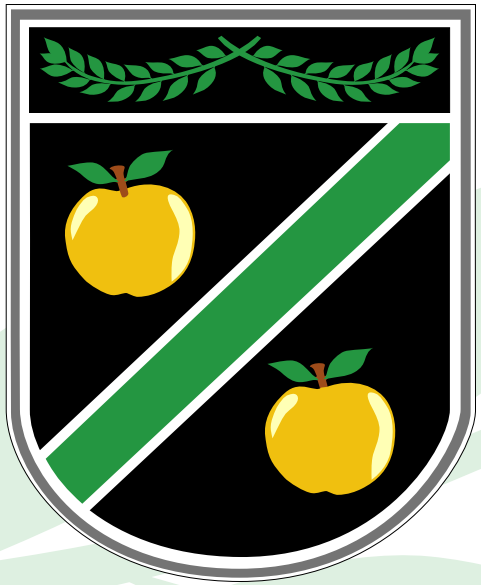


The Appleton School

Ofsted
Good
Provider

GCSE AQA Science Parent Workshop

Supporting Your Child's Success in Science

Mrs Love (Head of Science)

Dr Reay (Associate Assistant Headteacher)

Welcome

Objectives for today:

- Understand the structure of GCSE AQA Science.
- Discover strategies to support your child's learning.

Quick activity

I would like you to memorise this list and we will come back to this later:

- Cell membrane
- Cell wall
- Mitochondria
- Ribosomes
- Chloroplast
- Cytoplasm
- Nucleus

Science Exam Information

- Combined science: 6 exams, 1 hour 15 each
- Separate science: 6 exams, 1 hour 45 each
- 2 Biology, 2 Chemistry, and 2 Physics exams.

Key differences: Curriculum depth, time commitment, and grading.

Ofsted Good Provider

Combined Science Paper 1

- **13th May 2025**
- Exam for GCSE Combined Science: Biology Paper 1 (both tiers)
  Start time: pm
  Duration: 1h 15m 70 marks 16.7% of GCSE
- **19th May 2025**
- Exam for GCSE Combined Science: Chemistry Paper 1 (both tiers)
  Start time: am
  Duration: 1h 15m 70 marks 16.7% of GCSE
- **22nd May 2025**
- Exam for GCSE Combined Science: Physics Paper 1 (both tiers)
  Start time: am
  Duration: 1h 15m 70 marks 16.7% of GCSE

Combined Science Paper 2

- **9th June 2025**
- Exam for GCSE Combined Science: Biology Paper 2 (both tiers)
  Start time: am
  Duration: 1h 15m 70 marks 16.7% of GCSE
- **13th June 2025**
- Exam for GCSE Combined Science: Chemistry Paper 2 (both tiers)
  Start time: am
  Duration: 1h 15m 70 marks 16.7% of GCSE
- **16th June 2025**
- Exam for GCSE Combined Science: Physics Paper 2 (both tiers)
  Start time: am
  Duration: 1h 15m 70 marks 16.7% of GCSE

Biology

- **13th May 2025**
- Exam for GCSE Biology Paper 1 (both tiers)
  Start time: pm
  Duration: 1h 45m 100 Marks 50% of GCSE

- **9th June 2025**
- Exam for GCSE Biology Paper 2 (both tiers)
- Start time: am
  Duration: 1h 45m 100 Marks 50% of GCSE

Chemistry

- **19th May 2025**
- Exam for GCSE Chemistry Paper 1 (both tiers)
  Start time: am
  Duration: 1h 45m 100 Marks 50% of GCSE

- **13th June 2025**
- Exam for GCSE Chemistry Paper 2 (both tiers)
- Start time: am
  Duration: 1h 45m 100 Marks 50% of GCSE

Physics

- **22nd May 2025**
- Exam for GCSE Physics Paper 1 (both tiers)
  Start time: am
  Duration: 1h 45m 100 Marks 50% of GCSE

- **16th June 2025**
- Exam for GCSE Physics Paper 2 (both tiers)
- Start time: am
  Duration: 1h 45m 100 Marks 50% of GCSE

Ofsted
Good
Provider

In Your booklets You Will Find Key Topics in Each Subject (Combined and Separates)

Biology: Cell biology, genetics, ecology, homeostasis, etc…

Chemistry: Atomic structure, bonding, chemical changes, energy changes, etc…

Physics: Forces, energy waves, electricity, particle model, etc…

Tips: Regulation revision of key topis to reinforce understanding.

Ofsted Good Provider

Activity time

Using the card sort can you select the topics that fall under biology, chemistry, and physics? Without looking at your booklet.

Self-assess (promote independent learning)

Using your booklets, self-assess how many you got correct.

Assessment Objectives

AO1: Knowledge and understanding of specific ideas.

AO2: Application of knowledge in different contexts.

AO3: Analysis and evaluation of information, data, and methods.

Tips: Encourage students to practice applying knowledge and analysing data.

Assessment Questions

Exam Format

- All papers will have a mixture of multiple choice

0 3 . 2 How is sewage sludge treated before being released into the environment? **[1 mark]**

Tick (✓) **one** box.

- Aerobic biological treatment ☐
- Anaerobic digestion ☐
- Grit removal ☐
- Screening ☐

- Structured recall questions,

0 1 . 2 Describe the test for carbon dioxide.

Give the result of the test. **[2 marks]**

Test _____

Result _____

_____

Ofsted Good Provider

Assessment Questions

- Some Maths

0 3 . 3 Hydrocarbons are used to make polymers. Polymers are used to make plastic bags.

In one year 8.0 billion plastic bags were used.

The next year there was a charge for plastic bags and only 1.3 billion plastic bags were used.

Calculate the percentage decrease in the number of plastic bags used.

[3 marks]

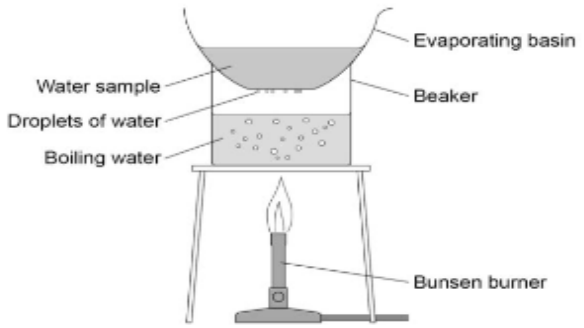
Percentage decrease = _____ %

- Some long answers based on practicals

0 4 A student investigated the mass of dissolved solids in four water samples **A**, **B**, **C** and **D**.

Figure 4 shows the apparatus used.

Figure 4



Ofsted Good Provider

Assessment Questions

0 6 . 3 Describe the processes that have caused the main **changes** in the percentage of carbon dioxide in the Earth's atmosphere over the last 4.6 billion years.

Use **Figure 6**.

[6 marks]

AO3 examples

Evaluate

Evaluate questions almost always assess AO3, with some AO2. They are unlikely to involve much AO1. They will always be higher tariff questions (4 marks or higher).

Farmers add nitrate fertiliser to fields where they grow corn.

Nitrate fertilisers are expensive.

Evaluate the economic and environmental implication of adding fertiliser to soil in nitrate ion concentrations ranging from 0 to 50 ppm

[4 marks]

In Question **07.2** it was assumed that the acceleration was a constant 9.8 m/s^2

Evaluate this assumption.

[4 marks]

Evaluate the sustainability of wooden and plastic window frames.

You should include environmental and economic factors.

[6 marks]

Ofsted Good Provider

Practical Activity

AO1: Knowledge and understanding of specific ideas.

AO2: Application of knowledge in different contexts.

AO3: Analysis and evaluation of information, data, and methods.

Required Practical Activities

Importance of Practical Activities: 16 required practical's for Combined Science, additional for Separate Sciences.

Assessment in Exams: Practical questions appear on Exams.

Parent tip: Discuss practical's at home, relate experiments to everyday life.

Please find Required Practical lists in your booklet.

Required Practical Questions

(b) The table in **Figure 1** shows the results of the experiment.

set	noise level	reaction time (s)	mean reaction time (s)
1	silent	0.21, 0.24, 0.19, 0.22, 0.36	0.22
2	high	0.46, 0.44, 0.78, 0.51, 0.55	
3	high	0.39, 0.42, 0.44, 0.38, 0.40	0.41
4	high	0.33, 0.31, 0.35, 0.37, 0.32	0.34
5	high	0.29, 0.31, 0.28, 0.28, 0.33	0.30
6	high	0.31, 0.28, 0.33, 0.30, 0.27	0.30
7	high	0.33, 0.29, 0.31, 0.32, 0.30	0.31
8	high	0.29, 0.32, 0.31, 0.33, 0.31	0.31
9	high	0.30, 0.26, 0.29, 0.31, 0.33	0.30
10	high	0.32, 0.27, 0.33, 0.31, 0.31	0.31

Figure 1

(i) Complete the table by calculating the mean reaction time for set 2.

[2 marks]

(ii) Explain the extent to which these results support the hypothesis being investigated.

A Practical Activity

Help me make a cup of tea

Could I have a volunteer?

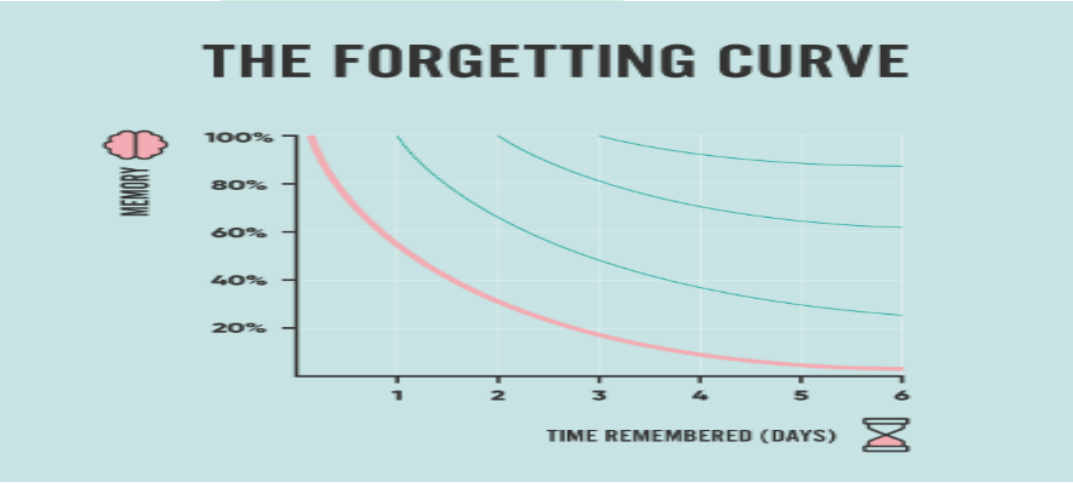
Supporting Your Child's Revision

Establish a Study Routine: Set specific times for science revision.

Active Revision Techniques: Flashcards, mind maps, past papers.

Use of AQA Resources: AQA website, BBE bitesize, Seneca Learning, GCSE Bitesize, etc…

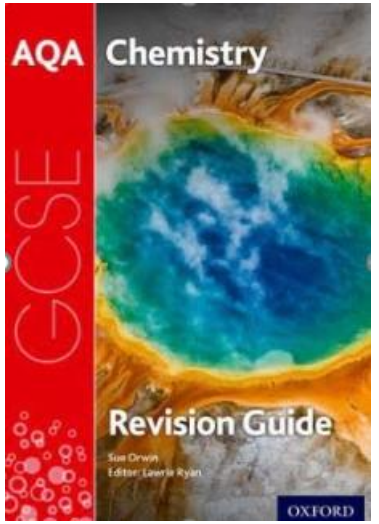
Encourage Self-Testing: Regular quizzes on key topics and vocabulary.

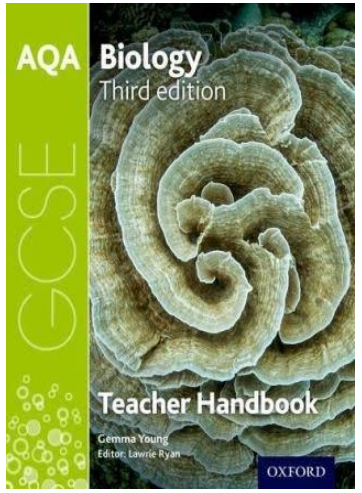


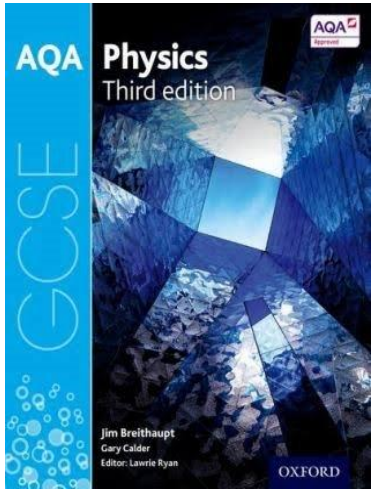
Ofsted Good Provider

Supporting Your Child's Revision

- All students have been issued their own electronic copy of the three textbooks we use in school, via Kerboodle
- All students have been given access to Focus eLearning which is an interactive program with all the Required Practicals that could appear in the exam
- All students have access to SENECA, an interactive website with exam practise and instant feedback so that students can check their learning and progress.



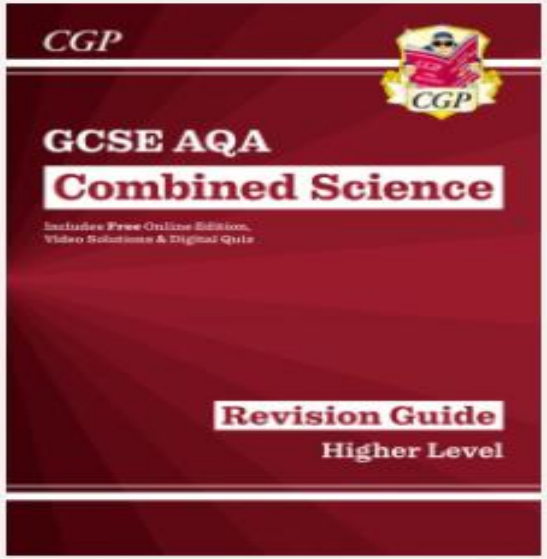


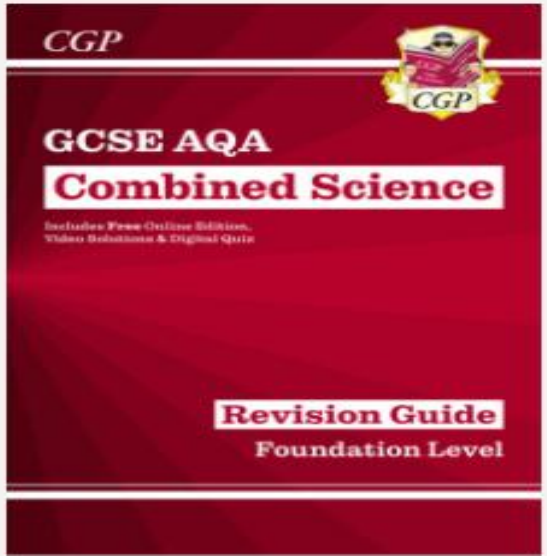


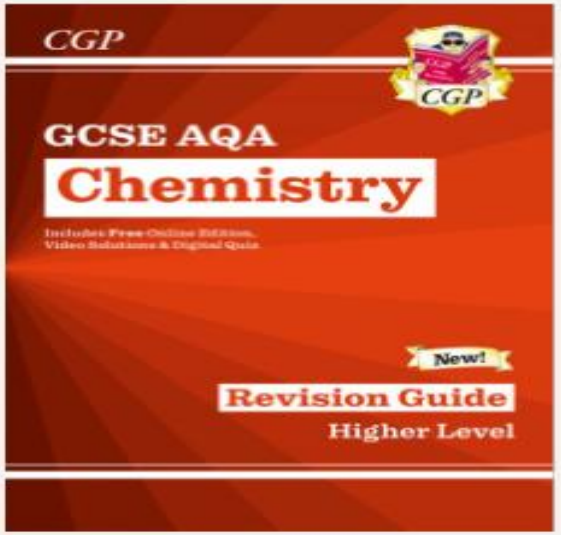
Ofsted
Good
Provider

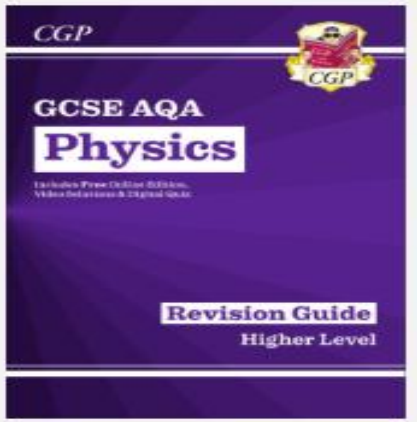
Extra Revision Guides

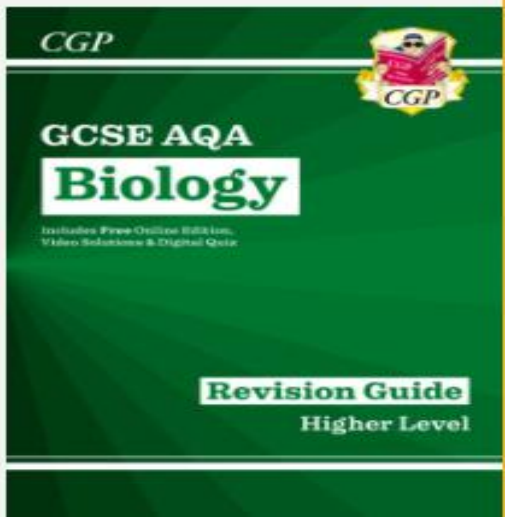
These can be bought online or bookshops:







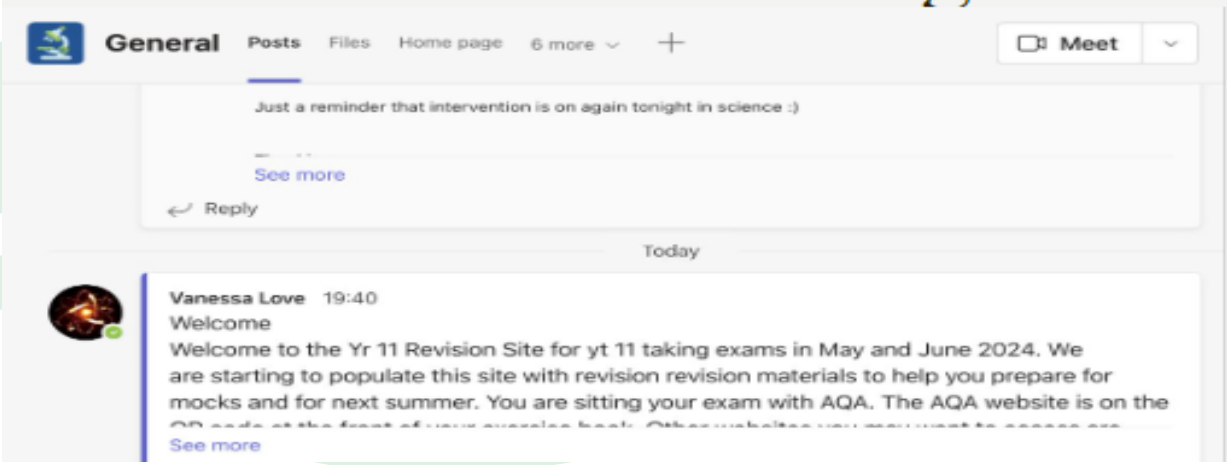


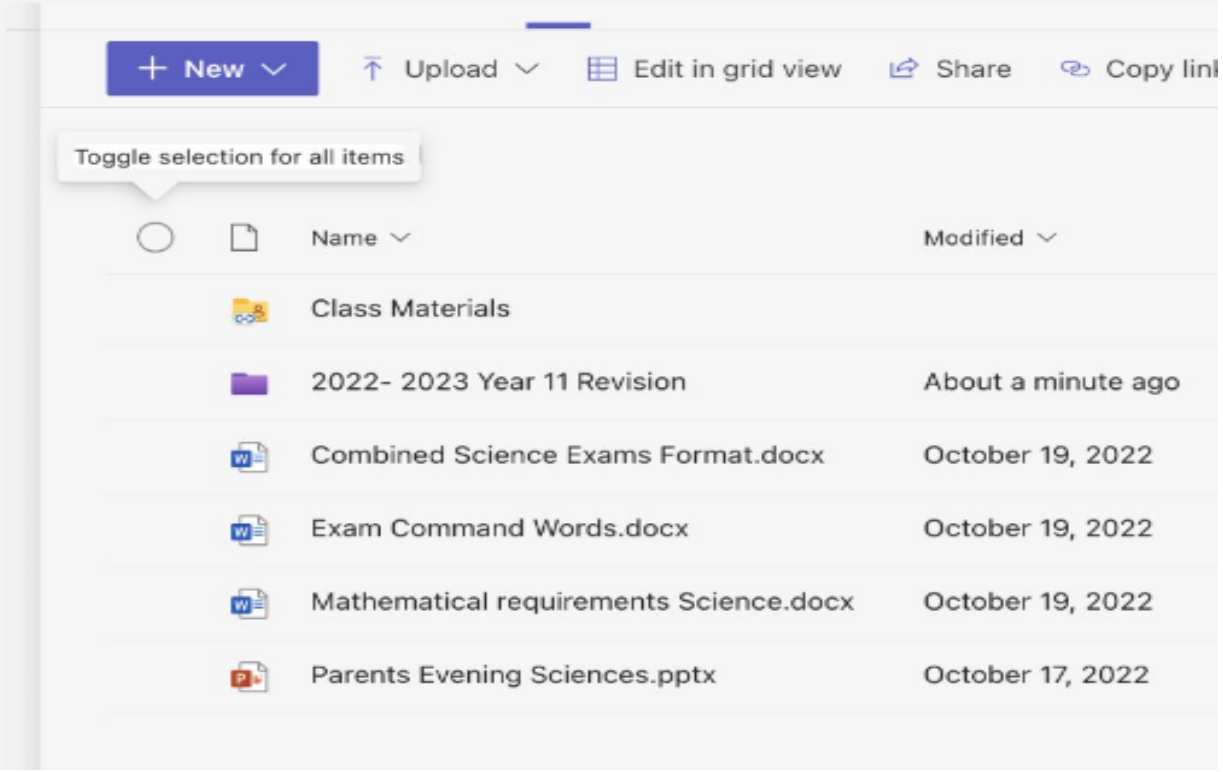


Ofsted Good Provider

TEAMS Yr 11 Science Revision:

Details all the topics that will appear on each paper and lists even more resources like YouTube videos and bitesize revision for both foundation and higher



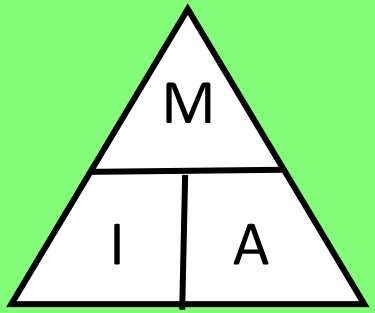


Ofsted Good Provider

Resources To Support Learning

- SENECA: www.senecalearning.com
  - Username (School email)
  - Password (you set this yourself)
  - Class Code
- Focus E Learning: www.focuselearning.co.uk
  - Username: student@theapleton3762
  - Password: 5xw2qyqcw
- Kerboodle: www.kerboodle.com
  - Username: initial and surname
  - Password: initial and surname (and then reset yourself)
  - Institute Code: qpx7
  - **OR** use you school email address and passwords and click on Google

MATHS IN BIOLOGY

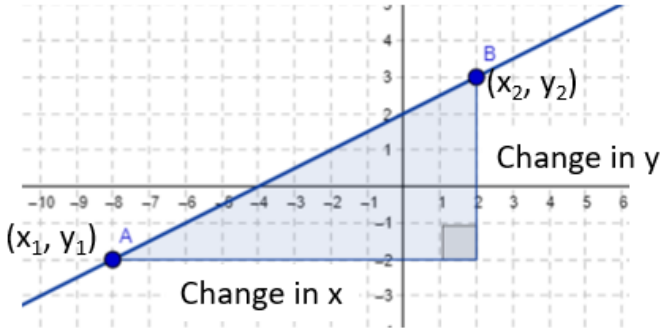


1mm = 1000µm

Be sure you are able to convert from one to another

PERCENTAGE CHANGE = $\frac{\text{DIFFERENCE}}{\text{ORIGINAL}}$ x 100

Gradient of a Straight Line



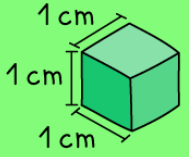
Gradient = $\frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{Change in y}}{\text{Change in x}}$

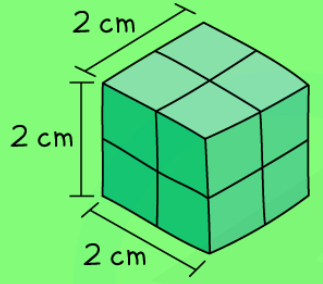
Area of Circle

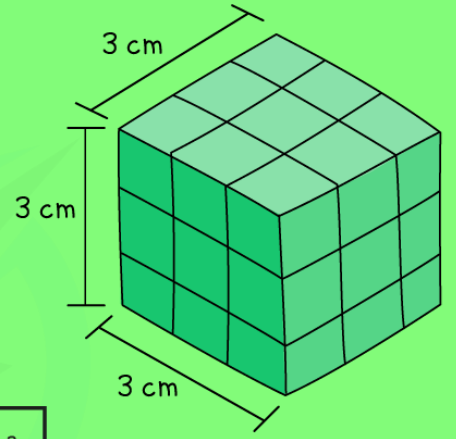
Ordinary Number	Standard Form
29	2.9×10^{1}
350	3.50×10^{2}
4716	4.716×10^{3}
600000000	6×10^{8}
0.3	3×10^{-1}
0.09	9×10^{-2}
0.0071	7.1×10^{-3}
0.000502	5.02×10^{-4}

$$\text{Light intensity} = \frac{1}{\text{Distance}^2}$$

Number	Number of Significant digits/figures
50000	One
0.008	One
89	Two
340	Two
6700	Two
0.012	Two
1002	Four
4.9210	Five







Surface area	6 cm²	24 cm²	54 cm²
Volume	1 cm³	8 cm³	27 cm³
Surface area : volume	6:1	3:1	2:1

MATHS IN CHEMISTRY

Substance	Atoms present	M_r
Hydrogen (H_2)	2 × H	(2 × 1) = 2
Water (H_2O)	(2 × H) + (1 × O)	(2 × 1) + 16 = 18
Potassium Carbonate (K_2CO_3)	(2 × K) + (1 × C) + (3 × O)	(2 × 39) + 12 + (3 × 16) = 138
Calcium Hydroxide ($Ca(OH)_2$)	(1 × Ca) + (2 × O) + (2 × H)	40 + (2 × 16) + (2 × 1) = 74
Ammonium Sulfate ($(NH_4)_2SO_4$)	(2 × N) + (8 × H) + (1 × S) + (4 × O)	(2 × 14) + (8 × 1) + 32 + (4 × 16) = 132

Hydrogen reacts with oxygen to form water:

$2 \times (H–H) + O=O \rightarrow 2 \times (H-O-H)$

Use the bond energies in the table to calculate the energy change for this reaction.

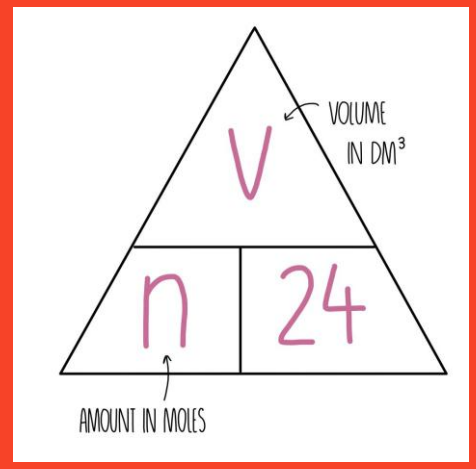
Bond	Bond energy
H–H	436 kJ mol^{-1}
O=O	498 kJ mol^{-1}
O-H	464 kJ mol^{-1}

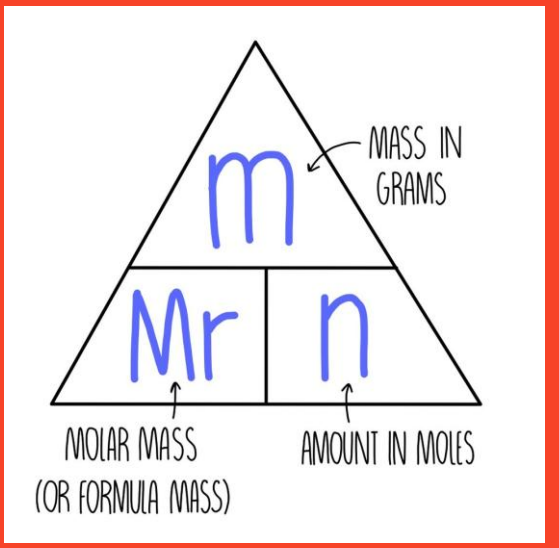
MOLES = CONCENTRATION × VOLUME

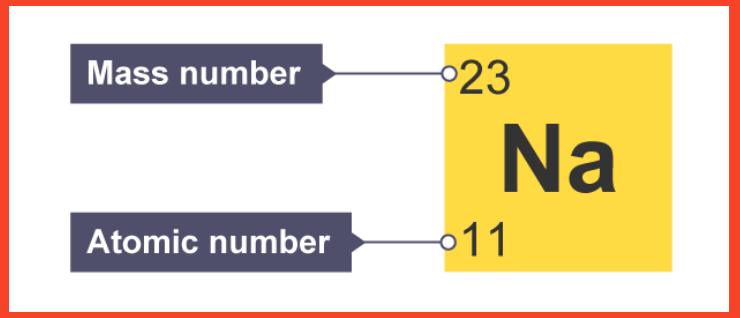
$1000cm^3 = 1dm^3$

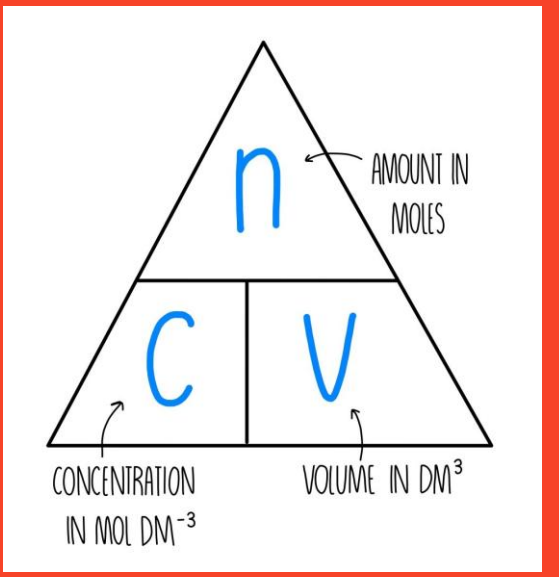
1000g = 1kg

Be sure you are able to convert from one to another









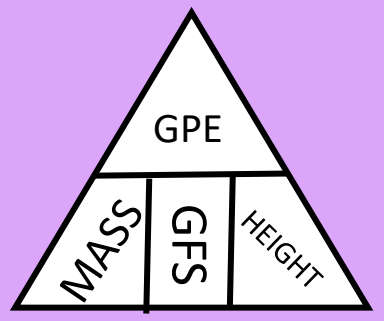
$$\text{percentage yield} = \frac{\textit{actual yield}}{\textit{predicted yield (theoretical yield)}} \times 100$$

? Calculate the mass of magnesium oxide that can be made by completely burning 6 g of magnesium in oxygen.

magnesium (s) + oxygen (g) → magnesium oxide (s)

$$\text{MOLES} = \frac{\text{MASS}}{\text{Mr}}$$

MATHS IN PHYSICS



Equations to Learn

kinetic energy = $\frac{1}{2}$ × mass × speed^2	$E_K = \frac{1}{2}mv^2$
GPE = mass × gravitational field strength × height	$E_P = mgh$
power = $\frac{\text{work done}}{\text{time taken}} = \frac{\text{energy transferred}}{\text{time taken}}$	$P = \frac{W}{t} = \frac{E}{t}$
efficiency = $\frac{\text{useful energy output}}{\text{total energy input}}$ efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	

Equations given in the exam

elastic potential energy = 0.5 × spring constant x (extension)^2	$E_e = \frac{1}{2}ke^2$
change in thermal energy = mass × specific heat capacity × temperature change	$\Delta E = mc\Delta\theta$

1000g = 1kg
1000J = 1kJ

- **Power is measured in W**
- **Current is measured in A**
- **P.D is measured in V**
- **Time is measured in s**

REMEMBER YOUR UNITS!

The power of the heater, in watts, is given by the equation:

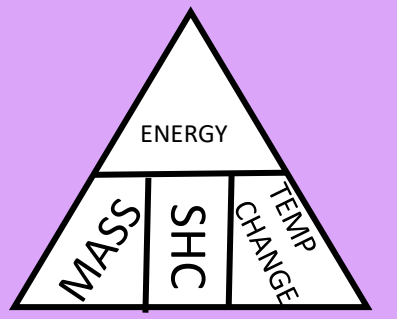
power (W) = voltage (V) × current (A)

The amount of heat transferred by the immersion heater is given by the equation:

***amount of energy (J)* = power (W) × time (s)**

To calculate SHC:

energy transferred ÷ (mass x temperature change)



Equations to Learn

density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{V}$

Equations given in the exam

change in thermal energy = mass × specific heat capacity × temperature change	$\Delta E = mc\Delta\theta$
thermal energy for a change in state = mass × specific latent heat	$E = mL$
^ for a gas: pressure × volume = constant	$pV = constant$

Equations to Learn

charge flow = current × time	$Q = I\,t$
potential difference = current × resistance	$V = I\,R$
total resistance = resistance of component 1 + resistance of component 2	$R_T = R_1 + R_2$
power = current × potential difference	$P = I\,V$
power = (current)^2 × resistance	$P = I^2R$
energy transferred = power × time	$E = Pt$
energy transferred = charge flow × potential difference	$E = QV$

Managing Exam stress

Parent tips:

- Encourage breaks and relaxation techniques.

- Ensure healthy sleep (8-9 hours), diet habits (2 litres of water), etc…

- Know the exam timetable.

Quick activity

How many of the 7 words did you remember?

Recall

I would like you to memorise this list and we will come back to this later:

- Cell membrane
- Cell wall
- Mitochondria
- Ribosomes
- Chloroplast
- Cytoplasm
- Nucleus

Thank you

Ofsted
Good
Provider

Resources To Support Learning

- SENECA: www.senecalearning.com
  - Username (School email)
  - Password (you set this yourself)
  - Class Code
- Focus E Learning: www.focuselearning.co.uk
  - Username: student@theapleton3762
  - Password: 5xw2qyqcw
- Kerboodle: www.kerboodle.com
  - Username: initial and surname
  - Password: initial and surname (and then reset yourself)
  - Institute Code: qpx7
  - **OR** use you school email address and passwords and click on Google

Ofsted Good Provider