GCSE Examiners' Report

Applied Science (Single Award)

GCSE

Summer 2026

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Introduction

Our Principal examiners' report provides valuable feedback on the recent assessment series. It has been written by our Principal Examiners and Principal Moderators after the completion of marking and moderation, and details how candidates have performed in each unit.

This report opens with a summary of candidates' performance, including the assessment objectives/skills/topics/themes being tested, and highlights the characteristics of successful performance and where performance could be improved. It then looks in detail at each unit, pinpointing aspects that proved challenging to some candidates and suggesting some reasons as to why that might be.[1]

The information found in this report provides valuable insight for practitioners to support their teaching and learning activity. We would also encourage practitioners to share this document – in its entirety or in part – with their learners to help with exam preparation, to understand how to avoid pitfalls and to add to their revision toolbox.

Further support

Document	Description	Link
Professional Learning / CPD	WJEC offers an extensive programme of online and face-to-face Professional Learning events. Access interactive feedback, review example candidate responses, gain practical ideas for the classroom and put questions to our dedicated team by registering for one of our events here.	https://www.wjec.co.uk/home/professional-learning/
Past papers	Access the bank of past papers for this qualification, including the most recent assessments. Please note that we do not make past papers available on the public website until 12 months after the examination.	Portal by WJEC or on the WJEC subject page
Grade boundary information	Grade boundaries are the minimum number of marks needed to achieve each grade. For unitised specifications grade boundaries are expressed on a Uniform Mark Scale (UMS). UMS grade boundaries remain the same every year as the range of UMS mark percentages allocated to a particular grade does not change. UMS grade boundaries are published at overall subject and unit level. For linear specifications, a single grade is awarded for the subject, rather than for each unit that contributes towards the overall grade. Grade boundaries are published on results day.	For unitised specifications click here: Results, Grade Boundaries and PRS (wjec.co.uk)

[1] ***Please note that where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.***

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Executive Summary

Total entries were similar to 2025, with the vast majority of candidates entered at Foundation tier. There was a very small higher tier entry for each unit.

The beginning of the Foundation tier papers included many objective style questions and straightforward calculations. These parts were generally well attempted, although many candidates made errors in questions requiring recall and made random guesses. There were also those candidates who, through failing to read the question properly, did not follow instructions so selected more or less answers than required.

Questions that assessed mathematical skills were generally well attempted, such as interpretation of a distance-time graph. However, many candidates substituted incorrectly into given equations and sometimes ignored the maths symbols that were given. Rounding errors were frequently seen. There continued to be a significant number of candidates that did not show any workings.

The quality of graph work was inconsistent. The majority of candidates were able to successfully plot some points onto the grid but usually an error was seen. Only a minority were able to add a best fit curve. Again this year, candidates often didn't read questions thoroughly and therefore missed out on some marks, e.g. adding lines to a graph.

QER questions that did not require recall were better answered than those that did, e.g. the questions requiring a description of a nuclear reactor was answered poorly.

Questions that drew upon practical skills and understanding were answered inconsistently. There was some success in identification of variables, however few candidates could rewrite a method or identify a suitable piece of apparatus to measure volume.

In the task based assessment, pack B was more popular than pack A. However, candidates appeared to perform equally well across both packs. In the planning section there was still some confusion on variables and candidates had more difficulty producing labelled diagrams this year. Most could write a method, but often repeats and range were missed. Collecting and recording was the best section, however questions on resolution were often answered badly or units missed out. In the analysis section, graph plotting was often an issue. Evaluations were the weakest sections.

In the practical assessment unit, there was evidence that candidates are familiar with practical work and the analysis of practical results. As in previous series, candidates were largely successful in making hypotheses and in identifying variables. Notable areas that candidates found challenging were scaling graphs and lines of best fit. Using data to justify evaluations was also weak.

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APPLIED SCIENCE (SINGLE AWARD)

GCSE

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UNIT 1 FOUNDATION TIER

Overview of the Unit

The exam paper included questions based on all three assessment objectives so tested recall of knowledge, (40%), application and understanding of knowledge, (40%), and analysis, interpretation and evaluation of information (20%). This paper examines topics from the three science disciplines offered in the Science suite.

The demand of the early questions was less than in previous series due to an increase in objective style questions and straightforward calculations. The remainder of the paper was comparable with previous series. It provided a fair test for the candidates at Foundation Tier and differentiated well. The degree of difficulty of questions increased throughout the paper, with questions in the common section providing the most challenge.

The early objective style question parts were generally well attempted. This style of questioning, especially those requiring recall of knowledge, made them more accessible to candidates. However, many candidates lacked the basic knowledge and understanding of the topics assessed through these questions and probably made random guesses. The performance of candidates in recall questions tended to be poor. There were also those candidates who, through failing to read the question properly, did not follow instructions so selected more or less answers than required e.g. q2 – placing more than 1 tick in a row. There is no further comment on this type of question in the next section.

Attempt rates generally significantly dropped from question 5 onwards.

In some question parts, e.g. q6(b)(iii), candidates are asked to use data in their answer. Failure to do so often results in no marks being awarded. Where candidates demonstrated some understanding, many answers were vague or confused and sometimes did not relate exactly to the question asked. Examples of using irrelevant data were seen.

Questions that assessed mathematical skills were generally well attempted. Equations are given in the appropriate form in the question part e.g. q6(b)(i). However, too many candidates substitute incorrectly into given equations and sometimes ignore the maths symbols that are given. It is emphasised that workings should be shown in the provided spaces when answering calculation questions e.g. q9(a) and 9(b)(iii). Marks are often provided for selection of values and substitution. These marks cannot be awarded if all that is shown is an incorrect answer on the answer line. Few candidates were able to calculate a percentage, such as in q4(c)(i).

The quality of graph work was generally poor.

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Comments on individual questions/sections

Q.1 (a) Some candidates used words other than those provided in the box.

(b) No further comment.

(c) No further comment.

Q.2 The products of these reactions were not well known.

Q.3 (a) No further comment.

(b) (i),(ii) No further comment.

(c) This was poorly answered. Additionally, about 23 % of candidates failed to attempt the question. It was common to see the bullet points included in answers together with 'I agree'.

Q.4 (a) No further comment.

(b) (i),(ii) Most candidates achieved both marks here. However, answers were seen of animals not in the chain.

(c) (i) Few candidates were able to use the information to calculate the percentage.

(ii) About half of candidates completed the table correctly and arrived at the correct conclusion.

(d) Few candidates could state reasons for the energy loss.

Q.5 Attempt rates varied between 59% and 86%.

(a) (i) From some of the values seen it is unlikely that many candidates referred to the Periodic Table.

(ii) Just over half of candidates could state the trend.

(iii) Just over half of candidates could estimate the melting point.

(iv) It was clear that many candidates did not understand the term physical state since many answers naming an element or quoting a value were seen.

(v) Very few correct answers seen. Some elements not in group 7 were named.

(b) Most candidates completed the diagrams correctly. However, the non-attempt rate for part (ii) was about 35%.

Q.6 (a) The names of the symbols were not well known.

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(b) (i) Less than half of candidates calculated the correct value of resistance. Many of those that did not, failed to show their workings. When an incorrect answer is seen without workings being shown, then no marks for selecting values or substitution cannot be awarded.

(ii) The mean mark was low. This is because many candidates made plotting errors.

(iii) Some candidates just repeated the question. Others failed to include any data in their response.

(iv) A minority of candidates achieved any credit. Sometimes an incorrect metal was stated but the workings earned some credit. This was not possible when no workings are shown.

Q.7 (a) No further comment.

(b) This QER question did not require recall of information but was based on comparing two pie charts. It was well answered by most candidates with a middle band mean mark. It was pleasing to read top band answers. It was disappointing that the non-attempt rate was about 23%.

Q.8 About 26% of candidates failed to attempt the question. Of those that did, many earned 3 or more marks. Few candidates could give the correct chemical formula for copper chloride.

Q.9 Attempt rates were 76% or less for all question parts.

(a) Less than half of candidates completed both parts of the table correctly. It was impossible to award fall back marks when no workings were shown.

(b) (i) Very few marks were awarded here. There was confusion between which angles represented vertical and horizontal.

(ii) Just stating the correct direction did not earn credit. Candidates found it difficult to justify their choice.

(iii) This calculation was poorly answered. It was common to see incorrect data selected from the table.

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APPLIED SCIENCE (SINGLE AWARD)

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UNIT 1 HIGHER TIER

Overview of the Unit

The exam paper included questions based on all three assessment objectives so tested recall of knowledge, (40%), application and understanding of knowledge, (40%), and analysis, interpretation and evaluation of information (20%). This paper examines topics from the three science disciplines offered in the Science suite.

There was a low entry for this paper (51).

The paper was of comparable demand with previous series. It provided a fair test for the candidates at Higher Tier and differentiated well. The degree of difficulty of questions increased throughout the paper, with questions in the common section providing the least challenge.

The performance of candidates in recall questions that required descriptions and/or explanations tended to be less well answered than those requiring very little knowledge e.g. q4a and b. This is nothing new and has been commented on in exam reports for several series. This was particularly evident in questions relating to practical work e.g. q5. In some question parts, candidates were asked to include data or use the graph in their answers, e.g. q8a. Failure to do so often resulted in no marks being awarded. Where candidates demonstrated some knowledge and understanding, many answers were vague or confused and sometimes did not relate exactly to the question asked.

Questions that assessed mathematical skills were generally well attempted with some candidates gaining full marks e.g. q2biii. It is emphasised that workings should be shown in the provided spaces when answering calculation questions. Marks are often provided for selection of values and substitution. These marks cannot be awarded if all that is shown is an incorrect answer on the answer line. Candidates generally were able to make calculations including percentages.

The quality of graph work is still inconsistent. Candidates were expected to add scales to a grid in question q3c(i). Some candidates were unable to produce a linear scale from the tabulated data.

Comments on individual questions/sections

Q.1 (a) Most candidates earned 4 or 5 marks. Few candidates could give the correct chemical formula for copper chloride.

Q.2 (a) Most candidates completed both parts of the table correctly.

(b) (i) Some candidates earned full marks while others referred to either vertical or horizontal but not both. For some candidates, there was confusion between which angles represented vertical and horizontal.

(ii) Just stating the correct direction did not earn credit. Just under half of candidates could justify their choice.

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(iii) This calculation was well answered with most candidates gaining full marks. Some candidates selected incorrect data from the table.

Q.3 (a) About half of candidates answered correctly. Others confused repeatability with reproducibility.

(b) The purpose of the variable resistor was not well known.

(c) (i) Just under half of candidates earned both scale and plotting marks. Few joined the points with a smooth curve. Some candidates added a non-linear scale on the y-axis. These placed the values from the table at equal intervals. They scored zero. Others missed 30, 50 and 70 from the x-axis.

(ii) Most candidates only earned 1 mark due to not commenting on the decreasing rate of change.

(d) Most candidates could calculate the resistance of the 80cm length of wire. Some of these scaled this value up to 100cm and identified the metal. In some instances, no workings were shown. In these cases, a maximum mark of 1 was allowed for naming the correct metal.

Q.4 (a) This required recall and was poorly answered. There was confusion between atomic number and mass number.

(b) (i) Most candidates could make a correct statement to earn 1 mark, sometimes about elements and other times about compounds. There was confusion between mixtures and compounds.

(ii) This was very poorly answered.

Q.5 This QER depended on knowledge of a specified practical. It was poorly answered. More credit was earned for the risk assessment rather than the method.

Q.6 (a) This depended on recall of knowledge and was very poorly answered.

(b) Most candidates worked through at least part of the calculation to earn 2 or 3 marks. Some candidates did not use 5% and 10% in different stages of the calculation but used the same % throughout. Others made an incorrect judgement.

Q.7 (a) Recall of this topic was poor. Most candidates could only state 1 piece of evidence.

(b) This part did not require any recall and was very well answered. Many candidates earned 3 or 4 marks.

Q.8 (a) The question instructed candidates to ‘Use data from the graph to describe…’. Some candidates failed to include any data so the maximum mark they could achieve was 1. Others omitted some of the data so earned 2 or 3 marks.

(b) The majority of candidates gave an acceptable suggestion.

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(c) Most candidates earned some credit here. It was expected that candidates would refer to less periods of snow rather than just saying snow melts.

(d) This required recall of knowledge and was poorly answered.

Q.9 (a) This was the least well answered question on the paper. Additionally, about 31% of candidates failed to attempt it. The topic was not well known.

(b) Candidates were unable to explain the information provided by the spectra.

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UNIT 2 FOUNDATION TIER

Overview of the Unit

The examination paper assessed candidates through a series of questions across a range of topics from the three science disciplines, comparable with previous examinations in this qualification. The questions tested candidates' recall of knowledge, (AO1- 40%), application and understanding of knowledge, (AO2- 40%), and analysis, interpretation and evaluation of information (AO3- 20%).

The examination paper was of comparable demand with those of the previous series; the assessment differentiated across a range of candidates. The questions progressed in their degree of difficulty and challenge. Earlier questions demonstrated basic recall and the analysis or interpretation of more simple data. The most challenging questions occurred towards and within the common tier section of the examination. The initial questions in the examination proved accessible to most candidates and most candidates scored well within this point of the examination paper. Question 1 proved particularly accessible to candidates, where the question was well scaffolded and required application and understanding of distance-time graphs.

Recall questions were well answered within the first few questions of the paper, where candidates recalled knowledge from a series of choices that were provided. For example, candidates scored well on question 2a, where they selected the correct keyword to complete the paragraph provided. Further into the examination paper, where recall required greater scientific explanation, candidates struggled to recall and then correctly explain their knowledge and understanding. For example, when explaining the function of particular parts of the nuclear reactor. Within the common tier questions, candidates struggled to correctly identify genotypes and complete the Punnett square diagram with accuracy.

Questions that drew upon practical skills and understanding were answered inconsistently. Around half of candidates could successfully identify controlled variables as being kept the same. Very few candidates could rewrite a method by suggesting quantities for mass, volume and time. While some candidates could successfully complete part of a risk assessment, very few could name a suitable piece of apparatus to measure the volume of water.

Questions that assessed mathematical skills were generally well attempted. Interpretation of a distance-time graph was very well answered, with candidates calculating mean speed with some degree of success. Candidates lost marks for incorrect rounding of data. Basic manipulation of data was achieved by a number of candidates, with some candidates using more complex equations to calculate the energy content of crisps. Very few candidates could successfully calculate the half-life of a radioisotope.

Assessment objective AO1 was generally a challenge for candidates across the examination paper, unless the question provided choices of information to recall. Many candidates could recall the defence of the body against microorganisms, when using the key words provided. However, only a few candidates knew that the mass of a catalyst remains the same at the end of a reaction. Recalling information regarding the nuclear reactor was weaker still. A few

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candidates demonstrated some understanding of the role of the control rods. Some candidates could recall the regions of the electromagnetic spectrum used in external radiotherapy.

Questions that required evaluation or a conclusion (an AO3 skill) were attempted by a significant number of candidates, especially where the question involved calculation/s to prove or disprove a given statement. Forming a conclusion from graphical data was the most successful skill that was demonstrated by candidates. Candidates found it difficult to evaluate the range of data between the experimental groups in question 8. They did not appear to understand this key term.

Comments on individual questions/sections

Q.1 The question was accessed by the vast majority of candidates. Candidates were most confident in interpreting data from the distance-time graph. The majority of candidates could correctly calculate mean speed, though a number of candidates lost marks for incorrect rounding of data. Candidates should be encouraged to always show their workings.

Q.2 Part (a) was answered successfully with candidates correctly recalling their knowledge, using the key words provided. Part (b) was attempted by most candidates. Data needs to be correctly extracted and stated within the candidates answer. A number of candidates were successful in identifying where doubling of data occurred.

Q.3 Overall, the question was attempted by most candidates. Some candidates could successfully complete a risk assessment, but very few could name basic apparatus. There were some successes with the manipulation of data. Around half of candidates could name at least one diet issue and associated health problem.

Q.4 Many candidates understood the role of the catalyst. Improving the method was poor. Very few candidates could rewrite a method by suggesting quantities for mass, volume and time. Candidates could form a conclusion from the graphical data of the three catalysts.

Q.5 Candidates demonstrated weak overall understanding of the nuclear fission reactor. There was very poor understanding of the role of the moderator. A few candidates gave a basic description of the role of control rods.

Q.6 Overall, candidates demonstrated a basic idea of radiotherapy. They understood the role of radiotherapy in killing cancer cells. Some candidates could recall the regions of the electromagnetic spectrum used in external radiotherapy. The majority of candidates could correctly identify radioisotopes from data provided. Candidates require more practice with regard to simple half-life calculations.

Q.7 The common tier questions were challenging, though there were a number of areas where candidates scored well. For example, candidates demonstrated a good understanding of complimentary base pairing. However, identifying genotypes was highly variable, with a number of candidates stating only one allele within a genotype. Candidates should be encouraged to complete Punnett square diagrams since they can gain marks for errors carried forward.

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Q.8 Most candidates successfully extracted data from the graph and calculated a mean score. Candidates demonstrated a poor understanding of range, mistaking this for mean scores on reaction times. Many candidates could describe the long-term effects of alcohol.

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UNIT 2 HIGHER TIER

Overview of the Unit

The examination paper assessed candidates through a series of questions across a range of topics, comparable with previous examinations in this qualification. The questions tested candidates' recall of knowledge, (40%), application and understanding of knowledge, (40%), and analysis, interpretation and evaluation of information (20%). This paper examined topics from the three science disciplines offered in the Science suite, in line with the specification for this qualification.

The examination paper was of comparable demand with those of the previous series; the assessment differentiated across a range of candidates. The questions progressed in their degree of difficulty and challenge; the most challenging questions generally occurred towards the end of the examination. The common tier questions, at the start of the examination, generally proved more accessible to candidates and most candidates scored well within this point of the examination paper.

Recall questions were more successfully answered within the first few questions of the paper, where scientific knowledge was less challenging for higher tier candidates. Further into the examination paper, where recall required scientific explanation or more complex interpretation, candidates struggled to recall and then correctly apply their knowledge and understanding. For example, when recalling the role of white blood cells within the immune response or explaining the concept of thermal runaway.

Questions that assessed mathematical skills were well attempted by most candidates. Most candidates scored well when calculating percentage change in relation to white blood cell count. Fewer candidates understood the concept of range and incorrectly used mean scores instead of data ranges. Interpretation and calculations based on the velocity-time graph were attempted by most candidates. However, candidates need to apply equations accurately and ensure that they round numerical answers correctly. Including workings for calculations also provides an opportunity to gain credit. Descriptions of graphical trends were more successful and candidates were much more confident in demonstrating this skill.

Assessment objective AO1 was a challenge for candidates across the examination paper. Few candidates could describe the role of the moderator and control rods within the nuclear reactor. Although most candidates attempted to answer recall/understanding questions across the examination paper, candidates needed much more accurate scientific understanding of basic higher tier concepts, such as the immune response and internal/external radiotherapy.

Questions that required evaluation of a conclusion (an AO3 skill) were attempted by a significant number of candidates, especially where the question involved mathematical interpretation to prove or disprove a given statement. This style of AO3 question was more correctly answered than questions that required improvement to a stated experimental method (also an AO3 skill).

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Comments on individual questions/sections

Q.1 Candidates were confident in relating given data to complimentary base pairing. Most candidates completed the Punnett square diagram, though a minority of candidates could not identify the parental genotypes. Candidates should attempt to determine parental genotypes as they will be credited for any errors carried forward into the Punnett square diagram.

Q.2 Candidates were successful in extrapolating graphical data and calculating a mean score. They had limited understanding of data ranges, with many candidates incorrectly answering the question using mean scores. Candidates could suggest limited ways of improving the experimental design, mainly focusing on using more people within the experimental groups. Factors such as a wider age range or geographical area were less considered.

Q.3 Most candidates attempted all parts of this question. Candidates were more accurate in their description of the action of platelets, compared to the action of white blood cells. Most candidates scored well when calculating percentage change. Including workings and ensuring that final answers are rounded correctly will support improved candidate performance.

Q.4 Generally, the recall aspects of this question were answered poorly. Some candidates could recall the meaning of the term catalyst. Fewer candidates could describe the importance of catalysts in industry. Candidates were much more successful in using the graphical data to evaluate the effectiveness of the catalysts.

Q.5 Many candidates attempted this question, demonstrating confidence in their mathematical reasoning. Most candidates gained some credit for calculating bond energies, though few correctly calculated the total bond energy. Many candidates calculated the overall energy change for the reaction, with a number of candidates carrying an error forward from part (a). However, few candidates could explain why the reaction is exothermic. Understanding of thermal runaway was generally poor.

Q.6 Many candidates attempted this QER question, with an understanding that both types of radiotherapy have the shared purpose of killing cancerous tumours. Some candidates could identify the type of radiation used in each type of radiotherapy. Fewer candidates discussed the differences in half-life, or the manner in which the radiotherapy is administered.

Q.7 Candidates were more confident in applying their understanding, than recalling knowledge. Few candidates could describe the role of the moderator and control rods within the nuclear reactor. There was much greater success in using the graph to determine half-life, giving evidence on the graph provided. Candidates would benefit from greater practice of half-life calculations, including standard form conversions.

Q.8 This question was well attempted by most candidates. Candidates should describe a velocity-time graph with greater accuracy, ensuring that they quote both velocity changes and the stated time period. The majority of candidates calculated acceleration, though many lost marks due to incorrect rounding of the final answer. Candidates should practice calculating the area of a triangle in order to determine distance travelled.

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UNIT 3 FOUNDATION TIER

Overview of the Unit

All AOs are assessed in this Unit.

Both packs tested candidates' ability to: plan, carry out experiments, make measurements and record them, analyse data, evaluate methods and data, and assess risk.

Pack A tested candidates' ability within the topics of 'Underpinning energy concepts' and 'Exercise and Fitness in humans.' Pack B tested candidates' ability within the topics of 'Underpinning energy concepts' and 'Transfer and recycling of nutrients.'

Pack B was more popular than Pack A. Candidates appeared to generally perform equally well across both packs. Candidates performance in this unit was commensurate with last year.

Candidates' ability to answer questions fully continues to improve, and many fewer candidates were leaving questions blank. It was once again obvious that some centres had not practiced assessments on this unit with their candidates.

Comments on individual questions/sections

Activity 1

Task A Planning

Some candidates are still confused by the terms independent, dependent and controlled variables.

The style of 'choose the variables from a list' allowed more candidates to correctly select the independent and dependent variables, particularly as these are generally identifiable from the introduction section. Some candidates in both packs still had problems identifying the controlled variables. Many candidates on the foundation tier selected 'the height of the stand' as a controlled variable for Pack B.

The standard of labelled diagrams appears to be dropping. Most candidates do not use a ruler and a pencil, which is disappointing. Most candidates will draw some form of diagram, but a high percentage do not draw the diagram as it is actually set up in the experiment, with frequent examples of 'floating' pieces of apparatus, particularly a tape measure/ruler in both Pack A and B. A significant proportion of candidates do not label all the pieces of apparatus.

Most candidates in both packs attempted to write a method, and the quality of candidates' SPaG has improved over time, with many candidates obviously going back over their method and correcting spelling and punctuation.

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Centres are advised to teach their candidates to write methods using a numbered list - it is much easier for candidates to check that they have started sentences with a capital letter and finished them with a full stop. Numbered lists also make it much easier for candidates to check their methods for errors or omissions.

Candidates do need to be able to spell key scientific words correctly. These are generally words that can be found in the introduction section to the activity. Centres should remind their candidates before the examination to check their spelling of the key words.

Centres do need to remind their candidates to check that their methods include repeats and the correct range/interval for the experiment, as requested in the task instructions.

Candidates continue to find constructing a risk assessment difficult. Please ensure that candidates know that:

- Hazards require the specific nature of the hazard to be stated (e.g. the end of the clamp is pointed or could fall)
- Risks must have an injury and an action (e.g. the end of the clamp could cause an eye injury or bruise the skin if it falls whilst bouncing the mass-spring system). In both of these experiments, as the hazards are minimal and the risks negligible, it was perfectly acceptable to write 'there are no hazards' / 'no specific risks' / 'no specific control measures'. Any risks identified must be related to the hazard.
- Control measures need to be appropriate for the stated hazard and risk, (e.g. wearing goggles to prevent eye injury from the pointed end of a clamp, should it fall).

Task B Collecting and recording

This section continues to be high scoring.

Many candidates omitted to write the resolution of their tape measure (Pack A) or stopwatch (Pack B) – just leaving them blank, whilst other candidates seemed confused by having one space to write the resolution and another, next to it, for the unit. Some candidates wrote different units in both spaces.

Most candidates attempting Pack A managed to measure and record the distance travelled by the pellet six times, and identified the maximum and minimum values. The vast majority of candidates attempting Pack B managed to take repeated readings across the stated mass range, with some taking care to ensure that their repeats were similar to each other, or identified anomalies. A number of candidates took repeated measurements that were wildly different from each other. Examiners were looking for a degree of similarity within the repeats.

Some candidates still need practice with listing all the units on tables, and making sure that they do not include the units in the body of the table. A significant minority of candidates are still struggling to use the correct (consistent) number of decimal places on columns of numbers, particularly when calculating means.

A significant minority of tables were very scrappy. Centres need to practice this with their candidates. Please encourage candidates to use the space to record their rough data and then produce a good quality 'best' table in the space at the bottom of the page. Many candidates lost marks because they did not label the columns of their best table correctly.

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Task C – Analysis

The most common difficulty in this task involved plotting the graphs. Many candidates in Pack A failed to realise the needed to convert their mean distances to metres, but an error carried forward was applied in these cases.

Candidates do need to be more critical of their data and check for obvious anomalies. These should be identified and removed from any mean calculations. Candidates should practice calculating mean values of repeated measurements and expressing them to the same number of decimal points as the (primary) data. This was an issue for a significant minority of candidates from both Pack A and Pack B.

Candidates still find it very challenging to produce accurate graphs/charts. Common mistakes involve non-linear, and inappropriate scales, inaccurate point plotting, and poor best-fit line drawing (if appropriate). Candidates in Pack A particularly found drawing a best fit line a challenge, with many candidates merely joining the points together with a straight line. The graph in Pack B proved to be more successful, although many candidates failed to plot a point at (0,0), despite this being a point in the table. Candidates should be reminded that the scale should be over half of the available plottable area. Centres should continue to give candidates lots of practice on this skill, and give plenty of opportunities to design and plot simple graphs from data.

Many candidates were able to state the pattern in their results, but a significant number wrote a statement that did not contain both the independent and the dependent variable. Both packs required candidates to extract information from their graph. Most could determine a value from their line of best fit but in some cases, candidates were hampered by thickly drawn best-fit lines that did not allow them to obtain the correct tolerance, or did not draw a vertical line up to their line and were also out of tolerance.

A significant majority of candidates on both packs were able to perform the calculations given, although a large number of candidates sitting Pack B did not know the unit of speed. A minority of candidates in Pack A did not plot and label line B expected for a cardboard pellet.

Task D – Evaluation

As still continues to be the pattern, candidates find the evaluation component of any task hard. When asked about the suitability of the experiment, some candidates still write about their own performance during the experiment, or state that the method was easy to follow. Candidates need to either examine the pattern in the data, or give a comment about the uncertainty of the data.

Candidates still need to be more aware of the meaning of repeatability, although this was phrased differently on both packs. Pack B asked candidates to explain why the measurement of time was repeated twice and a significant minority continue to give an answer based on reliability. Many candidates do not subsequently refer to using repeated values to calculate a mean value. Pack A asked candidates why the travel distance was measured six times and most candidates did not give an explanation based on uncertainty.

Candidates are better at spotting inaccuracies and suggesting improvements, although extensions to an investigation are not considered to be improvements.

Many candidates found explaining the suggestion/agreement question at the end of this section for both packs a challenge. Candidates should take more time reading this question and thinking about a suitable response, before writing their final answer. There is no credit

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for a simple Yes/No answer, an explanation is needed, and in both cases the use of data, or patterns in the graph, was expected.

Activity 2

Task A – Analysis

A minority of candidates on Pack B did not circle the anomalous value in the table, suggesting that they did not read the questions carefully. Most attempted to calculate the missing mean values, but frequently did not remove the anomaly, or did not round their answers correctly. This is a skill that centres can easily practice with their candidates.

Most candidates doing Pack A were able to identify the missing values from the table. In Pack B, most candidates were able to draw some form of graph, and once again, very few plotted bar charts. However, the scale needed for Pack B proved to be a considerable issue, with a significant proportion of candidates using a scale that went up in threes, which subsequently caused many plotting errors. Many candidates struggled to draw a suitable smooth best fit line, with many candidates drawing wispy, bifurcated lines, or completely missing the obvious best-fit. A significant number of Foundation candidates are incorrectly drawing best-fit lines as join-the-dots.

The bar-chart with error bars needed for Pack A was done well, although a minority of candidates struggled to plot the error bars accurately. In Pack B, most candidates were able to state the relationship between the two variables plotted on the graph, and it is good practice to encourage candidates to use the names of the two variables, inevitably given in the question, to frame their answer. Most candidates were able to use their graph in Pack B to determine a value for the stated x-axis variable. Most candidates doing Pack A were able to compare the data for males and females correctly, and were able to successfully calculate the uncertainty.

Candidates are generally quite good at extracting information from text / tables / graphs / diagrams, and most candidates on both packs gained some credit for question 2. Many candidates scored full marks for this question in both packs.

Task B – Evaluation

As has always been the case, candidates find evaluations very challenging. For both packs, when asked about the suitability of the experiment, many candidates write about the method being easy to follow. Candidates need to either examine the pattern in the data, or give a comment about the uncertainty of the data.

Candidates found it quite hard to explain why the results were repeated for Pack B. Most candidates that gained credit, mentioned the need to calculate a mean value. A small minority wrote about spotting anomalies or reducing uncertainty.

Candidates doing Pack A struggled to give a suitable reason for why five males and five females were used in the experiment, with many giving answers associated with accuracy. Most candidates really struggled to suggest why the test was conducted on the back of each test subject's hand in Pack A (with only a minority giving an answer associated with validity or how sensitivity varies across the body), and they struggled to express themselves as to why the subjects were blindfolded in in Pack B. This proved to be a good discriminator question for the higher grades.

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Many candidates were able to suggest a suitable improvement to the experiment, with many candidates correctly suggesting a higher number of repeats. Please note, extensions of the experiment are not considered to be improvements.

Only a minority of candidates gained any credit for the suggestion/agreement question at the end of Pack B, as they did not use data to give a reason for their answer. Candidates doing Pack A were generally able to state that age makes a difference to skin sensitivity.

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APPLIED SCIENCE (SINGLE AWARD)

GCSE

Summer 2026

UNIT 3 HIGHER TIER

Overview of the Unit

All AOs are assessed in this unit.

Both packs tested candidates' ability to: plan, carry out experiments, make measurements and record them, analyse data, evaluate methods and data, and to assess risk.

Pack A tested candidates' ability within the topics of 'underpinning energy concepts' and 'exercise and fitness in humans.' Pack B tested candidates' ability within the topics of 'underpinning energy concepts' and 'transfer and recycling of nutrients.'

Pack B was much more popular than Pack A. Candidates appeared to generally perform equally well across both packs. Candidates performance in this unit was commensurate with last year.

Candidates' ability to answer questions fully continues to improve, and many fewer candidates were leaving questions blank. It was once again obvious that some centres had not practiced assessments on this unit with their candidates.

Comments on individual questions/sections

Activity 1

Task A Planning

Some candidates are still confused by the terms independent, dependent and controlled variables. As with previous years, a significant minority of Higher Tier candidates neglected to state any of the variables. Centres should point out to candidates that most of these are generally identifiable from the introduction section. Some candidates in both packs still had problems identifying the controlled variables.

The standard of labelled diagrams appears to be dropping. Most candidates do not use a ruler and a pencil, which is disappointing. Most candidates will draw some form of diagram, but a high percentage do not draw the diagram as it is actually set up in the experiment, with frequent examples of 'floating' pieces of apparatus, particularly a tape measure/ruler in both Pack A and B. A significant proportion of candidates do not label all the pieces of apparatus.

Most candidates in both packs attempted to write a method, and the quality of candidates' candidates' SPaG has improved over time, with many candidates obviously going back over their method and correcting spelling and punctuation. Centres are advised to teach their candidates to write methods using a numbered list - it is much easier for candidates to check that they have started sentences with a capital letter, and finished them with a full stop. Numbered lists also make it much easier for candidates to check their methods for errors or omissions. Candidates do need to be able to spell key scientific words correctly. These are generally words that can be found in the introduction section to the activity. Centres should remind their candidates before the examination to check their spelling of the key words.

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Centres do need to remind their candidates to check that their methods include repeats and the correct range/interval for the experiment, as requested in the task instructions.

Candidates continue to find constructing a risk assessment difficult. Please ensure that candidates know that:

- Hazards require the specific nature of the hazard to be stated (e.g. the end of the clamp is pointed or could fall).
- Risks must have an injury and an action (e.g. the end of the clamp could cause an eye injury or bruise the skin if it falls whilst bouncing the mass-spring system). In both of these experiments, as the hazards are minimal and the risks negligible, it was perfectly acceptable to write 'there are no hazards' / 'no specific risks' / 'no specific control measures'. Any risks identified must be related to the hazard.
- Control measures need to appropriate for the stated hazard and risk, (e.g. wearing goggles to prevent eye injury from the pointed end of a clamp, should it fall).

Task B Collecting and recording

This section continues to be high scoring. Many candidates omitted to write the resolution of their tape measure (Pack A) or stopwatch (Pack B) – just leaving them blank, whilst other candidates seemed confused by having one space to write the resolution and another, next to it, for the unit. Some candidates wrote different units in both spaces.

Most candidates attempting Pack A managed to measure and record the distance travelled by the pellet six times and identified the maximum and minimum values. The vast majority of candidates attempting Pack B managed to take repeated readings across the stated mass range, with some taking care to ensure that their repeats were similar to each other, or identified anomalies. A number of candidates took repeated measurements that were wildly different from each other. Examiners were looking for a degree of similarity within the repeats.

Some candidates still need practice with listing all the units on tables, and making sure that they do not include the units in the body of the table. A significant minority of candidates are still struggling to use the correct (consistent) number of decimal places on columns of numbers, particularly when calculating means.

A significant minority of tables were very scrappy. Centres need to practice this with their candidates. Please encourage candidates to use the space to record their rough data and then produce a good quality 'best' table in the space at the bottom of the page. Many candidates lost marks because they did not label the columns of their best table correctly.

Task C – Analysis

The most common difficulty in this task involved plotting the graphs. Many candidates in Pack A failed to realise the need to convert their mean distances to metres, but an error carried forward was applied in these cases.

Candidates do need to be more critical of their data and check for obvious anomalies. These should be identified and removed from any mean calculations. Candidates should practice calculating mean values of repeated measurements and expressing them to the same number of decimal points as the (primary) data. This was an issue for a significant minority of candidates from both Pack A and Pack B.

Candidates still find it very challenging to produce accurate graphs/charts. Common mistakes involve non-linear, and inappropriate scales, inaccurate point plotting, and poor best-fit line drawing (if appropriate). Candidates in Pack A particularly found drawing a best

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fit line a challenge, with many candidates merely joining the points together with a straight line. The graph in Pack B proved to be more successful, although many candidates failed to plot a point at (0,0), despite this being a point in the table. Candidates should be reminded that the scale should be over half of the available plottable area. Centres should continue to give candidates lots of practice on this skill and give plenty of opportunities to design and plot simple graphs from data. A significant minority of Higher tier candidates did not label the axes correctly, frequently omitting the word 'mean' from the label and omitting the units (on both axes). A small minority of candidates on Pack B plotted 10T rather than T.

Many candidates were able to state the pattern in their results but a significant number wrote a statement that did not contain both the independent and the dependent variable.

Both packs required candidates to extract information from their graph. Most could determine a value from their line of best fit but in some cases candidates were hampered by thickly drawn best-fit lines that did not allow them to obtain the correct tolerance, or did not draw a vertical line up to their line and were also out of tolerance.

A significant majority of candidates on both packs were able to perform the calculations given, although a large number of candidates sitting Pack B did not know the unit of speed, or gave it as mph or mps, and a number of candidates doing Pack A did not include the square number when calculating the kinetic energy of the pellet. A minority of candidates in Pack A did not plot and label the line B expected for a cardboard pellet.

Task D – Evaluation

As still continues to be the pattern, candidates find the evaluation component of any task hard. When asked about the suitability of the experiment, some candidates still write about their own performance during the experiment, or state that the method was easy to follow. Candidates need to either examine the pattern in the data, or give a comment about the uncertainty of the data.

Candidates still need to be more aware of the meaning of repeatability, although this was phrased differently on both packs. Pack B asked candidates to explain why the measurement of time was repeated twice and a significant minority continue to give an answer based on reliability. Many candidates do not subsequently refer to using repeated values to calculate a mean value. Pack A asked candidates why the travel distance was measured six times and most candidates did not give an explanation based on uncertainty.

Candidates are better at spotting inaccuracies and suggesting improvements, although extensions to an investigation are not considered to be improvements.

Many candidates found explaining the suggestion/agreement question at the end of this section for both packs a challenge. Candidates should take more time reading this question, thinking about a suitable response before writing their final answer. There is no credit for a simple Yes/No answer, an explanation is needed, and in both cases the use of data, or patterns in the graph, was expected.

Activity 2

Task A – Analysis

A minority of candidates on Pack B did not circle the anomalous value in the table, suggesting that they did not read the questions carefully. Most attempted to calculate the missing mean values, but frequently did not remove the anomaly, or did not round their answers correctly.

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Most candidates doing Pack A were able to identify the missing values from the table. In Pack B, most candidates were able to draw some form of graph, and once again, very few plotted bar charts. However, the scale needed for Pack B proved to be a considerable issue, with a significant proportion of candidates using a scale that went up in threes, which subsequently caused many plotting errors. Many candidates struggled to draw a suitable smooth best fit line, with many candidates drawing wispy, bifurcated lines, or completely missing the obvious best-fit. A significant number of Higher candidates are incorrectly drawing best-fit lines as join-the-dots. A significant number of Higher tier candidates failed to state that the y-axis label was the mean value. The bar-chart with error bars needed for Pack A was done quite well, although a minority of candidates struggled to plot the error bars accurately.

In Pack B, most candidates were able to state the relationship between the two variables plotted on the graph, and it is good practice to encourage candidates to use the names of the two variables, inevitably given in the question, to frame their answer. Most candidates were able to use their graph in Pack B to determine a value for the stated x-axis variable. Most candidates doing Pack A were able to compare the data for males and females correctly, but some struggled to calculate the percentage uncertainty.

Candidates are generally quite good at extracting information from text / tables / graphs / diagrams, and most candidates on both packs gained some credit for question 2 (and 3), but many candidates struggled to give a reason involving evolution or adaptation for Pack A question 3 (b).

Task B – Evaluation

As has always been the case, candidates find evaluations very challenging. For both packs, when asked about the suitability of the experiment, many candidates write about the method being easy to follow. Candidates need to either examine the pattern in the data or give a comment about the uncertainty of the data.

Candidates found it quite hard to explain why the results were repeated for Pack B. Most candidates that gained credit mentioned the need to calculate a mean value. A small minority wrote about spotting anomalies or reducing uncertainty.

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Many candidates were able to suggest a suitable improvement to the experiment, with many candidates correctly suggesting a higher number of repeats. Please note, extensions of the experiment are not considered to be improvements.

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APPLIED SCIENCE (SINGLE AWARD)

GCSE

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UNIT 4 PRACTICAL ASSESSMENT

Overview of the Unit

In this unit candidates are assessed on their practical skills including, forming hypotheses, recognising and preventing hazards and risks, recording and presenting data, understanding the variables that are involved in experiments, evaluating the success of the experiment and planning improvements. There was evidence that candidates are familiar with practical work and the analysis of practical results.

The tasks all proved to be accessible for most candidates who usually attempted all sections. As in previous series, candidates were largely successful in making hypotheses and in identifying variables. Notable areas that candidates found challenging were scaling graphs and lines of best fit. Using data to justify evaluations was also weak.

Comments on individual questions/sections

Section A – Hypotheses and risk assessments

Most candidates were able to make a sensible hypothesis in each of the 9 tasks, which linked the independent and dependent variables. Most candidates can make a reasonable hypothesis, identifying the expected relationship between the independent variable and dependent variable. However, some responses remained too vague to credit. A common error was failing to state how the dependent variable would change.

In producing risk assessments, the most successful candidates linked the risk with a particular action in the method. Weaker candidates identified risks that were not relevant to the method such as stating that hydrogel could be harmful if swallowed. In other cases, candidates identified a hazard but did not include a clear action such as touching or pouring.

Tables

Most candidates structured tables appropriately, with more consistent use of appropriate headings and units, and fewer errors such as abbreviated headings or units placed in the body of the table than in previous series. Weaker candidates made errors in calculating means correctly or rounding accurately. A small number of candidates failed to determine means.

Section B - Controlled Variables

Each of the 9 tasks included a section on variables. Candidates were usually able to identify the independent and dependent variables, and most were able to state the range of these variables when required. When describing controlled variables, candidates often did not provide both the value of the variable and how it was controlled. This was particularly evident where no numerical value was required and candidates needed to explain that the variable was kept consistent for each result. Weaker candidates selected variables that did not require control, such as timing in the hydrogel task, use of the same stopwatch in the glucose task, or the same person dropping the parachute. The use of incorrect terms such

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as ‘amount’ in place of volume or concentration was still evident in the work of many candidates.

Graphs

Graphs were drawn more accurately than in previous years, with many candidates labelling axes and plotting points appropriately, however, several common errors remained. These include axes plotted the wrong way around, starting values on scales not given for both axes, and the use of awkward scales, for example intervals of 3. Lines of best fit remained a key area of difficulty. Candidates were often unsure whether to use dot-to-dot plotting or a line/curve of best fit and frequently drew lines that did not leave an even spread of results on either side.

In all tasks candidates are often asked to identify the relationship between the plotted variables and this was usually done well. Whilst most candidates were able to describe a relationship between the independent and dependent variables in the graph, a description of the shape of the graph, where it was required for the second mark, was poor. Many candidates used incorrect terminology, for example describing relationships as proportional when they were not or stating that change occurred at a constant rate when the graph was curved.

Processing Data

Processing results was problematic in some cases, particularly in the hydrogel task when asked to calculate the increase in mass of the hydrogel from the starting mass, many candidates instead calculated the increase between consecutive results. Where candidates were asked to determine values from graphs, they were generally able to read values from the x-axis accurately, but many struggled to identify the corresponding y-values using their chosen scale. In common with previous series, calculations were often done well, however, as with mean calculations, rounding was often inaccurate, for example when rounding the mean speed in the parachutes task.

Evaluation of Results

Questions directly assessing understanding of repeatability and reproducibility were answered well however when judging repeatability, imprecise language often limited candidates’ access to marks. Many referred to “results” rather than “repeats”. Even where candidates used the term repeats correctly, few used data to support their judgement. Tasks requiring assessment of repeatability at a specific value of the independent variable were generally answered more successfully, for example in the parachute task where reference to “results” was acceptable.

The use of data to support judgements of repeatability was generally weak. Rather than describing variation within sets of repeats or comparing each set with the mean, candidates often quoted one or two individual values. For reproducibility, candidates usually recognised the need to compare with other groups, but weaker responses suggested more repeats or asked other groups to repeat the experiment without explicitly comparing results or identifying whether patterns were similar.

Inaccuracies and Improvements

The quality of responses varied significantly**.** Some candidates were able to identify specific inaccuracies in the method and suggest a suitable linked improvement. However, many candidates gave generic improvements, such as “take more repeats” or “take more care when obtaining results”, rather than linking the improvement directly to the identified issue.

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Others suggested inaccuracies that would not have affected the results, for example better controlling the volume of water in the hydrogel task, despite the water always being in excess.

Planning

Planning questions were generally answered more successfully than in previous years, and candidates often identified the dependent variable correctly. However, the range of independent variable values was sometimes insufficient, with some candidates providing only two or three values rather than the required four. Common errors in identifying controlled variables included stating only one variable instead of two, repeating the independent variable rather than identifying a suitable controlled variable, or selecting an irrelevant variable.

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