

Year 7 Chemistry Assessment Objectives

C1: Particles

	Substantive knowledge (subject content)	Disciplinary knowledge (skills)
Strong	- Suggest and apply the particle model to explain properties of matter. - Suggest and apply a real-life model to explain state changes. - Suggest and apply a real-life model to explain diffusion and factors affecting it. - Suggest and apply a real-life model to explain the gas pressure and the factors affecting it. - Suggest examples to explain the terms element, compound and molecule.	- Create a risk assessment for a given practical without assistance. - Identify independent, dependent and controlled variables in investigations. - Calculate a mean average and explain why anomalous data should be omitted. - Draw a table for data collection unaided, including units. - Draw a graph to display categoric and continuous data, unaided.
Confident	- Explain the particle model in terms of arrangement and energy. - Explain properties of solids, liquids and gases. - Explain the difference between boiling and evaporation. - Explain diffusion and the factors affecting the rate. - Explain the gas pressure and the factors affecting it. - Explain the differences between an element and a compound. - Explain what a molecules is.	- Write a risk assessment without a proforma and only given information about the hazards of particular chemicals. - Identify independent, dependent and controlled variables in investigations. - Calculate a mean average, taking into account anomalous data. - Draw a table for data collection, with little guidance. - Draw a graph to display categoric and continuous data, with little guidance.
Developing	- Describe the arrangement and the relative energies of the particles in a solid, liquid and gas. - Describe some changes of state. - Describe what diffusion is and the factors affecting the rate. - Describe the gas pressure and the factors affecting it. - Describe the differences between elements and compounds. - Identify a molecule from a particle diagram.	- Write a risk assessment using a proforma and using given information about the hazards for chemicals and apparatus. - Identify independent, dependent and controlled variables in investigations, having first been given the meaning of the variables. - Calculate a mean average. - Give headings and units to data tables and complete the unaided. - Draw a bar graph or line graph having been given guidance for suitable scales.
Emerging	- Classify simple substances as solid, liquid and gas. - Draw particle diagrams of solid, liquid and gas. - Name some changes of state. - Give an example of diffusion and how it can be sped up. - State that pressure inside a container is due to a gas. - State how an increase in temperature will affect gas pressure. - Identify elements and compounds from particle diagrams.	- Complete a risk assessment using a partially completed proforma. - Identify what is being changed, recorded and kept the same in an investigation, with prompting. - Calculate a mean average, with prompting. - Fill in a data table appropriately, having been given a proforma. - Draw a bar graph or line graph through modelling i.e. "I do, we do, you do..." approach.

C2: Separating mixtures

	Substantive knowledge (subject content)	Disciplinary knowledge (skills)
Strong	- Suggest examples to illustrate the differences between a pure substance, a mixture and specific mixture types, including alloys and formulations. - Suggest real-life examples to explain the meanings of solute, solvent, dissolve and solution. - Extrapolate a graph to make predications about solubility under different conditions. - Suggest a method to prepare a saturated solution. - Suggest a real-life application to explain the concept of separation by filtration. - Explain how distillation can be used to separate a mixture of several different liquids. - Analyse chromatography experiments and explain the findings to draw conclusions.	- Identify independent, dependent and controlled variables in investigations. - Write methods for investigations, unaided. - Calculate a mean average and explain why anomalous data should be omitted. - Draw a table for data collection unaided, including units. - Draw a graph to display categoric and continuous data, unaided. - Explain a trend or pattern on a graph and suggest reasons for anomalous data points.
Confident	- Explain how a pure substance is different from a mixture, giving examples to illustrate. - Explain the meaning of solute, solvent, dissolve and solution. - Explain how solubility is affected by temperature, by interpreting graphical data. - Explain what a saturated solution is. - Explain how filtration separates an insoluble solid from a liquid. - Explain how distillation separates two miscible liquids. - Explain how chromatography is used to separate a mixture of coloured dyes.	- Identify independent, dependent and controlled variables in investigations. - Write methods for investigations, having discussed variables and intervals of data collection. - Calculate a mean average, taking into account anomalous data. - Draw a table for data collection, with little guidance. - Draw a graph to display categoric and continuous data, with little guidance. - Explain a trend or pattern on a graph and identify anomalous data points.
Developing	- Describe what a pure substance is and what a mixture is. - Describe how temperature affects solubility. - Describe how distillation separates two miscible liquids. - Describe how to carry out chromatography.	- Identify independent, dependent and controlled variables in investigations, having first been given the meaning of the variables. - Write methods for simple experiments, using key words and diagrams for guidance. - Calculate a mean average. - Give headings and units to data tables and complete the unaided. - Draw a bar graph or line graph having been given guidance for suitable scales. - Describe a trend or pattern on a graph.
Emerging	- Identify pure substances and mixtures from examples. - Identify the most and least soluble substances from tabulated data. - Identify the changes of state that take place in distillation. - Write a method to carry out chromatography by completing a clozed activity.	- Identify what is being changed, recorded and controlled in an investigation. - Write a method by filling in clozed worksheets for guidance. - Calculate a mean average, with prompting. - Fill in a data table appropriately, having been given a proforma. - Draw a bar graph or line graph through modelling i.e. "I do, we do, you do..." approach. - Complete an, "as the...so the..." statement about a graph.

C3: Acids and bases

	Substantive knowledge (subject content)	Disciplinary knowledge (skills)
Strong	- Suggest examples to explain the differences between a physical change and a chemical reaction. - Suggest how the concentration of an acid or an alkali will affect its properties and how hazardous it is. - Explain the differences between a dilute acid and a concentrated acid and weak and a strong acid. - Use the ionic equation to explain the process of neutralisation. - Select an appropriate acid and insoluble base to describe and explain how to make a named salt	- Create a risk assessment for a given practical without assistance. - Draw a table for data collection unaided, including units. - Write methods for investigations, unaided.
Confident	- Explain the difference between a physical change and a chemical reaction. - Explain the properties of acids and alkalis, in terms of H^+ ion concentration and the pH scale. - Explain how to make an indicator and how it can be used to distinguish between weak and strong acids and alkalis. - Explain the differences between a weak and a strong acid. - Explain what neutralisation is and describe the ionic equation. - Describe and explain the steps involved to make a salt from a given acid and insoluble base.	- Write a risk assessment without a proforma and only given information about the hazards of particular chemicals. - Write methods for investigations, having discussed variables and intervals of data collection. - Draw a table for data collection, with little guidance.
Developing	- Describe the difference between a physical change and a chemical reaction. - Describe the properties of acids and alkalis. - Describe how to make an indicator and how it can be used to distinguish between weak and strong acids and alkalis. - Describe the differences between a weak and a strong acid. - Describe what neutralisation is. - Describe how to make a salt from a given acid and insoluble base.	- Write a risk assessment using a proforma and using given information about the hazards for chemicals and apparatus. - Write methods for simple experiments, using key words and diagrams for guidance. - Give headings and units to data tables and complete the unaided.
Emerging	- State some features of a physical change and a chemical reaction. - Be able to state the pH of strong and weak acids and alkalis. - Identify the main steps of how to make and use an indicator. - Identify a neutral pH and give an example of a neutral substance. - State what to do to make an acidic or an alkaline solution neutral. - Label diagrams to state the steps involved in making a salt.	- Complete a risk assessment using a partially completed proforma. - Write a method by filling in clozed worksheets for guidance. - Fill in a data table appropriately, having been given a proforma.

C4: Reactions of metals

	Substantive knowledge (subject content)	Disciplinary knowledge (skills)
Strong	- Using examples of metals and non-metals explain how their properties affect their use. - Suggest a way in which metal oxides and non-metal oxides could be distinguished. - Suggest how the reaction of metals and oxygen can give information about relative reactivities. - Suggest how the reaction of metals and acids can give information about relative reactivities. - Devise an experiment to determine the relative reactivity of metals and metal salt solutions. - Devise an experiment to investigate the catalytic properties of metals.	- Create a risk assessment for a given practical without assistance. - Draw a table for data collection unaided, including units. - Write methods for investigations, unaided.
Confident	- Explain how the physical properties of metals and non-metals affect their use. - Analyse experimental data to distinguish between metal oxides and non-metal oxides. - Explain the differences between metals' reactions with oxygen, including symbol equations. - Explain the differences between metals' reactions with acids, including symbol equations. - Explain how displacement reactions of metals and metal salt solutions can be used to create a reactivity series of metals; include symbol equations. - Explain the properties of catalysts. - Interpret experimental data to draw conclusions about the catalytic properties of metals.	- Write a risk assessment without a proforma and only given information about the hazards of particular chemicals. - Write methods for investigations, having discussed variables and intervals of data collection. - Draw a table for data collection, with little guidance.
Developing	- Describe how the physical properties of metals and non-metals affect their use. - Describe the difference in pH between metal oxides and non-metal oxides. - Describe the differences between metals' reactions with oxygen, including word equations. - Describe the differences between metals' reactions with acids, including word equations. - Describe what a displacement reaction is and make predictions about reactions using the reactivity series; include word equations. - Describe the properties of catalysts. - Identify the most suitable catalyst for a reaction, based on experimental data.	- Write a risk assessment using a proforma and using given information about the hazards for chemicals and apparatus. - Write methods for simple experiments, using key words and diagrams for guidance. - Give headings and units to data tables and complete the unaided.
Emerging	- State the physical properties of metals and non-metals. - State that an oxide is made is when a metal or a non-metal reacts with oxygen. - State that different metals will react differently with oxygen depending on their reactivity. - State that different metals will react differently with acids depending on their reactivity. - State what a displacement reaction is.	- Complete a risk assessment using a partially completed proforma. - Write a method by filling in clozed worksheets for guidance. - Fill in a data table appropriately, having been given a proforma.

