

Science Step Descriptors

Step	Descriptor
1	<ul style="list-style-type: none"> • Students attempt to answer basic recall questions in familiar contexts. • Students recall limited key words and their meanings, with prompts. • Students can recall some practical activities carried out and with support, select some appropriate pieces of equipment for a task. • With support, pupils can identify simple patterns from a graph or data table. • Students attempt to use a small number of basic formulae from a list.
2	<ul style="list-style-type: none"> • Students can answer basic recall questions in familiar contexts using limited scientific terminology. • Students can occasionally communicate scientific knowledge and understanding with prompts. • Students can recall some practical experiments they carried out and select appropriate equipment for a specific task. • Students recognise and describe simple patterns and begin to link in scientific explanations for these. • Students can use some basic formulae with help.
3	<ul style="list-style-type: none"> • Students answer recall questions and occasionally communicate scientific knowledge and understanding. • Students can occasionally apply their understanding to connect theory in familiar contexts. • Students can make basic comments relating to experimental procedure and start to develop ideas to improve evidence. • Students begin to link scientific theory to data. • Students can use the majority of basic formula.
4	<ul style="list-style-type: none"> • Students demonstrate some accurate and appropriate knowledge and understanding and apply these mostly correctly to familiar contexts, using some accurate scientific terminology. • Students begin to use models to explain scientific theory. • Student can analyse qualitative and quantitative data to draw simple conclusions supported by limited evidence. • Students are able to comment on methodologies to suggest improvements to experimental methods, and make simple comments on scientific conclusions. • Students can use appropriate mathematical skills to perform calculations.
5	<ul style="list-style-type: none"> • Students demonstrate mostly accurate and appropriate knowledge, understanding and applying these mostly correctly to familiar and unfamiliar contexts, using mostly accurate scientific terminology. • Students are able to use models to explain phenomena, events and processes. • Students use appropriate mathematical skills to perform multi-step calculations. • Students can analyse qualitative and quantitative data to draw plausible conclusions supported by some evidence.

	<ul style="list-style-type: none"> • Students evaluate methodologies to suggest improvements to experimental methods, and comment on scientific conclusions.
6	<ul style="list-style-type: none"> • Students demonstrate accurate and appropriate knowledge and understanding and apply these correctly to familiar and unfamiliar contexts, using accurate scientific terminology. • Students demonstrate a broad understanding of the nature of science, its laws, its applications, and the influence of society on science and science on society. • Students use appropriate mathematical skills to perform multi-step calculations. • Students analyse qualitative and quantitative data to make reasoned judgments and draw evidence-based conclusions. • They evaluate information to develop arguments and explanations taking account of the limitations of the available evidence.
7	<ul style="list-style-type: none"> • Students recall, select and communicate precise knowledge and a detailed understanding of science and its application to familiar and unfamiliar contexts. • Students can recall and explain the effects and risks of scientific developments and their applications on society, industry, the economy and the environment. • Students can correctly use the full range of complex formulae for calculations. • Students can apply a comprehensive understanding of practical methods, processes and protocols to plan and justify a range of appropriate methods to solve practical problems. • Students can analyse qualitative and quantitative data to draw detailed relevant and accurate conclusions supported by sufficient evidence.
8	<ul style="list-style-type: none"> • Students are able to communicate precise knowledge and detailed understanding of the full range of concepts from biology, chemistry and physics. • Students should be able to formulate and test hypotheses, linking this to evidence, theories and explanations, alongside using models to explain phenomena, events and processes. • Students can comprehensively apply higher level mathematical skills to analyse evidence provided. • Students can critically analyse qualitative and quantitative data to draw logical, well evidenced conclusions. • Students critically evaluate and refine methodologies and judge the validity of scientific conclusions.
9	<ul style="list-style-type: none"> • Students apply principles and abstract concepts in familiar contexts and in contexts outside those experienced during lessons. • Students are able to make schematic links drawing facts, principles and concepts in comprehensive detail from all areas of the specification. • Students can devise and plan experimental and investigative activities, selecting appropriate techniques and demonstrating safe and skilful practical techniques. • Students use and rearrange multiple step mathematical equations to perform complex scientific calculations.

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| | <ul style="list-style-type: none">• Students undertake in depth critical analysis of qualitative and quantitative data to draw detailed logical, well-evidenced conclusions which link to further knowledge and examples.• Students can critically evaluate and refine methodologies and judge the validity of scientific conclusions then providing alternative conclusions from secondary data. |
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