Year 7 Science – Term Two KO

1. Tier 3 Vocab

- **Atom** Basic building blocks of all substances.
- **Atomic number** The number of protons in the nucleus of an atom.
- **Electron** Subatomic particle with a negative charge and very tiny mass.
- **Element** Substances made of only one type of atom.
- **Isotope** Atoms of an element with the same number of protons but different numbers of neutrons.
- **Mass number** The sum of the protons and neutrons in the nucleus.
- **Neutron** Uncharged subatomic particle with a relative mass of 1.
- **Periodic table** A table of all known elements displayed in order of atomic number.
- **Nucleus** Central part of an atom, containing protons and neutrons. Plural: nuclei.
- **Proton** Subatomic particle with a positive charge and a relative mass of 1.
- **Subatomic particle** Objects found inside atoms. They include protons, neutrons and electrons.

2. Atoms and elements

- Atoms are the basic building blocks of **all** living and non-living things anywhere in the universe.
- There are just over 100 different types of atom.
- Substances made of only one kind of atom are called **elements**.
- All known elements are listed in the **periodic table** of elements.
- To the left of the period table are the metals.
    - These form positive ions
    - They conduct electricity
    - The have high melting and boiling points
- To the right of the periodic table are the non-metals:
    - These form negative ions, are insulators and have low melting and boiling points.

3. Atomic structure

- The modern model of the atom has a central nucleus, containing protons and neutrons surrounded by electron shells containing the electrons
- The first electron shell can contain a maximum of 2 electrons
- Each subsequent shell can contain a maximum of 8 electrons.

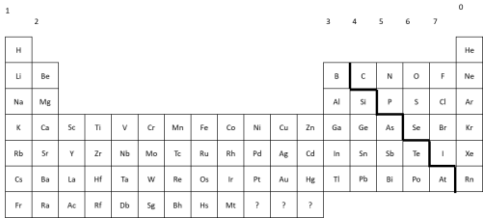
Name of Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electron	-1	Very small

4. Early atomic models

- Plum pudding model:
    - A ball of positive charge with negative electrons embedded in it.
    - Suggested after the discovery of the electron.
- Nuclear model:
    - Positively charged nucleus surrounded by negative electrons.
    - Suggested after the discovery of the nucleus.
    - Different from the modern model as the electrons were not is shells.

6. Mendeleev

- Before discovery of protons, neutrons and electrons elements were arranged in order of atomic weight
- A scientist called Mendeleev left gaps for elements that hadn't been discovered yet
- Elements with properties predicted by Mendeleev were discovered and filled in the gaps. Knowledge of isotopes explained why order based on atomic weights was not always correct.



6. Command Words

These are the key words in a question that tell you how the question should be answered.

State – requires you to recall a key fact without any further information needed.

Example:
State what is meant by an isotope.
Answer: Atoms of an element with the same number of protons but different numbers of neutrons.

Describe – say what will happen, but <u>without</u> any reason why.

Example:
Describe the plum pudding model of the atom.
Answer: A sphere of positive charge with negative electrons embedded within it.