



**THE SNAITH
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Science Revision

Content!



- A massive amount of content across Biology, Chemistry & Physics
- Students need to ensure they know what content is in each paper
- Students need to revise the content and then practice applying it to exam questions

Mock Priorities: Paper 1

Highlighted are Y9 taught
HT means higher tier
T means triple only

Biology	Chemistry	Physics
<p>B1</p> <ul style="list-style-type: none"> Eukaryotes and prokaryotes Cell structure Microscopes required practical (RP) Differentiation Stem cells Cell Cycle Diffusion, Osmosis, Active Transport RP Osmosis Culturing microorganisms (T) 	<p>C1</p> <ul style="list-style-type: none"> Atoms, elements, compounds, mixtures Balancing equations Development of the model of the atom Atomic structure Electronic structure Periodic table development Groups 0, 1 & 7 Transition metals (T) 	<p>P1</p> <ul style="list-style-type: none"> Energy stores and systems Kinetic energy, EPE, GPE Specific heat capacity RP Specific heat capacity Power Dissipation of energy Efficiency Energy resources RP 2: Insulation (T)
<p>B2</p> <ul style="list-style-type: none"> Organisation Digestive System, Enzymes and Digestive Enzymes RP Food Tests RP Amylase Heart, Blood and Blood vessels Health: cancer, CHD. Plants: tissues, organs, leaf structure, Transpiration 	<p>C2</p> <ul style="list-style-type: none"> Ionic Bonding Ionic compounds Covalent bonding Giant covalent compounds including polymers, diamond and graphite Metallic Bonding States of matter and state symbols Metals and alloys Nanoparticles (T) 	<p>P2</p> <ul style="list-style-type: none"> Circuit symbols Ohms Law Charge RP Resistance of a wire RP IV - and graphs Series & Parallel DC & AC Mains electricity and energy transfers National grid Static electricity (T) Electric fields (T)
<p>B3</p> <ul style="list-style-type: none"> Bacterial, viral, fungal and protist diseases. Human defence Vaccination Antibiotics and painkillers Development of drugs Monoclonal antibodies (T) Plant diseases and defences (T) 	<p>C3</p> <ul style="list-style-type: none"> Conservation of mass Relative formula mass Calculating moles (HT) Avogadro's Constant (HT) Limiting Reactants (HT) Concentration of solutions % yield (T) Atom economy (T) Concentration in mol/dm³ (HT) (T) 	<p>P3</p> <ul style="list-style-type: none"> Density of materials RP Density Changes of state Internal energy Specific latent heat Particle motion in gases Pressure in gases (T) Increasing pressure (T) (HT)
<p>B4</p> <ul style="list-style-type: none"> Photosynthesis: equation, factors affecting rate RP Light Intensity on pondweed Uses of glucose Aerobic respiration Anaerobic Respiration Metabolism 	<p>C4</p> <ul style="list-style-type: none"> Metal oxides Reactivity series REDOX reactions Strong and weak acids (HT) Acids and metals Neutralisation pH scale RP Making Salts Electrolysis RP Titration (T) 	<p>P4</p> <ul style="list-style-type: none"> Atomic Structure Mass number Development of atom Radioactive decay Nuclear equations Half life Radioactive contamination Background radiation (T) Nuclear fission (T) Nuclear fusion (T)
	<p>C5</p> <ul style="list-style-type: none"> Exo and endothermic RP temperature change Reaction Profiles Bond energies (HT) Fuel cells and batteries (T) 	

Exam Priorities: Paper 2

HT means higher tier
T means triple only

Biology	Chemistry	Physics
<p>B5</p> <ul style="list-style-type: none"> Homeostasis Nervous system RP Reaction Times Endocrine system Blood glucose Hormones in human reproduction Contraception IVF (HT) Feedback systems (HT) The brain (T) The eye (T) Body temperature (T) Kidneys (T) Plant hormones (T) 	<p>C6</p> <ul style="list-style-type: none"> Calculating rates of reaction RP Rate of reaction Collision theory Catalysts Reversible reactions Le Chatelier's Principle (HT) 	<p>P5</p> <ul style="list-style-type: none"> Scalar and vector quantities Types of force Weight, mass and gravity Work Done Elasticity RP Hooke's Law Distance and displacement Speed and Velocity Acceleration RP Acceleration Newton's Laws Reaction Time and Stopping Distances Momentum (HT) Moments (T) Pressure in fluids (T)
<p>B6</p> <ul style="list-style-type: none"> Sexual and asexual Meiosis DNA and inheritance Inherited disorders Variation Evolution and evidence Genetic engineering and selective breeding Extinction Classification Advantages of sexual and asexual reproduction (T) Structure of DNA (T) Cloning (T) Theory of evolution (T) Speciation Mendel's Genetics (T) 	<p>C7</p> <ul style="list-style-type: none"> Crude oil Fractional distillation Cracking Alkenes (T) Alcohol (T) Carboxylic Acids (T) Polymerisation (T) Amino Acids (T) DNA (T) 	<p>P6</p> <ul style="list-style-type: none"> Transverse & Longitudinal Waves Wave Properties RP Ripple Tank Electromagnetic Waves: uses and application RP: Radiation Reflection of Waves (T) Sound Waves (T) Waves for detection or exploration (T) Lenses (T) Black body radiation (T)
	<p>C8</p> <ul style="list-style-type: none"> Pure Substances Formulations Chromatography RP Chromatography Gas Tests Flame Tests (T) Metal Hydroxides (T) RP Ion Identification (T) Flame emission spectroscopy (T) 	<p>P7</p> <ul style="list-style-type: none"> Poles of a magnet Magnetic fields Electromagnets Left hand rule (HT) Motors (HT) Loudspeaker (T) (HT) Uses of generator effect (T) (HT) Microphones (T) (HT) Transformers (T) (HT)
<p>B7</p> <ul style="list-style-type: none"> Communities Abiotic and Biotic Adaptations Levels of organisation RP Species Distribution Biodiversity Waste management and land use Deforestation Global warming Decomposition (T) RP Decay (T) Environmental Change (T) Trophic Levels (T) Biomass (T) Food security, farming and fishing (T) Biotechnology (T) 	<p>C9</p> <ul style="list-style-type: none"> Earths Atmosphere Changing atmosphere Greenhouse gases Climate change Carbon footprint Pollutants 	<p>P8 - TRIPLE ONLY</p> <ul style="list-style-type: none"> Solar system Life cycle of a star Orbital motion Red-shift
	<p>C10</p> <ul style="list-style-type: none"> Earths Resources Potable Water RP Water Purification Waste water treatment Life cycle assessments Corrosion (T) Alloys (T) Ceramic and composites (T) Haber Process (T) NPK Fertilisers (T) 	

Homework



Homework is extremely important for Science as it enables students to recap prior knowledge and also to practice exam technique

There are 2 main forms of homework for Science:

1. Past exam question practice – taken in and marked by the class teacher – feedback given to improve exam technique
2. Tassomai

Tassomai!



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 TASSOMAI

The Learning Program

What is Tassomai?



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Tassomai is an online **multiple-choice quizzing tool** that is powered by an **adaptive algorithm**. What this means is that Tassomai will:

- Select the **right content at the right time** for you;
- Unlock more challenging topics when you're **doing well**;
- Give more **support** to current weaker areas;
- Provide a range of other **helpful tools** to help you learn!



[This short video](#) explains how Tassomai works in more detail!

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The Learning Program

Why does Tassomai work?



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Research into revision, retrieval practice and learning techniques has found that the best way to study, and get knowledge to stick is to:

- **Work for short, concentrated periods of time;**
- **Frequently switch between topics;**
- **Regularly test yourself.**

Tassomai is designed to help you do **all** of these things!



 **TASSOMAI**

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What's the best way to work through Tassomai?



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We realise that each school will have its own expectations, rewards and sanctions and so forth. And while we recommend students complete their DGs **at least 4 times per week**, we know this won't always suit everyone!

To help, we've got a **Weekly Goals** feature too - this is set to roughly the same amount of 4 DGs worth of work, but you have **more flexibility** as to when you complete this.

For example, you could complete enough work to hit your WG by doing lots of quizzes on one day...but we still advise **spreading your work over time**, as this will help with knowledge retrieval much more!



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Your Data



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Tapping on Usage will show you lots of information about your recent Tassomai use.

You can view different types of data and change the time frame. And, if you're using Tassomai for more than one subject, you can separate your data between those subjects, or view them altogether!



How does TASSOMAI work?



1. Investigating
We start by analysing a subject, down to the finest level of detail...



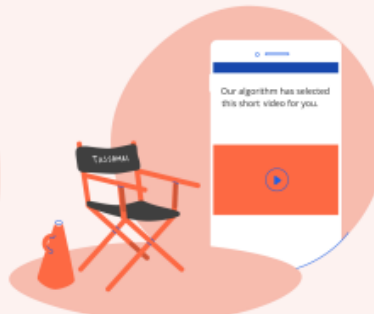
2. Creating
... turning everything a learner needs to know into quiz questions that teach as well as test.



3. Discovering
Every question answered helps us build up a detailed knowledge profile.



4. Personalising
Our intelligent algorithm continually adapts the content for each learner.



5. Supporting
Sometimes we'll suggest a short tutorial video, designed to supplement learning in a particular topic.



6. Evolving
Tassomai discovers more about what you understand (and what you don't) with every interaction.



7. Reinforcing
Quizzes are shown at the optimum time and repeated occasionally to check that knowledge has been retained.



8. Celebrating!
Your knowledge, understanding and confidence builds until you master the subject, helping you achieve your best possible results.



Scan the QR code to download the Tassomai app



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Tassomai for parents - how can we help?



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Tassomai provides a **weekly progress report** to all parents for each of their children using the platform, sent via email.

We also create a **free login** for parents, allowing them to log in via our web & mobile apps, and access their own personalised dashboard to monitor their child's progress.



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What does the parent dashboard offer?



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Parents can monitor their children's **Daily Goal completion** across the week (and go back by up to 3 weeks' worth of activity). They can also control their account settings, and opt into our new Parent Club! [Learn more here.](https://www.tassomai.com/school-parents)

<https://www.tassomai.com/school-parents>

It will also highlight the **weakest areas** for their child across their subjects, and **provide resources** to help support learning.



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Command Words in GCSE Science



Command	Meaning	Example 1	Example 2
Compare	Describe both the similarities and differences between two or more things.	Both graphite and graphene comprise hexagonal rings of carbon atoms that are covalently bonded to three other carbon atoms in a giant lattice structure. Graphene is different to graphite because it is a 2D structure as it's only one atom thick.	Both aerobic and anaerobic respiration use glucose and release energy although aerobic respiration releases more. Also, aerobic respiration produces carbon dioxide and water whereas anaerobic respiration produces lactic acid.
Describe*	Recall accurate facts about an object, event or process.	The plum pudding model of the atom consists of a ball of positive charge with negative electrons dotted throughout	<i>(E.g. include data from the graph in your answer).</i> The temperature increased for 1 minute before remaining constant for two minutes. It then rose again for three minutes.
Design	Set out how something will be done.	The student will need to use the same volume and concentration of acid to ensure a fair test. They can change the temperature using a water bath and measure how much gas is produced in 20s.	
Evaluate <i>(often a 6 mark question)</i>	Use your own knowledge and the information provided to come up with arguments for and against something and then add a summary.	One advantage of using hydrogen fuel cells is that the only emission produced is water. Petrol makes carbon dioxide and nitrogen oxides when burnt. Carbon dioxide is a greenhouse gas and nitrogen oxides contribute to acid rain. One disadvantage is hydrogen is difficult to store. Overall, I think fuel cells are the better option, provided we can find a suitable source of hydrogen.	Power stations that emit less carbon dioxide cause less global warming. Coal and geothermal power stations contribute to global warming, whereas nuclear power doesn't. Sulfur dioxide causes acid rain meaning coal power stations contribute to acid rain, whereas geothermal and nuclear power stations don't. Radioactive waste, which has a long half-life and remains radioactive for a long time, needs burying. Overall, I think nuclear power is the best option, provided we can store its waste material safely.
Explain*	State something more clearly; give the reason(s) for it.	Potassium is more reactive than sodium because potassium has more electron shells resulting in a weaker attraction between the nucleus and the outer electron meaning it is lost more easily.	Bile helps the digestion of milk by neutralising acid and emulsifying fats so that they have a greater surface area thereby allowing enzymes to work more effectively.
Justify	Use evidence (data, statements, quotes) from the question to support your answer.	Glass is a much better material for milk bottles than plastic because each bottle can be re-used 25 times instead of once and new bottles can be made using up to 50% recycled material. Plastic bottles are only made up of 10% recycled material.	
Plan <i>(often a 6 mark question)</i>	Write a method.	Add an excess of the metal oxide to the acid and stir to make sure all of the acid has reacted. Filter the mixture to remove the excess oxide. Heat the filtrate to form a saturated solution. Transfer to a crystallising dish and leave for the crystals to slowly form as the water evaporates.	Measure the object's mass using a mass balance. Fill a displacement can with water, ensuring it is levelled with the can's spout. Place the object in the can and collect the displaced water in a measuring cylinder to determine its volume. Calculate density = mass/volume
Show	Use evidence (data, statements, quotes) from the question and/or your own knowledge to reach a conclusion.	The nail in test tube two rusted the most. You can tell this because the mass increased by the greatest amount from 8.45g to 8.91g.	
Suggest*	Apply your knowledge and understanding from a similar situation to the one presented.	The student could change the method to investigate the rate of reaction at 40°C by putting both of the reactants in a water bath.	<i>Suggest how needing less oxygen helps the animal to conserve water. Less water is lost from respiration.</i>

*These are the most common command words

Physics - units



It has been confirmed today that students **will** full equation sheet this year, they do not need to memorise the equations.

However, if students can learn the units of each term in Physics, this will massively help them to understand which equation they need to choose to use in a question e.g.

Calculate the gravitational potential energy of a 12kg box at a height of 2.5m above the floor.
gravitational field strength = 9.8 N/kg

Using flashcards – we will be doing this with Y11 tomorrow



- Repetition strategy - practice makes perfect!
- Simple approach - 'cue' on the front and the 'answer' on the back
- Engage active recall of information

Why flashcards help you learn



- They help you to **recall** information - creating **stronger connections** for your memory
- Encourage self-reflection - embedding information into your **long term memory**

Make Flashcards More Powerful



Retrieve (don't look) - write or say the answer out loud before flipping the card over

Reorder (shuffle) - to add challenge
- spacing and interleaving

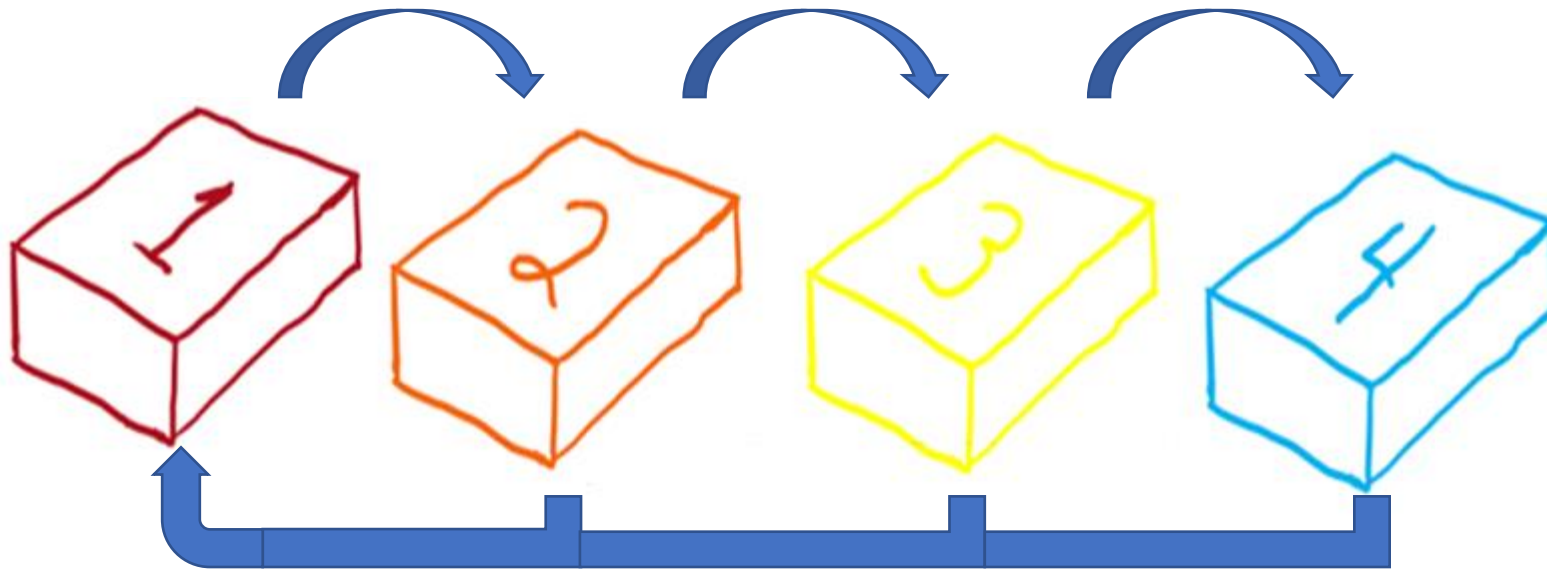
Repeat (at least 3 times) - to make sure you really know it and remember it!

Top tips for using flashcards

Use **spaced repetition** - review on specific days of increasing intervals (day 1, day 2, day 4, day 8...) as this activates your long term memory

All the cards start off in box 1

As you review the cards, each card you answer correctly goes into box 2



As you continue to get the answers correct, move the cards to box 3 and then 4.

Any incorrect answers in any box, go back to box 1

GCSE Past Papers



- Google "AQA Past Papers"
- <https://www.aqa.org.uk/find-past-papers-and-mark-schemes>
- link to this on TEAMS for students

Find past papers and mark schemes

Find past papers and mark schemes to help you prepare for exams.

Select a subject to start your search.

Subject

Science



Qualification

GCSE



Specification

Combined Science: Trilogy (8464)



Series

All available series



A range of revision strategies



- Tassomai quizzes
- Flashcards
- GCSE Past Papers
- Exam practice workbook
- Videos – GCSEPod/YouTube e.g. cognito science, kay science or free science lessons
- Posters/Mind maps – linking topics together
- Revision apps



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Any Questions?