



Within Science at Montgomery, students undertake a two-year Key Stage 3 (Years 7 and 8), followed by a three-year Key Stage 4 program of study (Years 9, 10 and 11). AQA GCSE science specifications can be found on the school student portal in the science curriculum folder or by using the following link:

<https://www.aqa.org.uk/subjects/science/gcse>

Key Stage 4 Science

In years 9, 10 and 11, our students are studying AQA science specifications from 2016 for first examination in 2018. Within this specification, students will either study the separate sciences, biology, chemistry and physics, leading to three GCSE qualifications (one in each area) or on the combined science trilogy program which is worth two GCSE qualifications. In both combined and separate science, practical skills are assessed through a series of required practicals which will then be tested within the terminal exams in year 11.

Specification at a glance

Biology – cell biology, organisation, infection and response, bioenergetics, homeostasis and response, inheritance, variation and evolution and ecology.

Chemistry – Atomic structure and the periodic table, bonding, structure and the properties of matter, quantitative chemistry, chemical changes, the rate and extent of chemical change, organic chemistry, chemical analysis, chemistry of the atmosphere and using resources.

Physics – Energy, electricity, particle model of matter, atomic structure, forces, waves, magnetism and electromagnetism.

How will it be assessed?

In terms of exams, the combined trilogy science students will do six 1 hour 15 minute exams (2 x biology, 2 x chemistry and 2 x physics). The separate science students will do six 1 hour 45 minute papers (2 x biology, 2 x chemistry and 2 x physics) which covers more content. The new specification also has an increased maths content across the combined and separate sciences, with 10% of the marks in biology, 20% in chemistry and 30% in physics exams being attributed to mathematical application. Grades awarded will be on the 1-9 numerical levels as opposed to the traditional but now extinct GCSE letter grades.

AQA Combined Science Trilogy (two GCSE grades)

Biology Paper 1
What's assessed Biology topics 1–4: Cell Biology; Organisation; Infection and response; and Bioenergetics.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 15 minutes• Foundation and Higher Tier• 70 marks• 16.7% of GCSE
Questions Multiple choice, structured, closed short answer, and open response.

Biology Paper 2
What's assessed Biology topics 5–7: Homeostasis and response; Inheritance, variation and evolution; and Ecology.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 15 minutes• Foundation and Higher Tier• 70 marks• 16.7% of GCSE
Questions Multiple choice, structured, closed short answer, and open response.

Chemistry Paper 1
What's assessed Chemistry topics 8–12: Atomic structure and the periodic table; Bonding, structure, and the properties of matter; Quantitative chemistry; Chemical changes; and Energy changes.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 15 minutes• Foundation and Higher Tier• 70 marks• 16.7% of GCSE
Questions Multiple choice, structured, closed short answer, and open response.

Chemistry Paper 2

What's assessed

Chemistry topics 13–17: The rate and extent of chemical change; Organic chemistry; Chemical analysis; Chemistry of the atmosphere; and Using resources.

How it's assessed

- Written exam: 1 hour 15 minutes
- Foundation and Higher Tier
- 70 marks
- 16.7% of GCSE

Questions

Multiple choice, structured, closed short answer, and open response.

Physics Paper 1

What's assessed

Physics topics 18–21: Energy; Electricity; Particle model of matter; and Atomic structure.

How it's assessed

- Written exam: 1 hour 15 minutes
- Foundation and Higher Tier
- 70 marks
- 16.7% of GCSE

Questions

Multiple choice, structured, closed short answer, and open response.

Physics Paper 2

What's assessed

Physics topics 22–24: Forces; Waves; and Magnetism and electromagnetism

How it's assessed

- Written exam: 1 hour 15 minutes
- Foundation and Higher Tier
- 70 marks
- 16.7% of GCSE

Questions

Multiple choice, structured, closed short answer, and open response.

Biology Separate Science

Paper 1
What's assessed Topics 1–4: Cell biology; Organisation; Infection and response; and Bioenergetics.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Paper 2
What's assessed Topics 5–7: Homeostasis and response; Inheritance, variation and evolution; and Ecology.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Chemistry Separate Science

Paper 1:
What's assessed Topics 1–5: Atomic structure and the periodic table; Bonding, structure, and the properties of matter; Quantitative chemistry, Chemical changes; and Energy changes.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Paper 2:
What's assessed Topics 6–10: The rate and extent of chemical change; Organic chemistry; Chemical analysis, Chemistry of the atmosphere; and Using resources.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Physics Separate Science

Paper 1:
What's assessed Topics 1-4: Energy; Electricity; Particle model of matter; and Atomic structure.
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Paper 2:
What's assessed Topics 5-8: Forces; Waves; Magnetism and electromagnetism; and Space physics. Questions in paper 2 may draw on an understanding of energy changes and transfers due to heating, mechanical and electrical work and the concept of energy conservation from Energy (page 17) and Electricity (page 22).
How it's assessed <ul style="list-style-type: none">• Written exam: 1 hour 45 minutes• Foundation and Higher Tier• 100 marks• 50% of GCSE
Questions <ul style="list-style-type: none">• Multiple choice, structured, closed short answer and open response.

Support for Key Stage 4 students

Academic Support Tutorials: Topic specific and focused intervention

Subject	Day	Teacher	Room	Time
Physics	Thursday	Mr Woodruff	S2	3-3.45pm
Chemistry		Dr Hutchinson	S6	3-3.45pm
Biology		Mr Mistry	S7	3-3.45pm

24/7 Teacher Access – any question, any topic [all teachers can also be contacted by email]

Targets to meet and exceed Minimum Target Grade:

1. Make sure at least 4 hours of Science study is completed each week outside the classroom
2. Ensure all next steps in your Science book are actioned.
3. Annotate/correct all mistakes on mock exams using the AQA mark schemes
4. Ensure that all homework is completed on time 100%
5. Make a revision tool for each topic using: your book, the specification, and the revision guide that runs alongside the course and has been provided for you. These could be mind-maps, spider diagrams, posters or flashcards.
6. Practice applying knowledge to past questions – use the student drive and past papers available.
7. Attend support tutorials for exam-question specific help and a review of the content
8. Speak to your teacher about personalised action planning if you are struggling to organise your work and revision.
9. Engage with Seneca – a free online learning program.

Help parents can offer:

1. Help generate a revision timetable for study at home that the student can stick to (with PS4/XBOX, Facebook and TV-free times for study!)
2. Help to ensure that the student's work is well organised with robust notes and revision tools.
3. Test the students on their learning of model answers and definitions
4. Help to ensure that the student attends the appropriate support tutorials.
5. Help to ensure that students are completing a range of past paper questions and engaging with the mark schemes (available on the student drive and on the AQA website)
6. Help to ensure that students are accessing and using their specification.
7. Monitor Seneca completion – ask your son/daughter to show you how it works.

Another strategy that could help your son or daughter's progress in Science is to acquire the Collins AQA workbooks that accompany the revision guides we have already supplied. These can be purchased as level 8/9 and level 5+ booster workbooks and contain problems linked directly to the AQA specification.

https://www.amazon.co.uk/s/ref=nb_sb_noss?url=search-alias%3Dstripbooks&field-keywords=Collins+AQA+GCSE+Science+revision+guides

Exam Schedule 2018/2019

Thinking ahead, attached below are the current examination dates next summer for AQA Science. All exams are one hour 15 minutes in duration for Combined Science and one hour 45 minutes for the separate sciences. We hope that these dates allow you to plan accordingly in supporting the school and your child in achieving the best possible outcomes in Science.

Biology Paper 1 – 14th May 2019 PM

Chemistry Paper 1 – 16th May 2019 AM

Physics Paper 1 – 22nd May 2019 PM

Biology Paper 2 – 7th June 2019 PM

Chemistry Paper 2 – 12th June 2019 AM

Physics Paper 2 – 14th June 2019 PM



Useful revision websites:

<http://www.my-gcsescience.com/>

<http://www.bbc.co.uk/schools/gcsebitesize/science/aqa/>

Seneca – Science Learning Program

<https://senecalearning.com/>

Primrose Kitten Science & Maths video tutorials:

<https://www.youtube.com/channel/UCBgymal8AR4QIK2e0EfJwaA>

<https://www.primrosekitten.com/>

AQA CGP Revision Cards

https://www.cgpbooks.co.uk/Parent/books_gcse_science_aqa_revision_cards

Key Stage 3 Science

Students in Years 7 and 8 undertake an FCAT wide Key Stage 3 curriculum based on key scientific principles that will prepare students for the transition to Key Stage 4 in Year 9. This involves developing both science theory and the associated practical skills that are embedded throughout. Below is an outline of the topics to be covered:

Year 7

- Safety and practical Investigations
- Particle theory
- Cells
- Atomic Structure
- Organisation
- Energy
- Chemical Change
- Electricity

Year 8

- Bioenergetics
- Forces and motion
- Rates of reaction
- Inheritance and DNA
- Space
- Atmosphere and the Earth
- Homeostasis
- Waves
- Using Resources

How are students assessed?

Students are assessed via their practical skills, worked produced in class, participation in group and class discussions and in formal topic assessments conducted at the end of each topic.

Supportive resources

In Key Stage 3, the Collins revision guides that are available to support the learning throughout the topics targeted above can be found using the following link:

<https://collins.co.uk/collections/collins-ks3-revision>

In terms of revising for end of topic assessments, students can also use the BBC bitesize website which is really useful in covering the key learning points needed:

<https://www.bbc.com/bitesize/subjects/zng4d2p>