



The background features a light blue gradient with abstract molecular or network-like structures. These structures consist of interconnected nodes and lines in various colors including teal, orange, black, and white. Scattered throughout the background are small, solid-colored circles in shades of teal, orange, and white, some of which are larger than others, creating a sense of depth and movement.

Science
Year 10 GCSE
preparation evening



What does the exam structure look like?



General information: Exam board is AQA

Triple science

Three separate GCSEs

Biology - 8461

Chemistry - 8462

Physics - 8463

Each subject is broken down and assessed over two papers, worth 100 marks each.

Paper 1 and paper 2 are both 1 hour and 45 mins long.

Trilogy science - known as double award

Two GCSEs - 8464

Biology

Chemistry

Physics

Each subject is broken down and assessed over two papers, worth 70 marks each.

Paper 1 and paper 2 are both 1 hour 15 mins long.

What does the exam structure look like?

Assessment objectives

The exams will measure how students have achieved the following assessment objectives[†].

AO1: Demonstrate knowledge and understanding of:

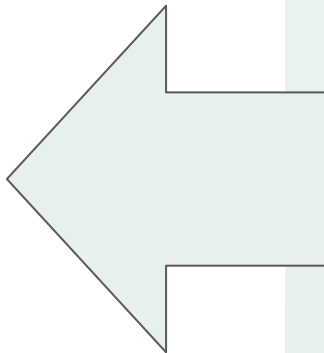
- 40% 1) scientific ideas
- 2) scientific techniques and procedures.

AO2: Apply knowledge and understanding of:

- 40% 1) scientific ideas
- 2) scientific enquiry, techniques and procedures.

AO3: Analyse information and ideas to:

- 20% 1a) interpret
- 1b) evaluate
- 2a) make judgements
- 2b) draw conclusions
- 3a) develop experimental procedures
- 3b) improve experimental procedures.

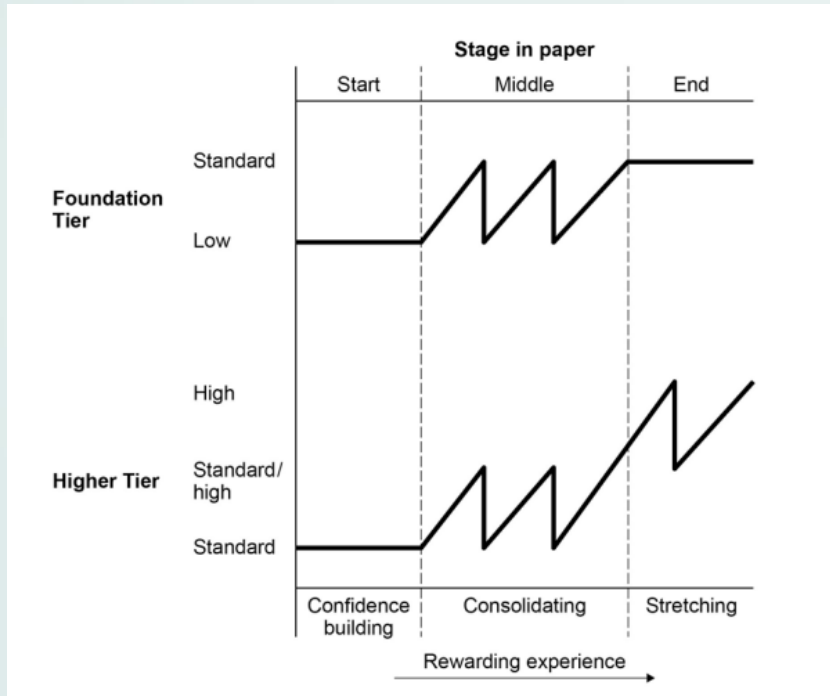


The different scientific skills are broken down across each assessment.

Teachers, alongside students and parents, make decisions about Higher and Foundation Tiers of entry by February 2026.

Foundation - grade 1-5
Higher - grade 4-9

What does the exam structure look like?



Exams are designed to increase in challenge as you move through the paper.

The first questions are there to build confidence in the process. Every questions gets harder and then the next questions starts at a more accessible level.

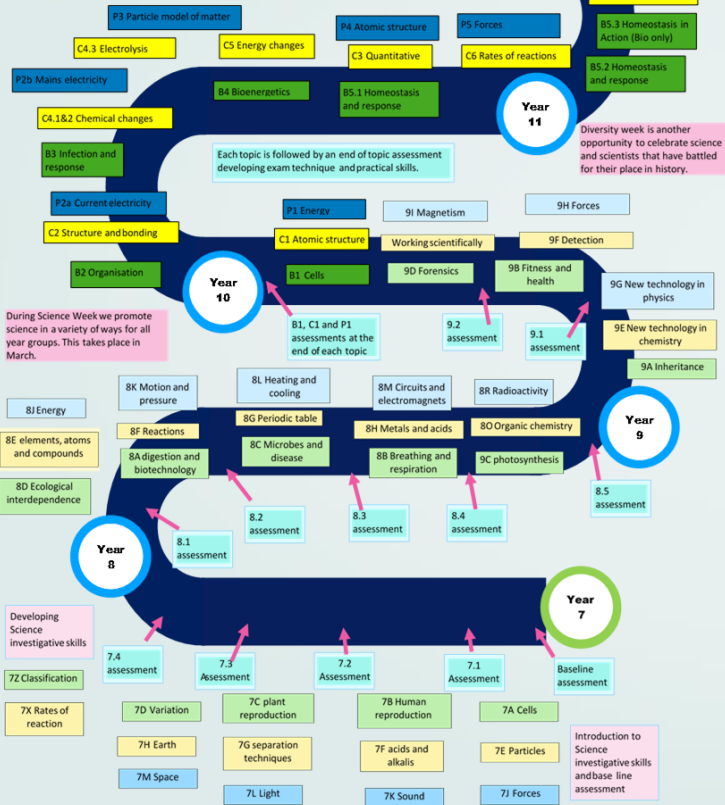
Millais School Science Department KS3 and KS4 Curriculum Road Map



KS4. We run both triple and trilogy courses. Trilogy have 10 lessons a fortnight and triple have 15.

Activities week is another opportunity to promote STEM learning with collaborative learning experiences and trips. This takes place every summer term

KS5 and beyond - Where will your science learning take you?



What assessment do students do in preparation for the exams?

Students complete regular end of topic tests and they are provided with feedback to help them move forward in their learning.

Mock exams take place in year 10, April (P1), year 11 November (P1), January (mid paper 2) and April (P2).

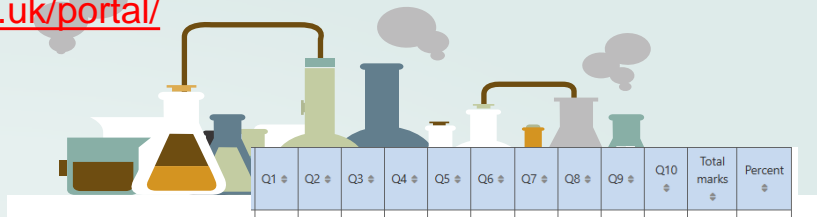
The learning journey is in the front of your child's books and shows the order of topics and assessments.



Home learning

<https://osa.exampro.co.uk/portal/>

The majority of homework is set through Exampro Onscreen. Students answer a set of GCSE exam paper questions based on each topic they are studying. Students then receive feedback enabling them to progress in their learning.

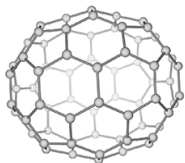


Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total marks	Percent
-	-	-	-	-	-	-	-	-	-	-	-
1	1	1	2	2	2	4	1	2	1	17	94.4
1	1	0	2	2	1	3	1	1	2	14	77.8
1	1	0	1	0	1	1	0	0	2	7	38.9
1	1	1	2	0	1	2	1	1	2	12	66.7
1	1	0	2	1	1	1	1	0	1	9	50.0
1	1	1	1	1	0	2	1	2	1	11	61.1
1	1	1	2	1	0	1	0	0	1	8	44.4
1	0	1	2	1	1	3	0	1	1	11	61.1
1	1	1	2	0	1	3	1	2	1	13	72.2
1	1	1	2	1	2	4	0	0	1	13	72.2
1	1	1	2	2	1	3	1	2	1	15	83.3
1	1	1	2	1	0	1	1	0	2	10	55.6
1	1	0	0	0	0	0	0	0	0	2	11.1
1	1	1	2	1	0	1	0	0	1	8	44.4
1	1	0	2	1	2	2	1	1	0	11	61.1
1	1	1	2	1	0	1	1	0	2	10	55.6
1	1	1	2	2	2	0	0	0	2	11	61.1
1	1	1	2	1	2	3	0	2	2	15	83.3
1	1	1	2	1	2	3	0	2	2	15	83.3
0	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-

Question 8

Figure 1 represents the molecule C₇₀

Figure 1



Molecules such as C₇₀ can be used in medicine to move drugs around the body.

Suggest **one** reason why the C₇₀ molecule is suitable for this use.

it can be absorbed easily and quickly into the body of affected areas

Teacher comment:

(CX70 is) hollow Allow (CX70) acts as a cage Allow (CX70) traps the drug (CX70 is) unreactive (CX70 is) not toxic (CX70 has) a large surface area to volume ratio

0

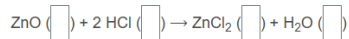
1 Mark

Question 10

This question is about acids, alkalis and bases.

A student reacted zinc oxide powder with hydrochloric acid to produce zinc chloride solution.

Complete the equation for the reaction by writing the state symbols.



Teacher comment:

ZnO (s) + HCl (aq) ? ZnCl2 (aq) + H2O (l)

0

2 Marks

Question 11

A student added copper metal to colourless silver nitrate solution.

The student observed:

- Pale grey crystals forming
- The solution turning blue

Explain how these observations show that silver is less reactive than copper.

Teacher comment:

The (grey) crystals are silver 1 The copper ions (produced) are blue Allow the copper nitrate / compound (produced) is blue 1 (Because) copper displaces silver

Teams resources – Using one note



Chemistry Resources Staff Class Notebook

+ Add section

+ Add page

C7.3 Polymers CHE...

C3 Quantitative Ch...

C9 Chemistry of ou...

C4 Chemical Chang...

C1.1 Atomic Structu...

C10.1 Earth's Resou...

C3 Quantitative Ch...

C7.2 Organic Reacti...

C4.3 Electrolysis

C6 rates of reactions

C10.2 Using Resour...

C7.1 Crude oil and f...

C1.2 Periodic Table

C5 Energy Changes

Using the Teacher ...

C2 Bonding and Str...

C8 Chemical analysis

C7.1 Lesson 1 - Hydroca...

C7.1 End of unit Test (H)

C7.1 End of unit Test (F)

C7.1 Lesson 2 – Fraction...

C7.1 Lesson 3 - Combust...

C7.1 Lesson 4 - Cracking

C7.1 Lesson 5 - Alkenes

C7.1 Lesson 4 - Cracking

Friday, November 27, 2020 10:13 AM

Last lesson:

Q: [What is the balanced equation for the combustion of propane?](#)

Last week:

Q: [What does chain length and boiling point have to do with fractional distillation?](#)

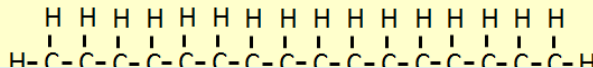
Last year:

Q: [What are limiting and excess reactants?](#)

Task 1:

What is this?

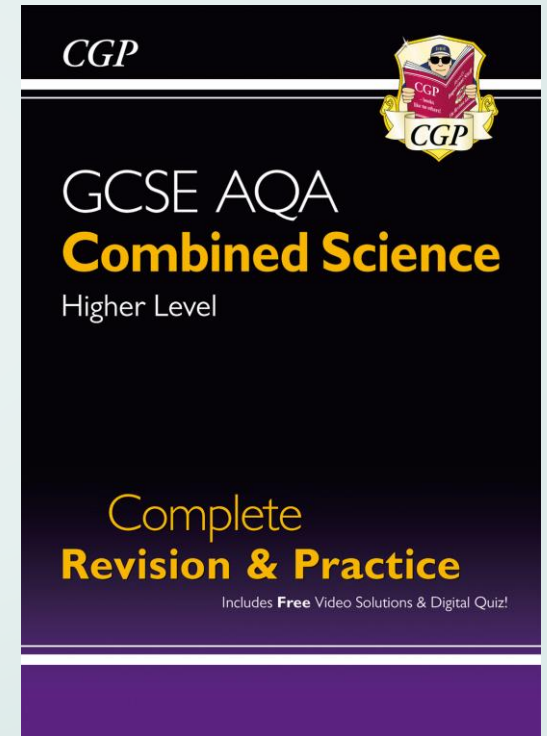
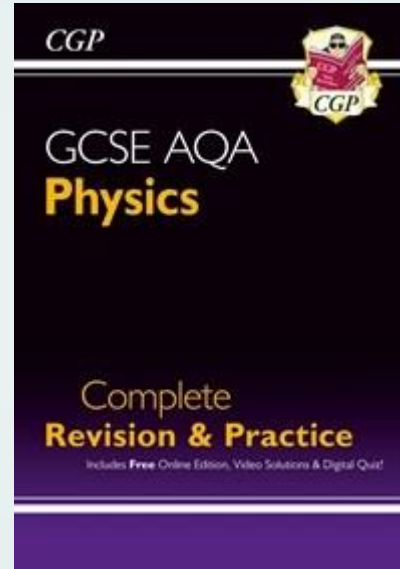
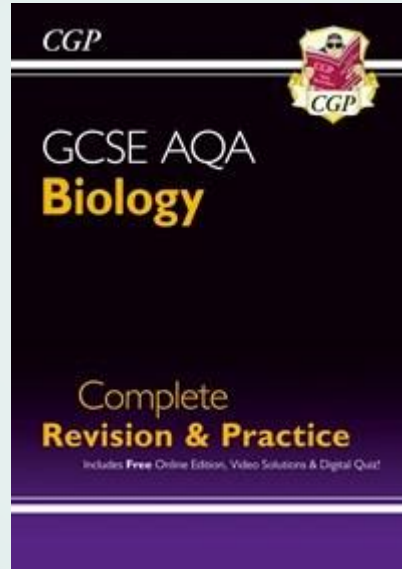
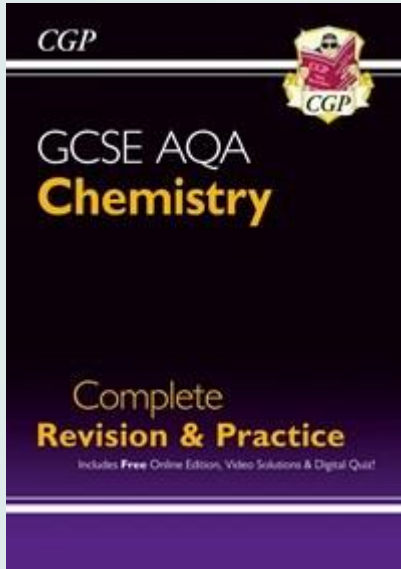
1. Draw it
2. Use as many keywords as you can to label it.



All lessons will be available on One note through the cloudbox interface on the school website or through teams.

Students can access every science lessons to support the activation of prior knowledge when revising or to support he catch up of missed work if needed.

Revision strategies



We recommend these revision guides, but any guide will be helpful as long as it is AQA and the right course.

Independent learning in science – a model for revision

PAPER 2 CHECKLIST TRILOGY FOUNDATION

Define rate of reaction using an equation (product formed or reactant used/time) using units
Draw graphs and interpret to calculate the mean rate of reaction
Describe how changing the concentration, temperature, surface area, using a catalyst and pressure in gases affect rate of reaction
Explain factors affecting rates of reaction using ideas on collision theory and activation energy
Required practical 5: Rates of reaction (method, variables, conclusion, and explanation of results)
Describe a reversible reaction
Describe the energy changes in a reversible reaction as either endothermic or exothermic
Define equilibrium
Explain how crude oil is formed over millions of years
Draw and identify the first four alkanes in the homologous series; state the general formula
Describe and explain how fractional distillation works using evaporation and condensation
Describe and explain the properties of hydrocarbons in relation to their chain length
Write and balance symbol equations for complete combustion reactions of hydrocarbon
Describe cracking as a process and why it is useful
Draw and identify the first four alkenes in the homologous series; state the general formula
Describe how you can test for the presence of alkanes and alkenes
Define a pure substance
Describe how a pure substance can be identified using the properties e.g. boiling point melting point
Define a formulation
Describe the method for chromatography to identify pure and impure substances
Required Practical 6: Chromatography (method, variables, conclusion and explanation of results)
Calculate the Rf Value
Describe how to test for; hydrogen, oxygen, carbon dioxide and chlorine, identify a positive result
Describe the earths early atmosphere and compare it to the atmosphere now
Describe how carbon dioxide levels decreased, and oxygen increased over time.
State the greenhouse gases and how they are released into the atmosphere
Describe the human activities that contribute to increasing greenhouse gases
State the potential effects of global climate change environmentally, socially, and economic
Define a carbon footprint
Explain how a carbon footprint can be reduced
Identify the atmospheric pollutants, describe how they are produced and the impact of each pollutant
Define sustainable development
Describe and give examples of finite and renewable resources
Define potable water
Describe the process for the treatment of ground water
Describe the two ways of making saltwater potable, reverse osmosis and distillation, compare them as useable methods, considering energy input and cost
Required practical 8: purifying water (method, conclusion and explanation of results)
Explain why reduce, reuse and recycling are ways of protecting finite resources
State the stages in a lifecycle assessment (LCAs)
Compare different materials or objects using life cycle assessment information.

1. Evaluate strengths and weaknesses in learning to prioritise independent study – use the checklist.
2. Use free science lessons on youtube to create mind maps and flash card for retrieval practice.
3. Complete past paper questions supplied by teachers, from the AQA website or <https://www.physicsandmathstutor.com/>

The image shows several pages of handwritten student work. At the top left, there is a diagram of a titration setup with labels like 'conical flask', 'indicator', and 'titrant'. Below it is a graph with 'Time (s)' on the x-axis and 'Mass of product' on the y-axis, showing a curve that levels off. To the right, there are notes titled 'G.C. RATE OF REACTION' with sub-points like 'rate of reaction = amount of product / time' and 'mean rate'. There are also some notes about 'changing concentration' and 'more product formed'.

The image is a YouTube video thumbnail. The title is 'Eukaryotes'. It features a man in a grey suit and red tie on the right side. On the left, there are two images: a purple-stained animal cell and a blue-stained plant cell. The text 'Animal cell' and 'Plant cells' is written below their respective images.

The image shows handwritten student notes on 'ORGANIC CHEMISTRY'. The title is written in a cloud. Below it, there are several diagrams and notes. One diagram shows a chain of carbon atoms with single bonds, labeled 'Saturated hydrocarbons'. Another diagram shows a chain with a double bond, labeled 'Unsaturated hydrocarbons'. There are also notes about 'Crude oil' and 'Fractionation'.



Home > Chemistry Revision > AQA GCSE > Topic 2 – Bonding, Structure, and The Properties of Matter

Topic 2 – Bonding, Structure, and The Properties of Matter



Thomas W.

Birkbeck College, University of London -
PhD Neogene Tectonics of Central
Greece

Earth Science PhD researcher tutoring GCSE
Science & A Level Biology, Chemistry and
Geography

£50 / hour
✓ Graduate

Book Tutor



This topic is included in Paper 1 for GCSE AQA Chemistry.

Notes

- Definitions
- Flashcards

Summary Notes

- 2.1 Chemical bonds and types of bonding
- 2.2. How bonding and structure are related to the properties of substances
- 2.3. Structure and bonding of carbon
- 2.4. Bulk and surface properties of matter including nanoparticles

Mind Maps

- 2.1. Chemical Bonds - Ionic, Covalent and Metallic
- 2.2. How Bonding and Structure are Related to the Properties of Substances
- 2.3. Structure and Bonding of Carbon
- 2.4. Bulk and Surface Properties of Matter Including Nanoparticles

PMT Shop

- Printed AQA Chemistry Resources

Questions by Topic

2018-2021 papers

- 2.1 Chemical Bonds - Ionic, Covalent and Metallic MS
- 2.1 Chemical Bonds - Ionic, Covalent and Metallic QP
- 2.2 Bonding and Structure MS
- 2.2 Bonding and Structure QP
- 2.3 Structure and Bonding of Carbon MS
- 2.3 Structure and Bonding of Carbon QP
- 2.4 Bulk and Surface Properties of Matter MS (separate only)
- 2.4 Bulk and Surface Properties of Matter QP (separate only)

pre-2018 papers

Questions selected for the current specification

- 2.1 Ionic, Covalent & Metallic Bonds 1 MS
- 2.1 Ionic, Covalent & Metallic Bonds 1 QP
- 2.1 Ionic, Covalent & Metallic Bonds 2 MS
- 2.1 Ionic, Covalent & Metallic Bonds 2 QP
- 2.1 Ionic, Covalent & Metallic Bonds 3 MS
- 2.1 Ionic, Covalent & Metallic Bonds 3 QP
- 2.2 Bonding & Structure 1 MS
- 2.2 Bonding & Structure 1 QP
- 2.2 Bonding & Structure 2 MS
- 2.2 Bonding & Structure 2 QP
- 2.2 Bonding & Structure 3 MS
- 2.2 Bonding & Structure 3 QP



Useful resources broken down into each individual topic. Includes; key definitions, mind map examples, summary notes and LOADS of exam questions.


What are the advantages of revising in this way?




We want to empower students to be independent learners. By following our model, students can self regulate their learning by identifying their strengths and weaknesses.

It is an active process that students find difficult at times but it is the most effective way to revise.

Things that aren't useful – copying out textbooks and revision guides for pages and pages.



What other revision resources are available?



Cognito: An online quizzing platform that is free to use for all students. There are topic videos and linked past paper questions.

Seneca: A free online platform that gives students information and then quizzes them as they go through. A very good starting point for students.

BBC bitesize: Useful source of information, has quizzes for retrieval and checking understanding.

Past paper questions: Past papers and mark schemes are available on the AQA website. These are one of the best ways of taking your revision to the next level.




Why science?




- Whether you have chosen triple or trilogy, science is an important subject for your future.
- The skills you learn support many careers not directly linked to science such as catering, cosmetics and aesthetics, caring for people, animals and children and any role that requires health and safety or risk assessment.
- More directly if you want to study any of these subjects at A level you will need at least a 6 at GCSE.
- Biology
- Chemistry
- Medical sciences
- Psychology
- Physics

A grade 4 is needed for many other courses such as BTEC engineering and applied science. Lots of university courses also require a grade 4 in science.



What can parents do to support?



- Encourage your child to complete homework, and help them track their progress throughout the course with the curriculum map.
- Check they have the correct equipment for lessons and assessments (green pen, calculator, whiteboard pen).
- Encourage them to attend SPAs or ask their teacher for help if they need it.