

KS4 Science

How to help at home



Top tip test and retrieve your previous knowledge. The best way to do this is by self-testing whether this is through flashcards, practice quizzes on Educake or exam practice.

Reading through and making notes is not an effective tool for revision and even though sometimes you may just need to remind yourself of some content either through reading your class notes, a revision guide or watching a BBC bitesize video this should be the bare minimum of your revision in comparison to testing your knowledge.

Our top 3 revision techniques for Science are listed below and these should last for a maximum of a 25-minute Pomodoro round and be varied throughout your child's revision timetable.



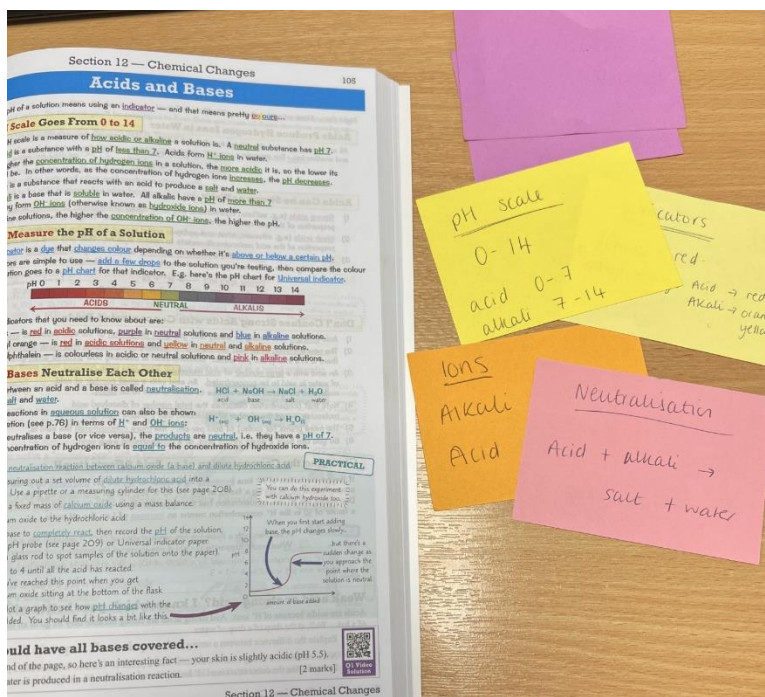
1. Educake:

This is compulsory independent study each week - www.educake.co.uk

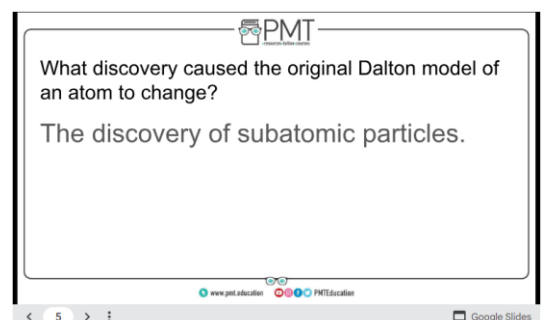
- Set on a Monday, Due the following Sunday evening.
- Quick recall quiz questions from Year 10 or 11 content.
- 3 x quizzes, 1 x Biology, 1 x Chemistry, 1 x Physics

2. Flashcards:

- Find the topic you are struggling on (this should be found from questions you can't complete at home, on Educake or in retrievals in school).
- Find that page in your revision guide or schoolbook. Read through the section on that page.
- Make flash cards of the key points, question on one side, answer on the other.
- Use those to test yourself or ask friends or family to test you.
- Repetition is key!



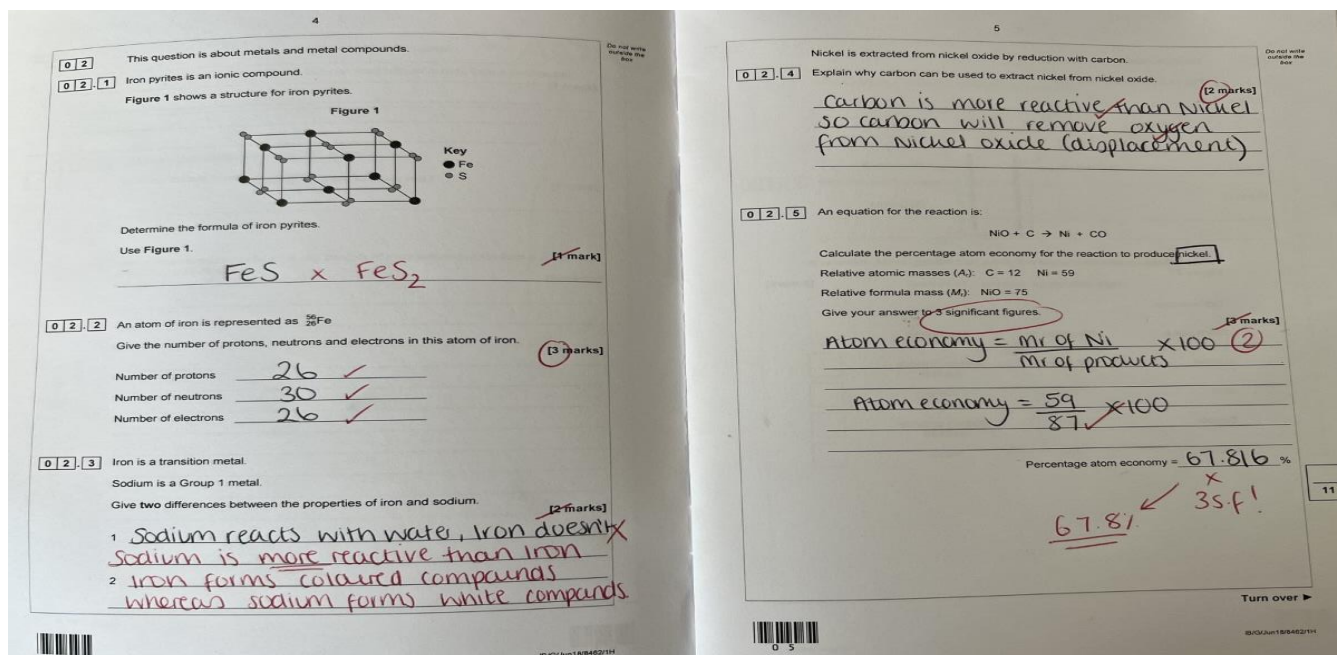
Flashcards on physics and maths tutor (website) are also great for self testing – you can use these to help make your own flashcards also.



3. Exam practice:

When you are completing exam practice you should follow these steps:

1. Pick a question in the past paper/exam workbook.
2. Glance at the marks and set a timer – 15 marks, 15 minutes.
3. Start the timer and work on the question until the timer elapses.
4. Use the mark scheme to then self-assess the question in a different colour pen, making improvements on their answers as they go.



The image shows two pages of a chemistry exam paper. The left page (page 4) contains questions about iron pyrites and iron. The right page (page 5) contains questions about nickel extraction and atom economy. Handwritten answers are in red ink, and marks are indicated in blue circles.

Page 4:

- Question 1: Iron pyrites is an ionic compound. Figure 1 shows a structure for iron pyrites. Determine the formula of iron pyrites. Use Figure 1. **Answer:** $\text{FeS} \times \text{FeS}_2$ (4 marks)
- Question 2: An atom of iron is represented as $^{56}_{26}\text{Fe}$. Give the number of protons, neutrons and electrons in this atom of iron. **Answer:** Protons: 26, Neutrons: 30, Electrons: 26 (3 marks)
- Question 3: Iron is a transition metal. Sodium is a Group 1 metal. Give two differences between the properties of iron and sodium. **Answer:** 1. Sodium reacts with water, iron doesn't. 2. Sodium is more reactive than iron. Iron forms coloured compounds whereas sodium forms white compounds. (2 marks)

Page 5:

- Question 4: Nickel is extracted from nickel oxide by reduction with carbon. Explain why carbon can be used to extract nickel from nickel oxide. **Answer:** Carbon is more reactive than nickel so carbon will remove oxygen from nickel oxide (displacement). (2 marks)
- Question 5: An equation for the reaction is: $\text{NiO} + \text{C} \rightarrow \text{Ni} + \text{CO}$. Calculate the percentage atom economy for the reaction to produce nickel. Relative atomic masses (A_r): C = 12, Ni = 59. Relative formula mass (M_r): NiO = 75. Give your answer to 3 significant figures. **Answer:** Atom economy = $\frac{\text{Mr of Ni}}{\text{Mr of products}} \times 100 = \frac{59}{87} \times 100 = 67.81\%$ (3 marks)

Exam information

Below details information on the Science exams, what topics are included in each exam and the codes for the students to check for on the exam papers when they are trying questions. They need to make sure they are practicing the right exam and content.

Students can find past exam papers on Pearson, type in Pearson past papers or the link below:

<https://qualifications.pearson.com/en/support/support-topics/exams/past-papers.html>

Then follow the steps:

1. Select GCSE qualification
2. Select subject – Science
3. Pop up box – select Sciences (2016)
4. Select Year for exam paper (most recent Year will be locked and unavailable to students)

Combined Science – 6 exams in total

All exams are a written examination: 1 hour and 10 minutes 16.67% of the qualification. 60 marks each paper usually over 6 questions

Biology

Paper 1: Biology 1 (Paper code: 1SC0/1BF, 1SC0/1BH)

Content overview Topic 1 – Key concepts in biology, Topic 2 – Cells and control, Topic 3 – Genetics, Topic 4 – Natural selection and genetic modification, Topic 5 – Health, disease and the development of medicines

Paper 2: Biology 2 (Paper code: 1SC0/2BF, 1SC0/2BH)

Content overview Topic 1 – Key concepts in biology, Topic 6 – Plant structures and their functions, Topic 7 – Animal coordination, control and homeostasis, Topic 8 – Exchange and transport in animals, Topic 9 – Ecosystems and material cycles

Chemistry

Paper 3: Chemistry 1 (Paper code: 1SC0/1CF, 1SC0/1CH)

Content overview Topic 1 – Key concepts in chemistry, Topic 2 – States of matter and mixtures, Topic 3 – Chemical changes, Topic 4 – Extracting metals and equilibria

Paper 4: Chemistry 2 (Paper code: 1SC0/2CF, 1SC0/2CH)

Content overview Topic 1 – Key concepts in chemistry, Topic 6 – Groups in the periodic table, Topic 7 – Rates of reaction and energy changes, Topic 8 – Fuels and Earth science

Physics

Paper 5: Physics 1 (Paper code: 1SC0/1PF, 1SC0/1PH)

Content overview Topic 1 – Key concepts of physics, Topic 2 – Motion and forces, Topic 3 – Conservation of energy, Topic 4 – Waves, Topic 5 – Light and the electromagnetic spectrum, Topic 6 – Radioactivity

Paper 6: Physics 2 (Paper code: 1SC0/2PF, 1SC0/2PH)

Content overview Topic 1 – Key concepts of physics, Topic 8 – Energy - Forces doing work, Topic 9 – Forces and their effects, Topic 10 – Electricity and circuits, Topic 12 – Magnetism and the motor effect, Topic 13 – Electromagnetic induction, Topic 14 – Particle model, Topic 15 – Forces and matter

Separate Science – 6 exams in total

All exams are a written examination: 1 hour and 45 minutes 50% of the qualification. 60 marks each paper usually over 6 questions

Biology

Paper 1: Biology 1 (*Paper code: 1BIO/1F, 1BIO/1H)

Content overview Topic 1 – Key concepts in biology, Topic 2 – Cells and control, Topic 3 – Genetics, Topic 4 – Natural selection and genetic modification, Topic 5 – Health, disease and the development of medicines

Paper 2: Biology 2 (Paper code: 1BIO/2F, 1BIO/2H)

Content overview Topic 1 – Key concepts in biology, Topic 6 – Plant structures and their functions, Topic 7 – Animal coordination, control and homeostasis, Topic 8 – Exchange and transport in animals, Topic 9 – Ecosystems and material cycles

Chemistry**Paper 3: Chemistry 1 (Paper code: 1CHO/1F, 1CHO/1H)**

Content overview Topic 1 – Key concepts in chemistry, Topic 2 – States of matter and mixtures, Topic 3 – Chemical changes, Topic 4 – Extracting metals and equilibria, Topic 5 – Separate Chemistry 1

Paper 4: Chemistry 2 (Paper code: 1CHO/2F, 1CHO/2H)

Content overview Topic 1 – Key concepts in chemistry, Topic 6 – Groups in the periodic table, Topic 7 – Rates of reaction and energy changes, Topic 8 – Fuels and Earth science, Topic 9 – Separate chemistry 2

Physics**Paper 5: Physics 1 (*Paper code: 1PH0/1F and 1PH0/1H)**

Content overview Topic 1 – Key concepts of physics, Topic 2 – Motion and forces, Topic 3 – Conservation of energy, Topic 4 – Waves, Topic 5 – Light and the electromagnetic spectrum, Topic 6 – Radioactivity, Topic 7 – Astronomy

Paper 6: Physics 2 (Paper code: 1PH0/2F and 1PH0/2H)

Content overview Topic 1 – Key concepts of physics, Topic 8 – Energy - Forces doing work, Topic 9 – Forces and their effects, Topic 10 – Electricity and circuits, Topic 11 – Static electricity, Topic 12 – Magnetism and the motor effect, Topic 13 – Electromagnetic induction, Topic 14 – Particle model, Topic 15 – Forces and matter

Useful websites:**Science specification**

A list of all content taught across these 3 Sciences can be found on the Specifications below:

<https://qualifications.pearson.com/en/qualifications/edexcel-gcses/sciences-2016.html>

Revision guides

Edexcel CGP Revision guides and exam workbooks are available to buy online and at local retailers.

<https://www.cgpbooks.co.uk/secondary-books/gcse/gcse-science-edexcel>

Revision content:

- BBC Bitesize (Edexcel)
- Seneca Learning
- freesciencelessons.co.uk
- PhysicsandMathstutor.com (covers all the sciences)

You will be able to find quizzes, videos and past paper questions on all of these websites.