## Key learning points

- Matter is made up of tiny particles called atoms.
- An atom has two main parts:
- The nucleus at the center, which contains protons and neutrons.
- The energy levels (shells) around the nucleus, where electrons move.
- Protons have a positive charge (+), electrons have a negative charge (−), and neutrons are neutral.
- The atomic number is the number of protons in an atom.
- The mass number is the total number of protons and neutrons in the nucleus.
- In a neutral atom, the number of electrons equals the number of protons.
- Electron arrangement shows how electrons are distributed in energy levels.
- The first energy level holds up to 2 electrons, and the next levels hold up to 8 electrons.
- The period of an element shows the number of occupied energy levels.
- The group of an element shows the number of electrons in its outermost shell.
- Metals are shiny, strong, and good conductors of electricity (e.g., sodium, magnesium, aluminium).
- Non-metals are dull, often gases, and poor conductors (e.g., oxygen, nitrogen, chlorine).
- Both metals and non-metals are important in daily life — for building, energy use, breathing, and supporting life.
- Understanding the structure of atoms helps explain how elements combine to form compounds and why they react differently.
- Protons + Neutrons = Mass number, Mass number − Atomic number = Neutrons.
- Elements are arranged in the Periodic Table based on their atomic number and properties.
- Knowledge of atomic structure helps in understanding real-life applications in medicine, agriculture, construction, and technology.