Year 11 Parents Information Evening

Science

Wednesday 20th September 2023

Science

Miss S Neale

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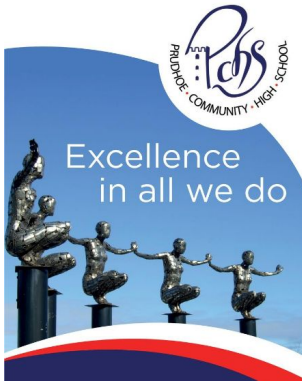


GCSE Sciences

Exam Board AQA

Biology

Chemistry

Physics

Biology

- Cell biology
- Organisation
- Infection and response
- Bioenergetics
- Homeostasis and response - current topic
- Inheritance
- Variation
- Evolution
- Ecology

Studied in year 9 and 10

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 - current topic JPH
- Chemistry of the atmosphere
- Organic chemistry
- Chemical analysis
- Energy changes - current topic SN
- Using resources

Physics

- Energy
- Waves - current topic
- Particle model of matter
- Atomic structure
- Forces
- Electricity
- Magnetism
- Electromagnetism
- Space physics

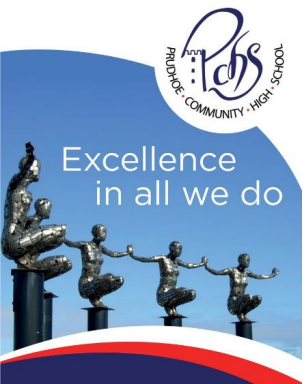
Physics

- Forces
- Energy
- Waves
- Electricity
- Magnetism
- Electromagnetism
- Particle model of matter
- Atomic structure
- Space physics

All students must learn the required equations, know how to rearrange them and use them.
Equations are in the personal organiser on page 140

https://filestore.aqa.org.uk/resources/physics/AQA-8463-ES-INS.PDF

AQA GCSE Physics – Equations & Formulae (specification 8463 & 8464)



Biology, Chemistry and Physics

ASSESSMENT

Two written exams per subject: 1 hour 45 minutes each

Foundation and Higher Tier

100 marks

QUESTIONS

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

Science Practical Work

There is no coursework or controlled assessment in the science GCSE courses. Practical work will be undertaken to help students make sense of the theory. Students are required to complete a number of AQA set practicals for each subject on which questions can be asked in the examinations.

Homework Guidelines

Students should be starting their revision NOW.

Independent Learning

- Encourage them to work through the specification making revision resources i.e. Mind Maps, Flash Cards
- Encourage them to be practicing past paper questions - and using mark schemes to improve answers

They will also be given specific homework tasks by their teachers

Four Top Websites for Science

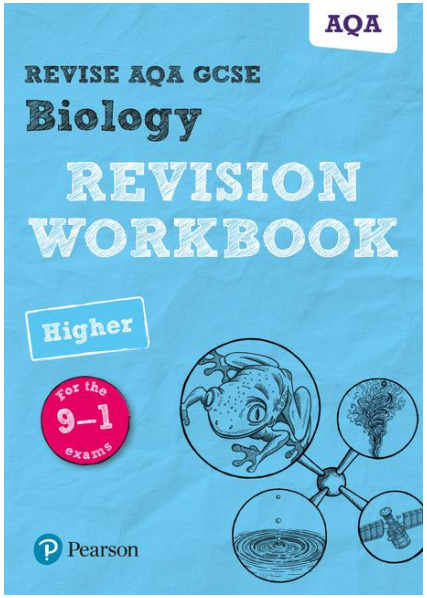
- https://www.aqa.org.uk/subjects/science/gcse
- www.bbc.co.uk/bitesize/levels/z98jmp3
- https://www.freesciencelessons.co.uk/
- https://www.youtube.com/c/Cognitoedu

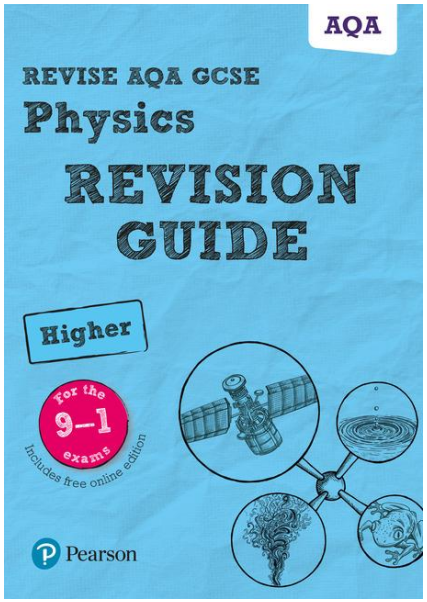
Google Classrooms for Science

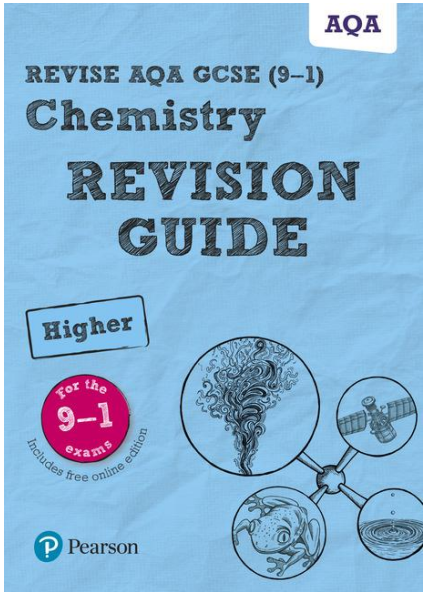
All students are members of google classrooms for each subject. The classrooms contain

- Revision maps
- Links to websites
- Links to videos
- Recorded lessons
- Quizzes and much more!

Science Revision Guides / Workbooks





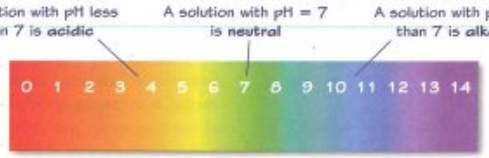


£17.94

Paper 1 Had a look ☐ Nearly there ☐ Nailed it! ☐

The pH scale

The pH scale, from 0 to 14, is a measure of how acidic or how alkaline a solution is.



Practical skills Measuring pH

1. Drops of **universal indicator** can be added to a solution. The colour in the mixture can be compared with the chart above and the pH read off.
2. A pH **probe** can be placed in the solution.

All acids release H^+ ions and all alkaline solutions contain OH^- ions, so the ionic equation for neutralisation of an acid and an alkali is always $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$

Revise the difference between dilute and concentrated acids on page 34.

Worked example

(a) Write the balanced equation, including state symbols, for the reaction between potassium hydroxide solution and dilute nitric acid. **(3 marks)**

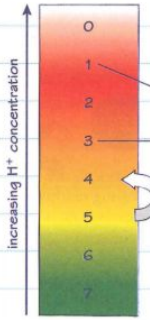
$KOH(aq) + HNO_3(aq) \rightarrow KNO_3(aq) + H_2O(l)$

(b) Write the ionic equation for the reaction. **(1 mark)**

$H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$

In the ionic equation, the ions that do not change are left out. In this reaction, the potassium ions and the nitrate ions remain in the solution and are left out of the ionic equation.

Strong and weak acids



A **strong** acid is completely **ionised** giving H^+ ions e.g. hydrochloric acid $HCl \rightarrow H^+ + Cl^-$. Other strong acids are sulfuric acid and nitric acid.

pH of 0.1 mol/dm³ HCl, a **strong** acid.

pH of 0.1 mol/dm³ ethanoic acid, a **weak** acid.

As the pH decreases by 1, the concentration of H^+ ions **increases** by 10.

A **weak** acid is only partially **ionised** giving a few H^+ ions. Examples of weak acids are ethanoic acid, citric acid and carbonic acid.

Now try this

(a) Explain why a 1 mol/dm³ solution of citric acid has a higher pH value than a 1 mol/dm³ solution of nitric acid. **(4 marks)**

In your answer think about the concentration of H^+ ions in the acid solutions.

(b) A solution has a pH of 4.3. What is the pH of a solution with a concentration of H^+ ions that is 10 times higher? **(1 mark)**

Paper 1 Had a go ☐ Nearly there ☐ Nailed it! ☐

The pH scale

1 The pH scale is used to measure acid and alkaline properties. The table shows the pH of five solutions.

Solution	A	B	C	D	E
pH	2	6	7	10	13

(a) Which of these solutions contain excess H^+ ions? ..... **(1 mark)**

(b) Which solution contains the greatest concentration of OH^- ions? ..... **(1 mark)**

(c) How would the pH change if pure water were added to solution C? ..... **(1 mark)**

Guided

(d) Describe how a student could test the pH of an unknown solution.

The student could add some universal indicator and .....

..... **(2 marks)**

2 Sulfuric acid is a strong acid which neutralises potassium hydroxide.

(a) Write a balanced chemical equation for this reaction.

..... **(2 marks)**

(b) What is meant by a strong acid? Give your answer in terms of ionisation.

..... **(2 marks)**

(c) Write the ionic equation for a neutralisation reaction. Include state symbols.

..... **(2 marks)**

(d) Solution X has a pH of 4.1. Suggest the pH of solution Y, which has a hydrogen ion concentration ten times lower than that of solution X.

..... **(1 mark)**

3 A is a solution of 2.0 mol/dm³ ethanoic acid and B is a solution of 0.5 mol/dm³ nitric acid.

(a) Which acid, A or B, is a weak acid? ..... **(1 mark)**

(b) Which acid, A or B, is more concentrated? Explain your answer.

..... **(2 marks)**

Guided

(c) Which acid, A or B, has a lower pH? Explain your answer.

Nitric acid is fully ionised into hydrogen ions in aqueous solution, as it is a

..... **(2 marks)**

Science Support in School

Miss Pentland is organising targeted intervention on Monday, Tuesday and Friday lunchtimes.

All science staff will support students who have questions they want answering - encourage them to come and see us!

Science Revision Tips for Parents

Useful Websites

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

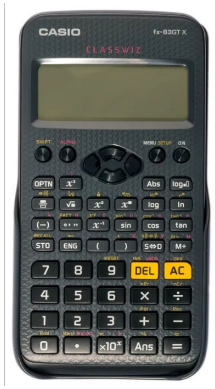
www.bbc.co.uk/bitesize/levels/z98jmp3

https://www.freesciencelessons.co.uk/

https://www.youtube.com/c/Cognitoedu

Equipment

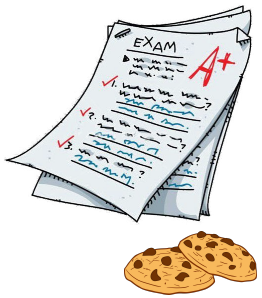
Ensure students have the correct equipment for every lesson.



Revision Clubs

Attend after school sessions with science teachers.

Past paper questions will be provided.



Regular Homework

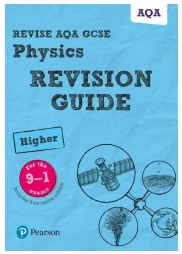
Ensure students are completing their revision homeworks to the best of their ability, using video links to help.

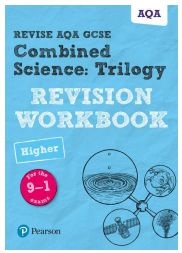
Google Classroom

Revision Guides and Workbooks

For sale at school
Buy them on Gateway

Then use them!!





Most importantly - be positive about Science!

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