Department: Science: Chemistry – Atomic Structure, Energy Changes and Structures and Bonding
Year Group: Nine

Working Towards	Working At	Working Beyond
• Struggles to recall basic subatomic particles and their properties. • Has difficulty understanding the structure of the atom and the concept of isotopes. • Requires support to interpret atomic number and mass number from the periodic table. • Finds it challenging to distinguish between different types of bonding (ionic, covalent, metallic). • Has limited understanding of how bonding affects properties of substances. • Needs support to draw or interpret simple bonding diagrams. • Has difficulty distinguishing between exothermic and endothermic reactions. • Requires support to interpret energy level diagrams. • Struggles to understand the concept of activation energy.	• Can identify protons, neutrons, and electrons and describe their roles in the atom. • Understands atomic number, mass number, and isotopes with some guidance. • Can use the periodic table to determine electronic configurations for the first 20 elements. • Can describe ionic, covalent, and metallic bonding with examples. • Understands how bonding relates to melting/boiling points and conductivity. • Can draw and interpret basic dot-and-cross diagrams for simple molecules. • Can identify and describe exothermic and endothermic reactions. • Understands and interprets basic energy level diagrams. • Can explain activation energy and its role in chemical reactions.	• Confidently explains atomic structure and the behavior of isotopes. • Accurately calculates relative atomic mass and applies this to chemical contexts. • Demonstrates a strong understanding of historical models of the atom and their development. • Explains bonding types with clarity and links them to macroscopic properties. • Accurately draws complex bonding diagrams and predicts molecular behavior. • Applies understanding to unfamiliar contexts, such as nanoparticles or polymers. • Clearly explains energy changes in reactions with accurate terminology. • Analyses energy level diagrams and relates them to reaction profiles. • Applies understanding to calculate energy changes using bond energies.