we are able to manipulate them. • Fats soften over a range of temperatures as they contain triglycerides. • The more plasticity a fat has the easier it is to spread. • The more unsaturated fatty acids a fat or oil contains, the more plasticity the fat or oil will have.
2	**WHAT CAUSES PLASTICITY**	• A mixture of triglycerides.
3	**EXAMPLES OF PLASTICITY IN COOKING**	• Spreading raw cake mixtures into a tin. • Piping buttercream onto cakes. • Spreading cream cheese onto crackers. • Rubbing fat into flour to shorten dough.