

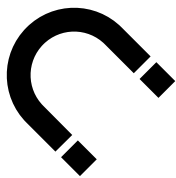
# Year 11 parent information evening

## Science

**As a parent, what can you do to help?**

**What does good revision look like?**





Students on both the combined science and triple science courses will sit **6 exams** in the summer.

Biology paper 1 – topics B1-B4

Chemistry paper 1 – topics C1-C5

Physics paper 1 – topics P1-P4

Biology paper 2 – topics B5-B7

Chemistry paper 2 – topics C6-C10

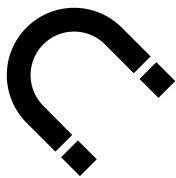
Physics paper 2 – topics P5-P7

**Trial exams in November-Dec**

- Biology paper 1
- Chemistry paper 2
- Physics paper 2 in December
  
- **Second set of trials- Feb-March**
- Biology paper 2
- Chemistry paper 1
- Physics paper 1

*This information is also available on the inside front cover of the revision guides.*





# NEW GCSE (9-1), (9-9 to 1-1)

## SCIENCE GRADING



Students following the **triple pathway** will gain **3 GCSEs**, with a grade for ***Biology, Chemistry*** and ***Physics***.

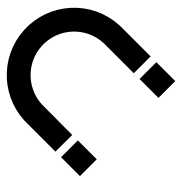
Students on the **Combined Science** course will gain **2 GCSEs** in Science. The grades are awarded in the format shown in **blue**.

A **4-4** grade is considered to be a standard pass.

The two grades are calculated using grade boundaries based on a total number of marks across all 6 papers.

BIOLOGY, CHEMISTRY, PHYSICS	COMBINED SCIENCE
9	9-9
8	8-8
7	7-7
6	6-6
5	5-5
4	4-4
3	3-3
2	2-2
1	1-1
U	U





# NEW GCSE (9-1), (9-9 to 1-1)

## SCIENCE GRADING



Students on the **combined science course** could be entered for **higher tier** or **foundation tier**.

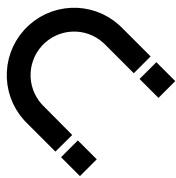
Students taking the **foundation tier papers** could achieve **up to a grade 5-5**. There tends to be more multiple choice style and lower demand questions, however the grade boundaries will be higher.

Students taking the **higher tier papers** can achieve a **grade 4-3 up to a grade 9-9**. The demand of the questions will be higher, however the grade boundaries will be lower.

Students taking the triple science route will sit the higher tier papers. The demand of the questions will be equivalent to the demand on the Combined science higher tier.

BIOLOGY, CHEMISTRY, PHYSICS	COMBINED SCIENCE
9	9-9
	9-8
8	8-8
	8-7
7	7-7
	7-6
6	6-6
	6-5
5	5-5
	5-4
4	4-4
	4-3
3	3-3
	3-2
2	2-2
	2-1
1	1-1
U	U





Science papers will assess maths and practical skills as well as the science content.

The average across all the papers is approximately **30% maths and 15% how science works (practical skills)**.

This will largely be assessed through analysis of data provided to students in the forms of graphs or tables as well as students' knowledge of the **21 required practicals (spread across all 6 papers)**.

Students are given the opportunity to carry out the required practicals in lessons as well as to practise the sort of questions that are often asked.

It is important when revising that students don't skip the first chapter of the revision guide that goes through these skills.



# Analysis of performance of students in the summer year 10 exams.

Feedback from a survey we do with students at the end of year 10 showed that many students spent **less than an hour** in total revising and preparing for the **three exam papers**.

This is nowhere near enough time as they are gaining two GCSEs or three GCSEs

Many students were only revising by reading the revision guide. This doesn't work. They need to cover it up and test themselves and then answer practice exams questions.

# General revision/ key definitions for a whole topic

Step	Approx. time (minutes)	
1	10-15	Read the pages of information in your revision guide OR watch a video (type... isotopes AQA gcse into YouTube)
2	5	Create a revision card or start/ add to a mind map or spider diagram/poster of the information (see examples on the next slide) OR Set yourself a quiz on educake
3	Keep coming back to it!	Get someone to quiz you/ quiz yourself/ read through your mind map etc
4	1- 2 hours	Once you are happy with a whole topic or exam paper, find and complete/ mark some exam questions on the revision website

Remember sites like BBC bitesize are an alternative for revision guide!  
Make sure to pick AQA and the correct course.

## FRONT OF CARD

1. What is an isotope?
2. What does the atomic number tell us?

## BACK OF CARD

1. Atoms with the same number of protons but a different number of neutrons
2. The number of protons an atom has (in the nucleus)

# Spider diagram/knowledge organiser poster examples

These are added to over several revision sessions on one topic

**Chlorine** → 2, 8, 7 → have one extra e<sup>-</sup> config

Maximum electrons in shells:  
 1st = 2 electrons  
 2nd = 8 electrons  
 3rd = 8 electrons

Atomic Structure

Subatomic Particle	Relative Charge	Relative Mass
Proton	+1 (positive)	1
Neutron	0 (no charge)	1

Electron Configuration

These electron configurations can also be worked out from an element's atomic number (Z)  
 e.g. Chlorine's Z = 17  
 Therefore chlorine has 17 electrons - 2 in shell 1, 8 in shell 2 and 7 in shell 3

**The Periodic Table**  
 Developed by Dmitri Mendeleev, organised by mass number and chemical properties leaving gaps for elements yet to be discovered

hydrogen (an element)  
 metals/non-metal divide  
 Group number = no. of e<sup>-</sup> in outer shell of atom  
 8 = noble gases  
 Group 1 = alkali metals  
 Group 2 = alkaline earth metals  
 Group 9 = The halogens

**Isotopes**  
 = Same element as but different mass numbers  
 = number of protons is different - forming a different charged ions

All matter is made up of atoms. The atoms in an element are all identical but each element has its own atom.

**A Sodium atom:**  
 mass number (A)  
 atom symbol  
 atomic number (Z)

**Relative Atomic Mass**  
 The mass of an atom compared to an atom of carbon-12

**Start** → Make sure you understand Topic 1 - Structure of the atom

Split into sections like the revision guide (on the contents page)

**CC5, 6, 7, 8** → knowledge organiser (H)

**Lesson 1 Ions**  
 Atoms are more stable with a full outer shell of electrons and they will lose or gain electrons to achieve this  
 Atoms that lose electrons (metals) gain a positive charge. Atoms that gain electrons (non-metals) gain a negative charge. An ion is an atom with a charge  
 You need to be able to calculate the number of protons, neutrons and electrons in different ions and draw electron structure of ions showing their charge outside of brackets.

**Lesson 2 Ionic bonds**  
 Ionic bonds form between metals and non-metals. Metals have extra electrons and they **lose** them to form positive ions. Non-metals have electron gaps and they **gain** electrons to form negative ions. In an ionic bond the metal 'gives' its electrons to the non-metals to form positive and negative ions  
 An ionic bond is the electrostatic attraction between a positive and negative ion.

**Lesson 3 Ionic compounds**  
 Ionic compounds consist of regular arrangements of positive and negative ions called an ionic lattice. Positive and negative ions combine in fixed ratios to give neutral compounds.  
 You can work out the charge on most positive and negative ions from their position in the periodic table and then use the cross over rule to give the formula of the compound  
 Sulphate:  $SO_4^{2-}$   
 Carbonate:  $CO_3^{2-}$   
 Nitrate:  $NO_3^-$   
 Hydroxide:  $OH^-$   
 The formulas of some polyatomic anions you just have to learn!

**Lesson 4 Properties of ionic compounds**  
 Ionic compounds:  
 1. Form crystals with high melting points  
 2. Dissolve in water to give solutions  
 3. Conduct electricity when dissolved in solution or molten but not when solid  
 You need to be able to use the structure of an ionic compound (Lesson 3) to **explain** why ionic compounds have these properties. Use the following **keywords / ideas**  
 • Giving / receiving electrons  
 • Ions / positive ion / negative ion  
 • Giant ionic structure / ionic lattice  
 • Strong electrostatic force (ve attracts -ve)  
 • **Fixed ions** in solid / **free ions** in solution / when molten  
 • Dissolves in water / water solvates (surrounds) ions

**Lesson 5 Covalent bonds**  
 Covalent bonds form between two non-metals. Non-metals have spaces for electrons and they are able to **share** electrons so it is 'as if' both atoms have a full outer shell.  
 You need to be able to draw covalent bonds between two atoms using 'dot and cross' diagrams and stick diagrams  
 A covalent bond is a pair of electrons shared between the two atoms. A double covalent bond (double bond) consists of 4 shared electrons  
 Covalent bonds are strong bonds

**Lesson 6 Simple molecular compounds**  
 Covalent bonds are found in two types of structures - simple molecules and giant covalent structures. Most common gases are simple molecules. A **molecule** is a small group of atoms that go around together. Simple molecular compounds have strong covalent bonds holding the atoms together in a molecule. Between the molecules there are weak intermolecular forces which are much more easily broken.  
**Properties**  
 • Gases and liquids with low melting and boiling points  
 • Do not conduct electricity  
**Keywords** to describe simple molecules  
 Shared electrons, strong covalent bonds between atoms, simple molecules, weak intermolecular forces between molecules

**Lesson 7 Giant covalent structures**  
 In giant covalent structures every atom is joined to other atoms with a strong covalent bond.  
**Properties**  
 • Giant covalent structures  
 • Hard, strong, high melting point

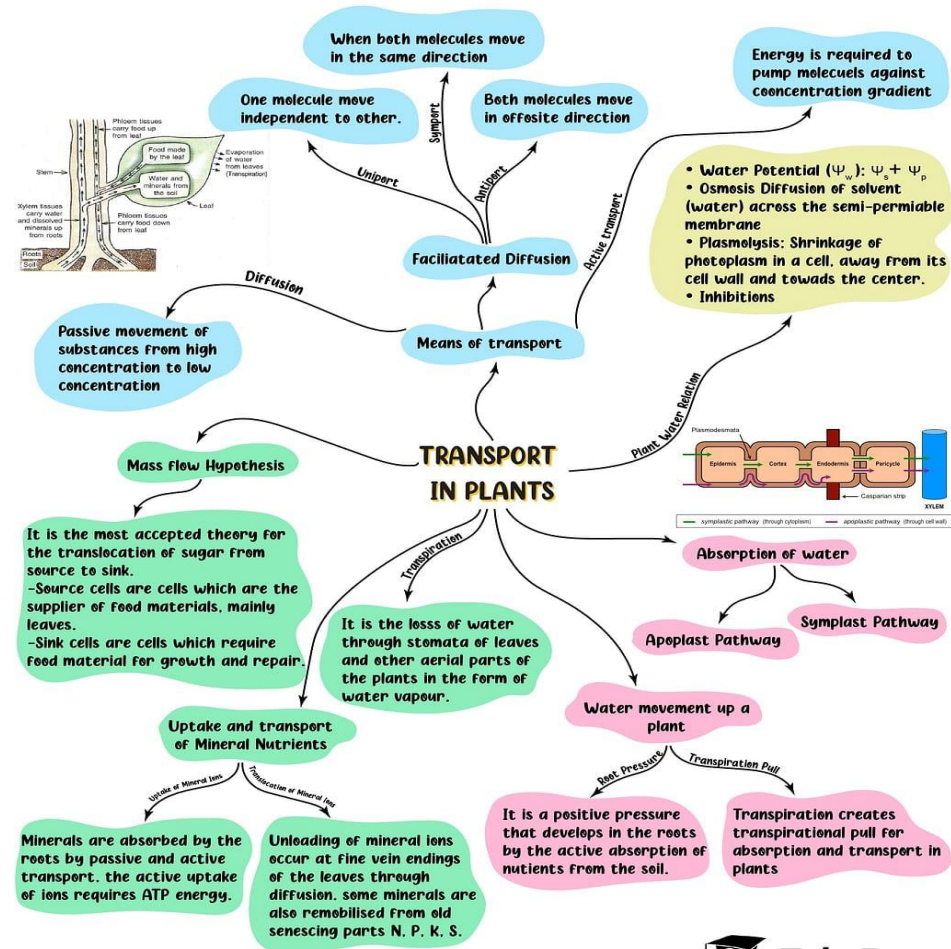
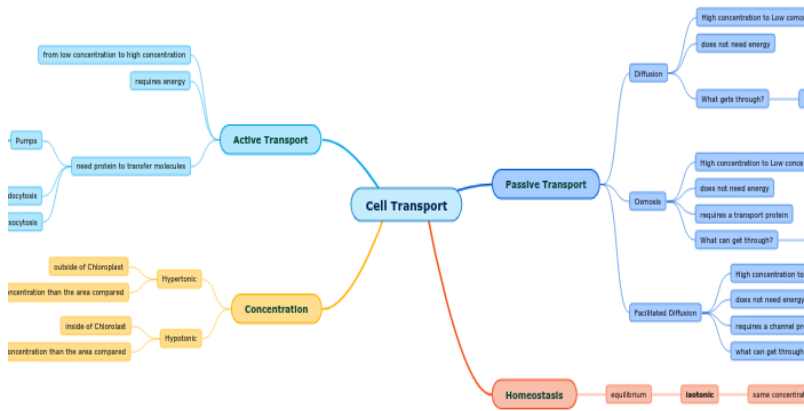
**Lesson 8 Allotropes of carbon**  
 Diamond: Every carbon atom is joined to four other carbon atoms in a tetrahedral structure. Strong covalent bonds. High melting point. Does not conduct electricity. Does not dissolve.  
 Graphite: Every carbon atom is joined to three other carbon atoms in a layered structure. Strong covalent bonds in layers. Weak intermolecular forces between layers. High melting point. Conducts electricity. Does not dissolve.  
 Fullerenes: Every carbon atom is joined to three other carbon atoms in a cage-like structure. Strong covalent bonds. High melting point. Does not dissolve.

**Lesson 9 Metallic bonding and the properties of metals**  
 Metallic bonds form between metal atoms and metals from giant metallic structures. The structure of a metal consists of a regular arrangement of metal ions surrounded by a sea of delocalised electrons  
**Properties**  
 • Strong attraction between positive ions and delocalised e<sup>-</sup>  
 • Outer shell electrons free to move  
 • Layers can slide while maintaining metallic bonding  
**Keywords**  
 • Melting & boiling points: **HIGH**  
 • Electrical conductivity: **CONDUCTS**  
 • Strength: **STRONG**  
 • Solubility in water: **INSOLUBLE**



# Mind map examples

These are added to over several revision sessions on one topic





One new resource we have in Science is **EDUCAKE**.

It is a fantastic online platform where students can set their own questions on areas that may be weaker in.

Teachers are also provided with a detailed report of how each student is performing in each area within Science, giving students a detailed review of where they should spend time revising, including;

- Maths in science
- Working scientifically
- Biology/Chemistry/Physics
- Performance by question type e.g. recall/application/data and graphs and calculations

They can also view any feedback given from teachers after they have sent a query about a question, which supports further learning.



[Contact Us](#)

– Wyvern College [My account](#) [Log out](#)

## My Educake

[Revision wizard](#) >

[View feedback from your teachers](#) ▾

### Your Upcoming Quizzes

[View all your quizzes](#)

Subject	Quiz name	Assigned by	Due
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Woohoo! You're all caught up! If your teacher sets you a quiz, you'll see it here.

### Study and Quiz Yourself

KS3 GCSE

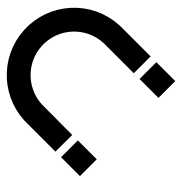
GCSE Science	AQA	77%	▶
Biology		0%	▶
Chemistry		77%	▶
Physics		76%	▶
Maths for Science		0%	▶
Working Scientifically		0%	▶

Here, the student can choose;

- Learn something new
- Revise (take a quiz or read about the subject through a guide)
- Not sure (the platform will select for them from the analysis of their current performance)

From the 'study and quiz yourself' section:

Students can study the subject area by using the online guide which leads them through step by step. They can also set a quiz for themselves to test their knowledge and understanding.



# Revision – Tips!



1. They need to revise in a quiet environment.
2. Don't have distractions – turn devices off and put phones away.
3. Homework's are all geared around revision and revisiting and reviewing learning. These need to be completed with a high level of effort for students to get the most out of them.
4. Check they have attempted the whole task or, if it is a past paper that they have attempted all the questions. Many leave the longer or trickier questions blank when it is these that are most important for them to practise.
5. Remind them to use their revision guides to help them. That's what they're there for!
6. Encourage students to attend the P6 revision sessions that will be available from their class teachers.

# Revision at school

For this **November trials** –there will be **drop in sessions** after school to support students in their revision of all areas within science-This will again be differentiated into Foundation/Higher or Triple sessions.

Students can come to these sessions to clear any doubts or just sit and do past topic questions. Teachers will be around to support them.

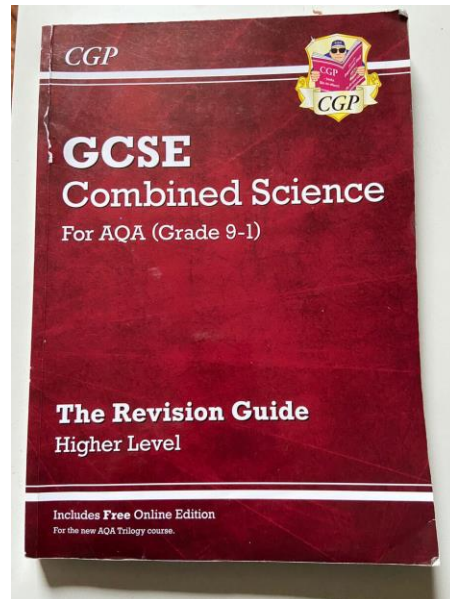
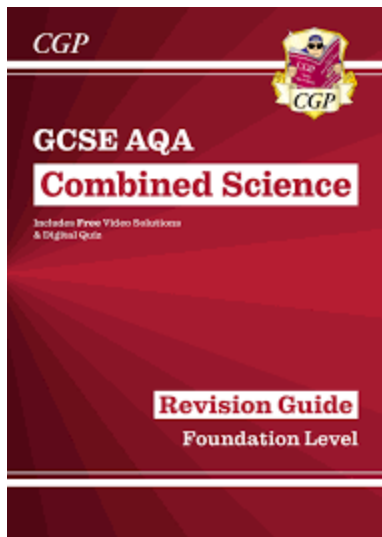
Also they can check with their individual teachers for any help.

**After first trials** -we will be offering **P6 sessions** to support students in their revision of all areas within science- we would have looked at the performance and will be able to cater it to the weaker topics

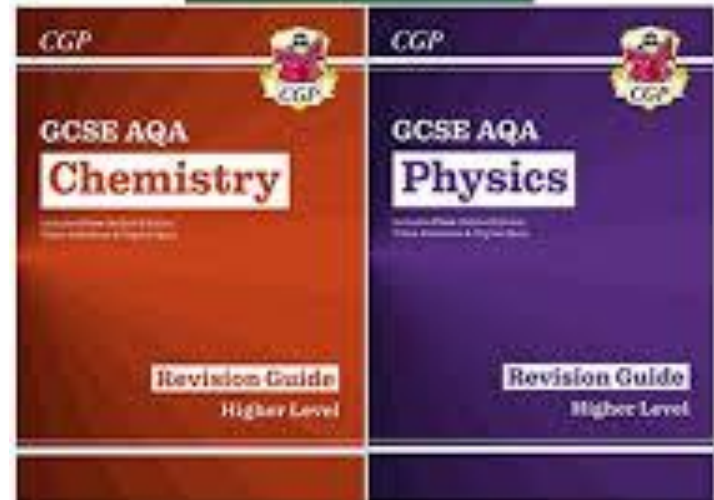
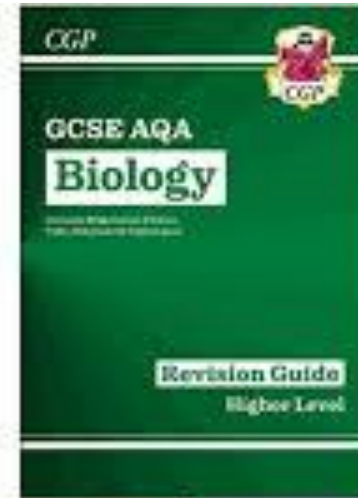
There will be a chance to attend Foundation/Higher or Triple sessions of any teacher that is offering a session.

Please ensure that students check Edulink for these sessions as they will need to sign up so we know how many students are attending and can adequately provide resources and seats for them!

# COMBINED SCIENCE



# TRIPLE



# Where to find the information

- Revision guides – Combined Science Foundation and Higher and Separate Guides for Triple
- [Wyvern science revision website](#) – full of useful resources, videos, questions revision cards etc- *link to new website have been sent to all year 11s.*

The new website has all the revision mats (with answers), past paper and topic questions, keywords.

- [BBC bitesize](#) – this is a good website to get fundamental concepts.
- [EDUCAKE](#) – question bank full of AQA standardised questions with study guides to support your child.
- [Your teacher](#) – if your child needs help, make sure they seek it

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- Students need to log in using their school email (if off school site they will need to enter their school password too).