

Science Inquiry Skills

Knowledge	Application
Scientific methods enable systematic investigation to obtain measurable evidence.	<p>Deconstruct the parts of a problem to determine the most appropriate method for investigation.</p> <p>Design investigations, including:</p> <ul style="list-style-type: none"> ♦ a hypothesis or inquiry question ♦ types of variables <ul style="list-style-type: none"> – dependent – independent – factors held constant (how and why they are controlled) – factors that may not be able to be controlled (and why not) ♦ materials required ♦ the procedure to be followed ♦ the type and amount of data to be collected ♦ identification of ethical and safety considerations.
Obtaining meaningful data depends on conducting investigations using appropriate procedures and safe, ethical working practices.	<p>Conduct investigations, including:</p> <ul style="list-style-type: none"> ♦ selection and safe use of appropriate materials, apparatus, and equipment ♦ collection of appropriate primary and/or secondary data (numerical, visual, descriptive) ♦ individual and collaborative work.
Results of investigations are represented in a well-organised way to allow them to be interpreted.	<p>Represent results of investigations in appropriate ways, including:</p> <ul style="list-style-type: none"> ♦ use of appropriate SI units, symbols ♦ construction of appropriately labelled tables ♦ drawing of graphs: linear, non-linear, lines of best fit ♦ use of significant figures.
Scientific information can be presented using different types of symbols and representations.	<p>Select, use, and interpret appropriate representations, including:</p> <ul style="list-style-type: none"> ♦ mathematical relationships, such as ratios ♦ diagrams ♦ writing equations <p>to explain concepts, solve problems, and make predictions.</p>
The analysis of the results of investigations allows them to be interpreted in a meaningful way.	<p>Analyse data, including:</p> <ul style="list-style-type: none"> ♦ identification and discussion of trends, patterns, and relationships ♦ interpolation or extrapolation where appropriate ♦ selection and use of evidence and scientific understanding to make and justify conclusions.
Critical evaluation of procedures and outcomes can determine the meaningfulness of conclusions.	<p>Evaluate the procedures and results to identify sources of uncertainty, including:</p> <ul style="list-style-type: none"> ♦ random and systematic errors ♦ replication ♦ sample size ♦ accuracy ♦ reliability ♦ precision ♦ validity ♦ effective control of variables. <p>Discuss the impact that sources of uncertainty have on experimental results. Recognise the limitations of conclusions.</p>
Effective scientific communication is clear and concise.	<p>Communicate to specific audiences and for specific purposes using:</p> <ul style="list-style-type: none"> ♦ appropriate language ♦ terminology ♦ conventions.