Section 4.3 – Changes in Matter (notes) Adapted

There are two kinds of change that can happen to matter; Physical and chemical.

Physical means that the type of matter doesn’t change, but the size or shape may change.

Examples;

Tearing up paper is a physical change, as it is still paper, only in smaller bits. (how small can you tear it up and still have ‘paper’?)

Boiling water changes it’s state, but it is still water *vapour*. That water *vapour* can be condensed back into liquid water, so it is still water.

Taking a raw egg and scrambling the goo all up is a physical change, as it is still a raw egg…

A change of state is a physical change!!!

When you **chemically change** some matter, it becomes a different type of matter that is hard to return to the original type of matter.

Examples;

Burning (oxidizing) paper is a chemical change, as the paper decomposes into various different chemicals that once were combined together to make ‘paper’.

Cooking an egg is a chemical change, as you can’t change it back to a raw egg.

Every kind of matter has chemical properties that are unique to that type of matter, and these properties are used to identify that type of matter. Boiling point, freezing point, are just two chemical properties of matter. (page 125 figure 4.4).

A Chemical change will change those properties.

*Changes of state* involve a change in energy, either adding or removing energy from matter:

Solid to liquid = melting ADD ENERGY (HEAT)

Liquid to solid = freezing/solidifying REMOVE ENERGY (COOL)

Liquid to gas = evaporation ADD ENERGY (HEAT)

Gas to liquid = condensation REMOVE ENERGY (COOL)

Solid to gas = sublimation ADD ENERGY (HEAT)

Gas to solid = sublimation REMOVE ENERGY (COOL)

**The Particle Theory of Matter**

We use models to show the behaviour of matter. ‘The Particle Theory of Matter’ says that all matter is made of really small bits of identical matter – called ATOMS.

-the smallest units of matter are too small to be seen with the naked eye

-the smallest units of matter are always in motion, they vibrate, they rotate and they move from place to place.

-there are huge empty spaces between the particles in a gas

-there are some space between the particles in a liquid

-there is very little space between the particles in a solid

-the higher the temperature, the more energy there is and the faster the particles move

-each pure substance is made up of only one type of particle, and each different pure substance has its own specific type of particle