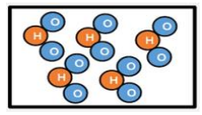
Year 7 Science: Term 6
Separating mixtures- energy in food- models of electricity

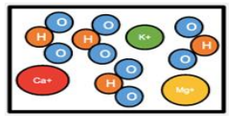
Week 1

Separating Mixtures

- A mixture consists of two or more types of atoms or compounds not chemically combined together.
- A pure substance is made of one type of atom or compound.
- Pure substances melt and boil at specific temperatures. Melting points and boiling points can be used to identify pure substances or mixtures.



Pure water



Impure water

Week 2

Chromatography

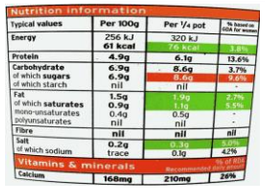
- Chromatography is a separation technique used to separate mixtures, especially coloured pigments and dyes.
- The word chromatography means 'colour writing'.
- 'Chroma': colour, 'tography': writing .
- Chromatography was first devised in Russia in 1900 by the Italian-born scientist Mikhail Tsvet.
- He used chromatography to separate the colours in plants (such as the green pigment chlorophyll found in the chloroplasts in plant cells).

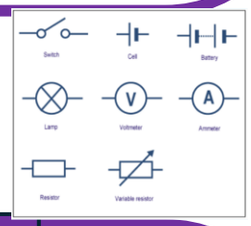
$$R_f = \frac{\text{distance moved from line by dye}}{\text{distance moved from line by solvent}}$$

Week 3

Energy

- Many things have energy because of what they are doing or what they are – we call them energy 'stores'.
- You are storing energy in your body right now.
- Different animals need different amounts of energy. An elephant needs around 200,000 kJ every day, and a cat about 800 kJ.
- The amount of energy a human needs depends on many things, including their age and what they are doing. Typically, a 13-year-old girl would need 9,000 kJ every day and a 13-year-old boy would need around 10,000 kJ every day.





Week 4

Energy in food.

- Chemical energy is stored in the food we eat. As the bonds between the atoms in food break, a chemical reaction takes place and energy is released. We use this energy to keep us warm, to move, to climb stairs, to grow, when we sleep and many other things.

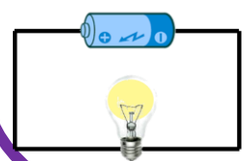
- The table below shows some suggested daily energy requirements for different groups of people.

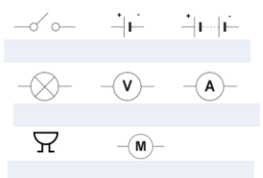
Physical activity	Calories/hr	kJ/hr
Ironing (or schoolwork)	138	580
Cleaning and dusting	150	630
Walking	198	830
Vacuum cleaning	210	880
Golf	258	1080
Tennis (doubles)	300	1260
Brisk walking	300	1260
Mowing the lawn	330	1390
Cycling	360	1510
Aerobics	390	1640
Swimming (slow crawl)	390	1640
Tennis	480	2020
Running	600	2520

Week 5 & 6

Models of electricity & Circuits and components

- We need electricity for many appliances in our homes and lives. We can use models and build electric circuits in the classroom, to help us understand how electric circuits work.
- Circuits are made of components.
- Components can be represented using circuit symbols.





Key words:

Mixture – tow or more types of atoms or compounds not chemically bonded together

Chromatography- Separation technique

Energy - the capacity for doing work.

Dietary requirements - the types of food and drink someone should consume to maintain or improve their health.

Electricity- presence and motion of matter possessing an electric charge.

Circuit components – basic elements of an electrical circuit.

Year 7 Science: Term 6

Week 1

Questions	Answers
What is a mixture?	A mixture consists of two or more types of atoms or compounds not chemically combined together.
What is a pure substance?	A pure substance is made of one type of atom or compound.
What can be used to identify a mixture or a pure substance?	Melting points and boiling points can be used to identify pure substances or mixtures.
What is a compound?	Two or more elements chemically bonded together.
Give examples of separation techniques.	Evaporation, simple distillation, crystallization, chromatography.

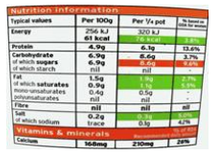
Week 2

Questions	Answers
What is chromatography?	Chromatography is a separation technique used to separate mixtures, especially coloured pigments and dyes.
What is chromatogram?	The piece of paper showing results after chromatography.
How to calculate Rf values?	$R_f = \frac{\text{distance moved from line by dye}}{\text{distance moved from line by solvent}}$
What does 1 spot means on chromatogram?	On a chromatogram, one spot means that the substance is pure.
2 or more spots on chromatogram?	An impure substance produces two or more spots.

Week 3

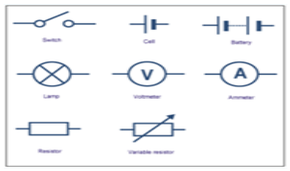
Questions	Answers
What is unit for energy?	Energy is measured in Joules (J).
Why do you think you need energy?	To move, breathe, keep your heart beating, keep you warm. All living things need energy to live.
Which of these options would store the most energy: hot bath, a peanut, cold bath	A hot bath
List 3 things around the home that need electricity to work.	TV, washing machine, fridge.
State two types of energy.	Kinetic energy, chemical energy.

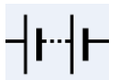
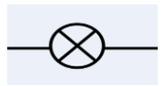
Week 4



Questions	Answers
Where do you get the energy that your body needs?	From the food you eat.
Which activity would reduce your chemical energy store the most? Swimming or Sleeping?	Swimming
Give examples of physical activities.	Runing, walking, swimming, hoovering, biking.
Name a food group/ nutrient that is a source of energy for your body.	Carbohydrates.
Name the chemical reaction that transfers energy from glucose.	Aerobic respiration

Week 5 & 6



Questions	Answers
What is the symbol for battery in a circuit?	
What is an insulator?	Materials that do not allow electricity to pass through them.
What is a conductor?	Materials that let the electricity pass through them easily.
What is a symbol for a lamp in the circuit?	
How is electricity created?	Electricity is created by generators which can be powered by gas, coal, oil, wind or solar.

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