

Year 7 Science Term 1A

Subject:	SCIENCE: Chemistry	Year group:	7
Topic:	Introduction to science	Sequence:	Term 1a
Prior learning: (What previous learning will the new learning in this unit build upon?)		Next learning: (What learning comes next and builds upon this unit?)	
KS2 experience of working scientifically and basic scientific concepts, presenting results and making a conclusion		Understanding scientific investigation and applying investigation skills to new concepts and ideas	
Learning objectives: (In chronological order)	Duration: (How long it usually takes to secure each learning objective)	Homework: (Activities to consolidate learning outside the classroom)	Specific vocabulary: (Subject specific terms relating to each learning objective)
Understand and demonstrate how to work safely in a lab	1 hour	Watch the clip below and make a safety poster https://www.youtube.com/watch?v=MEIXRLcC6RA	Hazard, risk, danger, goggles, fire bin, glass bin
Know and understand the hazard symbols used to identify common hazards in the lab and work safely with substances displaying those symbols	1 hour	Educake hazard symbols quiz (year 7)	Flammable, oxidising, corrosive, explosive, toxic, irritant, harmful to the environment, carcinogenic, health hazard, radioactive
Identify and draw common laboratory equipment	1 hour	Seneca KS3 4.1.12 'Drawing scientific apparatus'	Bunsen burner, tripod, gauze, test tube, boiling, conical flask, beaker, thermometer, measuring cylinder, filter funnel, filter paper, evaporating basin, tongs, spatula
Know how to use a Bunsen Burner safely and effectively to heat a non-flammable substance and demonstrate this	2 hours	N/A	Air hole, collar, roaring flame, safety flame, splint, heat proof mat, gas tap

Know and understand common units and scales used in science practical work	1 hour	Seneca KS3 4.1.13 'Observation and measurement skills'	Distance (meters), Time (seconds), temperature (degrees C), mass (kilograms), accuracy, precision
Collect data and create a corresponding bar chart	1 hour	N/A	Bar chart, column, x-axis, y-axis, scale, plot, linear, data
Collect data and create a corresponding line/scatter graph including a line of best fit	1 hour	Seneca KS3 4.1.15 'Graphs and charts'	Line graph, line of best fit, scale, plot, x-axis, y-axis

Subject:	SCIENCE: Chemistry	Year group:	7
Topic:	Atoms, elements and compounds	Sequence:	Term 1a
Prior learning: (What previous learning will the new learning in this unit build upon?)		Next learning: (What learning comes next and builds upon this unit?)	
Students will already understand that materials are made of different substances and be able to describe and compare the properties of common solids, liquids, and gases.		Exploring how particles are arranged and move in solids, liquids, and gases. This will help them explain changes of state, chemical changes, diffusion, and other physical processes using particle theory.	
Learning objectives: (In chronological order)	Duration: (How long it usually takes to secure each learning objective)	Homework: (Activities to consolidate learning outside the classroom)	Specific vocabulary: (Subject specific terms relating to each learning objective)
Describe the differences between atoms, molecules, elements, mixtures and compounds.	2 hours	Century Nuggets: Atoms, Elements, Compounds and Molecules [CK2.01] Diagnostic: Atoms, Elements & Compounds (Structure) [CK0.02]	Atoms, molecules, elements, mixtures, compounds
Understand symbols, properties and uses of the Earth's elements. Explain the importance of recycling metals.	1 hour	Century Nuggets: Diagnostic: Atoms, Elements & Compounds (Symbols & Names) [CK0.03] Element Symbols and State Symbols [CK2.03]	Symbols, elements, periodic table, properties, uses, recycling
Describe and investigate some common properties of metals and non-metals.	1 hour	Century Nuggets: The Periodic Table [CK3.01]	Metals, non-metals, properties

		Metals vs Non-Metals [CK3.02]	
Explain the differences between compounds and the elements. Describe changes in properties between a compound and its constituent elements.	1 hour	Century Nuggets: Naming Compounds [CK2.04] Formulae for Compounds [CK2.05]	Compounds, elements, mixtures, chemical reaction, properties
Investigate and explain the changes that take place during a chemical reaction and use word equations to represent these changes.	1 hour	Century Nuggets: Diagnostic: Chemical Reactions [CK0.08] Chemical Reactions [CK6.01]	Chemical reactions, reactants, products, equation, thermal decomposition, apparatus

Subject:	SCIENCE: Chemistry	Year group:	7
Topic:	The particle model	Sequence:	Term 1a
Prior learning: (What previous learning will the new learning in this unit build upon?)		Next learning: (What learning comes next and builds upon this unit?)	
Students will have come across the idea of solids, liquids and gases before and may be able to identify different substances that fall into each category.		Application of the particle model to explain new phenomena and scientific techniques – e.g. methods for separating different types of mixtures, explaining density of different substances	
Learning objectives: (In chronological order)	Duration: (How long it usually takes to secure each learning objective)	Homework: Century Nuggets: (Activities to consolidate learning outside the classroom)	Specific vocabulary: (Subject specific terms relating to each learning objective)
Identify solids, liquids and gases and classify examples correctly and describe the observable properties of solids, liquids and gases: shape, volume, flow, compressibility	1 hour 30 minutes	State of Matter (CK1.01) (states of matter CK1.01)	solid, liquid, gas, state, material, substance, matter, classify, example, property, shape, volume, fixed shape, fixed volume, flow, pour, compress, compression, expand, container, surface
Use evidence from simple tests to compare states of matter, e.g. syringe compression, pouring/flowing	30–60 min		evidence, observation, test, compare, syringe, compression, flow, pour, measure, result, conclusion

State that all matter is made of tiny particles and draw particle diagrams for solids, liquids and gases	60 min	Century nuggets: Particle Model (CK1.03) (particle model CK1.03)	matter, particle, tiny, substance, material, made of, particle model, theory, particle diagram, arrangement, spacing, close together, far apart, regular pattern, random arrangement, touching, gaps
Explain properties of solids, liquids and gases using the particle model	1–1.5 hours	Century nuggets: Density (CK1.07) (density CK1.07)	particle model, vibrate, move, fixed position, slide past, flow, close together, far apart, strong attraction, weak attraction, compressible, density
Understand the difference between observation, hypothesis, prediction, evidence and theory	30–45 min		observation, hypothesis, prediction, evidence, theory, model, explanation, scientific method, conclusion, data
Describe Brownian motion as random/jerky motion of small visible particles caused by collisions with much smaller particles and explain why Brownian motion provided evidence for the particle theory	1 hour	Century nuggets: Particle Model (CK1.03) (changing states: particle model CK1.03)	Brownian motion, random, jerky, movement, pollen, smoke, particles, collision, uneven, microscope, observation, explanation
Define diffusion as particles spreading and mixing through spaces between particles and explain diffusion in gases and liquids using moving particles then predict how temperature/state/particle size affects diffusion speed	1 hour	Century nuggets: Diffusion (CK10.5) (diffusion CK1.05)	diffusion, spread out, mix, particles, movement, spaces, concentration, high concentration, low concentration, gas, liquid, concentration gradient, temperature, hotter, colder, energy, faster, slower, diffusion rate, particle size, gas, liquid
Explain air pressure as gas particles colliding with surfaces then use the particle model to explain tyres, straws, suction cups, crushed cans, and gas pressure changes then apply the particle model to unfamiliar examples and write	1 hour	Behaviour of Matter (CK1.06) (behaviour of matter CK1.06)	pressure difference, air pressure, gas particles, collisions, tyre, straw, suction cup, crushed can, vacuum, expand, compress, because, therefore, so, particle model, evidence, explain, apply, link,

clear explanations using “because”
chains

cause, effect, particles,
properties