NHSG Key stage 3: Unit Overview for P1.1 Particle model

Scheme of Learning	P1.1 Particle Model
Learning outcomes	**Subject Content** Knowledge and understating of: • How our ideas about atoms have changed over time. • Why solids, liquids, and gases have different densities (how heavy something is for its size). • How to use the formula: Density = Weight ÷ Space it takes up and understand that weight stays the same even if the shape or state changes. Skills: • Recognising different models of atoms. • Explaining why some materials are heavier for their size. • Doing simple calculations using the density formula.
Key questions	• "What do people think everything is made from?" By the end of this unit, students should be able to explain this clearly to someone else.
Knowledge	Key Ideas and Skills: • Different models of atoms • Size of atoms • What density means • Why different materials have different densities • How to calculate density Important Words to Learn: - Atom, Nucleus, Protons, Neutrons, Electrons, Electron shells - Order of magnitude, Density, Weight, Volume
Ongoing Assessment	During Lessons (Ongoing Checks): • Quick starter tasks to review past lessons • Whiteboard activities to check understanding

	• Teachers asking questions to everyone (not just hands up) • Common mistakes addressed, like: • Thinking particles grow when heated (they don't – they just move apart) • Confusing atoms, molecules, and subatomic particles • Struggling with unit conversions or imagining how particles are arranged
Key Assessment	• A short multiple-choice quiz in the middle of the topic. • 6 mark questions which are teacher assessed to look for greater depth of understanding. • Topic tests which aim to provide specific targets for improvement.
Content	• Builds on earlier science lessons - Helps prepare for future topics in physics - Vocabulary is taught clearly and used often
Careers	• Connects to careers in science and philosophy
Diversity and Inclusion	• Shows how different cultures have contributed to our understanding of matter (e.g. Ancient Greece, India)
Support	• Revision guides, online resources, and booklets
Challenge	• Why did Rutherford need a vacuum for his experiment? - Why use a microscope to see the screen? - How did scientists know particles bounced back?