Introductions
Mr D. Slack
Associate Deputy Headteacher
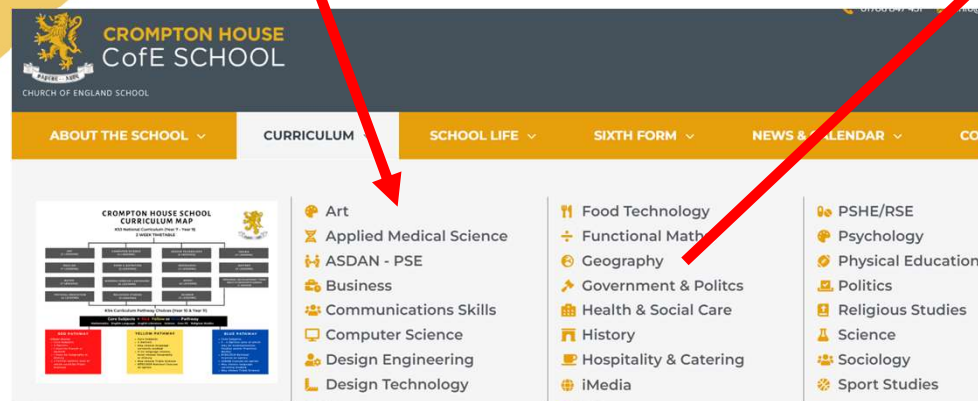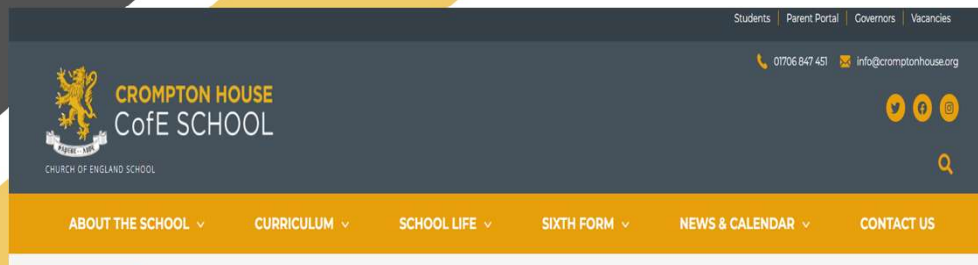
CROMPTON HOUSE
CofE SCHOOL

KS4 Overview
Mr D. Slack
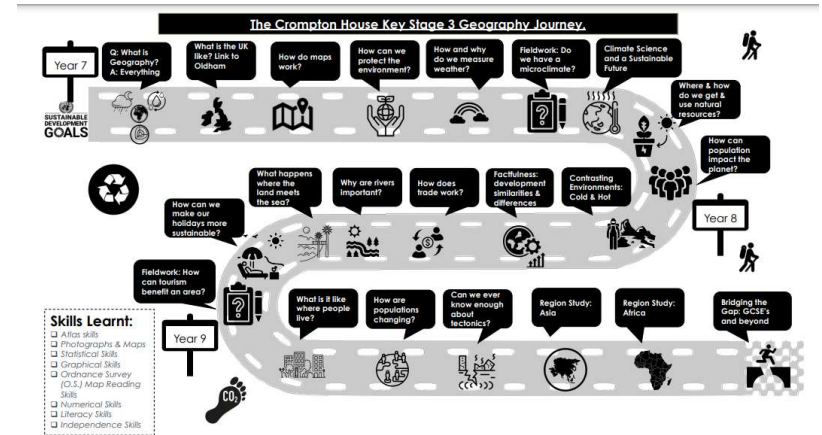## Associate Deputy Headteacher

KS4 Curriculum

- Maths
- English (Literature and Language)
- Science
- RS
- Core PE

- 4 'Option' Choices – Guided by the Pathways system

Where can I find what my child is learning? Crompton House Website

Where can I find what my child is learning? Curriculum Newsletters

- Sent home termly Y7-11

- Includes a summary of what is being studied in school for each subject in that year group

- Also includes tips for supporting learning outside the classroom

Year 7 Curriculum Newsletter
Summer Term

Dear parent/carer,

Welcome to our Curriculum Newsletter for the Summer term. As part of our on-going work in supporting students at home, our curriculum teams across the school have summarised the work they will be doing with students throughout this term so that you can see all of the different skills and knowledge bases that students will be developing. I hope that you find these entries to be an exciting taste of our brilliant curriculum that we have on offer and allow you to discuss subject learning with students at home. As always, should you wish to find out more information about any subject, please see our curriculum pages on the Crompton House website.

Kind regards,
Mr D. Slack
Assistant Headteacher – Curriculum

Subject	Learning
Art	Year 7 students will be exploring the topic of colour theory, exploring watercolour and coloured pencils to understand tertiary, complimentary, harmonious, cold and warm colours.
Computer Science	In Computer Science , students will be exploring Artificial Intelligence and looking at machine learning.

What is Home Learning?

- Learning does not stop at the end of the school day.

- Learning at home is an essential component of the educational process.

Homework assignments are carefully design by subject leaders to mirror and support the curriculum.

They serve as a bridge, linking directed learning from teachers, to independent student learning.

Home Learning: Frequency

KS4 Setting Timetable

	Red Week	Green Week
Monday	Science + Option V	Science + Option V
Tuesday	English	English
Wednesday	Maths	Maths
Thursday	RS + Option W	RS + Option W
Friday	Option Y + Option X	Option Y + Option X

GCSE Grades

- Every student is given an individual MEG ('Minimum Expected Grade')
- These grades are calculated based on:
  - CATs Data collected in Y7 (Cognative Ability Tests)
  - Data collected on each student throughout Y7-9
  - Any additional information provided at transition

- MEGs can and will change - they will move up with student performance

GCSE Grades

New grading structure	Current grading structure
9	
8	A*
7	A
6	B
5	C
4	
3	D
	E
2	F
1	G
U	U

Grade 4 or Grade 5?

Always push for 5.

Vocational Grades

WJEC Vocational Awards	Anticipated Performance Points*	GCSE 9-1
Level 2 Distinction*	8.5	9
		8
Level 2 Distinction	7	7
Level 2 Merit	5.5	6
		5
Level 2 Pass	4	4
Level 1 Distinction*	3	3
Level 1 Distinction	2	2
Level 1 Merit	1.5	
Level 1 Pass	1	1

Level 2 = Grade 4+

Level 1 = Grade 1-3

Assessment in Y10

- Summative Assessment 1 – November 2024
- Short Report 1 - WC 9th December
- Resetting – January 2024
- Summative Assessment 2 – January/February 2024
- Short Report 2 – WC 3rd March
- 12th & 18th March – Parent's Evening
- Year 10 Mocks – WC 16th June
- Short Report 3 – WC 7th July

Grade 4+ in Maths and English

Average Point Score

Average Point Scores

- Lots of Sixth Form and Colleges will ask for an 'average point score' or 'APS'
- This involves taking all the GCSE qualifications and adding them together
- You then divide this number by the number of qualifications to get your 'APS'

Maths – 5	RS – 7
Eng Lang – 6	History – 6
Eng Lit – 6	Art – 5
Spanish – 5	PE - 5
Science – 4:4	

Total Points: 53
Number of GCSEs: 10

APS: 5.3

English Curriculum
Mr D. Pacey
Assistant Headteacher

GCSE English Language

Paper 1: Explorations in Creative Reading and Writing

What's assessed

Section A: Reading

- one literature fiction text

Section B: Writing

- descriptive or narrative writing

Assessed

- written exam: 1 hour 45 minutes
- 80 marks
- 50% of GCSE

Questions

Reading (40 marks) (25%)– one single text

- 1 short form question (1 x 4 marks)
- 2 longer form questions (2 x 8 marks)
- 1 extended question (1 x 20 marks)

Writing (40 marks) (25%)

- 1 extended writing question (24 marks for content, 16 marks for technical accuracy)

GCSE English Language

Paper 2: Writers' Viewpoints and Perspectives

What's assessed

Section A: Reading

- one non-fiction text and one literary non-fiction text

Section B: Writing

- writing to present a viewpoint

Assessed

- written exam: 1 hour 45 minutes
- 80 marks
- 50% of GCSE

Questions

Reading (40 marks) (25%) – two linked texts

- 1 short form question (1 x 4 marks)
- 2 longer form questions (1 x 8, 1 x 12 marks)
- 1 extended question (1 x 16 marks)

Writing (40 marks) (25%)

- 1 extended writing question (24 marks for content, 16 marks for technical accuracy)

GCSE English Language

Non-examination Assessment: Spoken Language

What's assessed

(AO7–AO9)

- presenting
- responding to questions and feedback
- use of Standard English

Assessed

- teacher set throughout course
- marked by teacher
- separate endorsement (0% weighting of GCSE)

GCSE English Literature

Paper 1: Shakespeare and the 19th-century novel

What's assessed

- Shakespeare plays
- The 19th-century novel

How it's assessed

- written exam: 1 hour 45 minutes
- 64 marks
- 40% of GCSE

Questions

Section A Shakespeare: students will answer one question on their play of choice. They will be required to write in detail about an extract from the play and then to write about the play as a whole.

Section B The 19th-century novel: students will answer one question on their novel of choice. They will be required to write in detail about an extract from the novel and then to write about the novel as a whole.
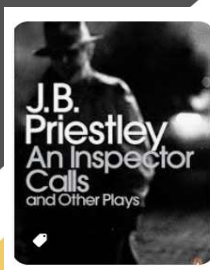
GCSE English Language

Paper 2: Modern texts and poetry

What's assessed

- Modern prose or drama texts
- The poetry anthology
- Unseen poetry

How it's assessed

- written exam: 2 hour 15 minutes
- 96 marks
- 60% of GCSE

Questions

Section A Modern texts: students will answer one essay question from a choice of two on their studied modern prose or drama text.

Section B Poetry: students will answer one comparative question on one named poem printed on the paper and one other poem from their chosen anthology cluster.

Section C Unseen poetry: Students will answer one question on one unseen poem and one question comparing this poem with a second unseen poem.

Homework

- Homework will always be set weekly on Class Charts on a Tuesday and is due in on a Tuesday.
- The average time to be spent on the homework is indicated on Class Charts.

Reading Matters

Reading Matters

Research absolutely confirms that regular reading ensures better grades, a better job and better mental health.

To help with GCSE English Language and Literature (and all subjects) student should read:

- Opinion articles (such as the free ones on the Guardian online)
- Biographies and autobiographies
- High-quality fiction.

How does Crompton House support reading?

- We have a fantastically stocked Library.
- All students have access to the SORA online library.

Learn together

What can we do at home to help?

- Research shows that encouraging reading at home is the most powerful thing you can do to ensure your child is successful in English (and nearly all other subjects in fact!)

- Read the Literature texts yourself. If you need a copy email Mr. Pacey at d.pacey@cromptonhouse.org. Talk about the texts with your child.

- Watch versions of the Literature texts together. There is a fantastic BBC version of 'An Inspector Calls' available to stream and there are lots of versions of 'Macbeth' and 'A Christmas Carol' available to stream. Discuss them after watching.

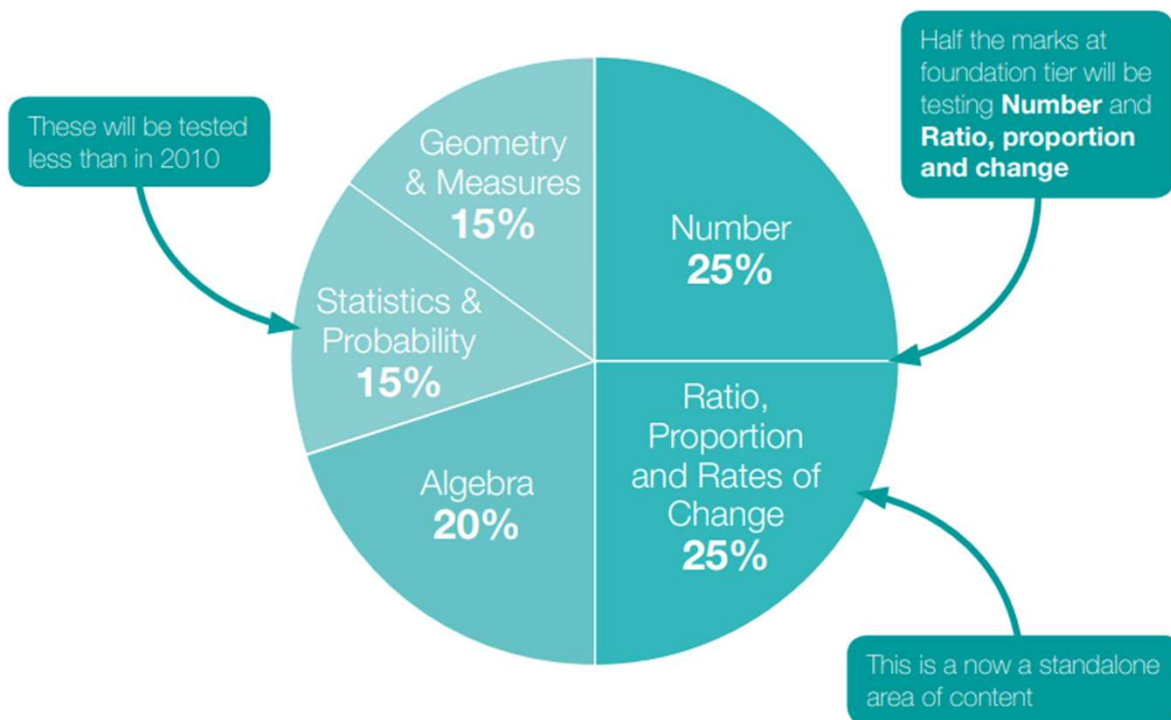- See a version at the theatre.

Maths Curriculum
Mrs C. Borthwick
Curriculum Team Leader - Maths

CROMPTON HOUSE
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Course Content

- Number
- Ratio and Proportion
- Algebra
- Geometry
- Statistics and Probability

Foundation tier papers will assess the different content domains in these proportions:

Foundation

These will be tested less than in 2010

Geometry & Measures **15%**

Statistics & Probability **15%**

Algebra **20%**

Number **25%**

Ratio, Proportion and Rates of Change **25%**

Half the marks at foundation tier will be testing **Number** and **Ratio, proportion and change**

This is a now a standalone area of content
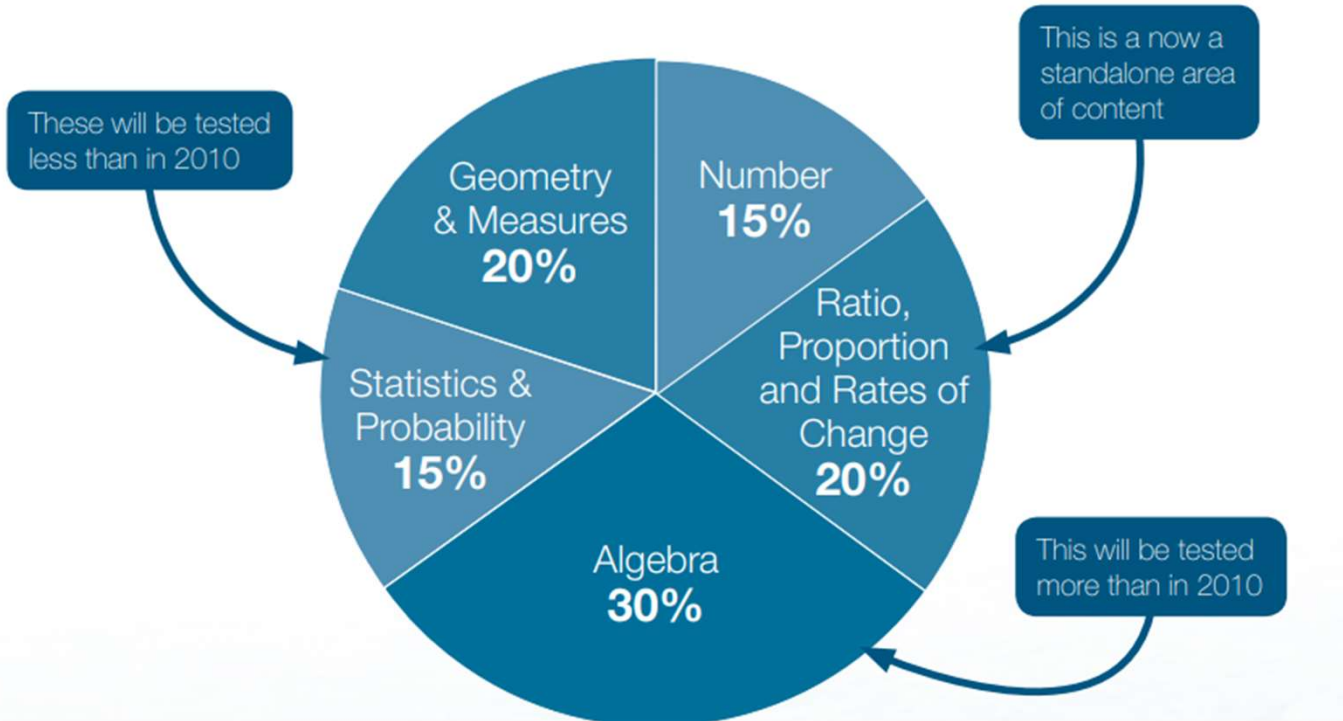
Foundation Tier: Grades 1-5

50% of the marks are for numerical skills.

Students need to aim for above 60% to achieve Grade 4.

Students need to aim for above 70% to achieve Grade 5.

Higher tier papers will assess the different content domains in these proportions:

Higher

These will be tested less than in 2010

Geometry & Measures 20%

Number 15%

This is a now a standalone area of content

Statistics & Probability 15%

Ratio, Proportion and Rates of Change 20%

Algebra 30%

This will be tested more than in 2010

Higher Tier: Grades 4-9

By comparison, only 35% of the paper assesses numerical skills-more emphasis on algebra.

Students need to aim for: 45% +to secure a Grade 6

60%+ to secure a Grade 7

75%+ to secure Grade 8

85%+ to secure Grade 9

1   Write 38% as a decimal.

15 Work out $\dfrac{6}{7} \times \dfrac{5}{12}$

Give your answer as a fraction in its simplest form.

Skills questions (50%/40%)

26 The price of a holiday increases by 20%
This 20% increase adds £240 to the price of the holiday.

Work out the price of the holiday before the increase.

Problem solving (40%/60%)
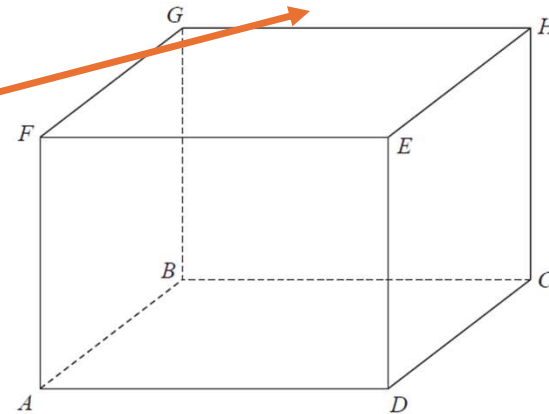
1   Work out $8.46 \div 0.15$

15 The equation of line L_1 is $y = 2x - 5$
The equation of line L_2 is $6y + kx - 12 = 0$

L_1 is perpendicular to L_2

Find the value of k.
You must show all your working.

22 $ABCDEFGH$ is a cuboid.

$AF = 6.8\,\text{cm}$
$FC = 13.6\,\text{cm}$

Work out the size of the angle between FC and the plane $ABCD$.

Key Differences

Equipment: scientific calculator essential

	Paper 1 Non-calculator	Paper 2 Calculator	Paper 3 Calculator
Foundation (grades 1-5)	33.3% weighting — 1 hour and 30 minutes — 80 marks	33.3% weighting — 1 hour and 30 minutes — 80 marks	33.3% weighting — 1 hour and 30 minutes — 80 marks
Higher (grades 4-9)	33.3% weighting — 1 hour and 30 minutes — 80 marks	33.3% weighting — 1 hour and 30 minutes — 80 marks	33.3% weighting — 1 hour and 30 minutes — 80 marks

Homework: SPARX

SPARX SUPPORT
Drop-in session for support!

Sparx Maths

Drop-in support session for students.

Day and Time	Monday and Friday lunch time
Room	M207

Come along if you need help with:

- Setting up or logging into SPARX
- Maths questions

- Set on WEDNESDAY
- Due in by the end of the day on MONDAY
- Parents/carers receive a reminder email over the weekend.

Other free resources
- Maths Genie
- Corbett maths
- Physics and Maths Tutor (PMT)

Sparx impact on grades

Sparx	P8
0%	-1.29
1%-10%	-0.79
10%-30%	-0.14
30%-60%	0.05
60-75%	0.03
76-90%	1.03
90% +	1.37

- This shows that students who completed more than 75% of their Sparx homeworks regularly ended up gaining more than one grade better than their MEG.

Science Curriculum
Dr E. O'Brien
Assistant Headteacher

CROMPTON HOUSE
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Combined Science or Separate Science

AQA
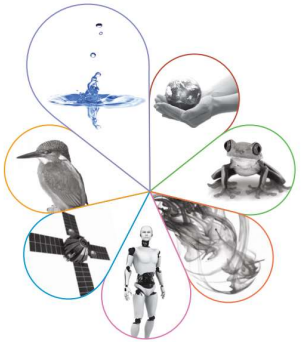Realising potential

GCSE COMBINED SCIENCE: TRILOGY
(8464)

Specification
For teaching from September 2016 onwards
For exams in 2018 onwards

Version 1.1 04 October 2019

Two GCSEs

9 periods a fortnight

Specialist teachers

Biology teacher

Chemistry teacher

Physics teacher

6 exams at end of course (1 hour 15 minutes each)

Each single science will be worth one GCSE grade. Combined science will be an award worth 2 GCSEs.

- Students taking separate science GCSEs will get a grade from 9 to 1 for each subject, with 9 being the highest grade.

- Students studying combined science will receive an award worth two GCSEs, consisting of two equal or adjacent grades from 9 to 1 (9-9, 9-8, 8-8, 8-7, 7-7…to 1-1).

- If the numbers are different, the highest number will always be reported on the left.

Specification at a glance

This qualification is linear. Linear means that students will sit all their exams at the end of the course.

Subject content

Biology

- 1. Cell biology
- 2. Organisation
- 3. Infection and response
- 4. Bioenergetics
- 5. Homeostasis and response
- 6. Inheritance, variation and evolution
- 7. Ecology
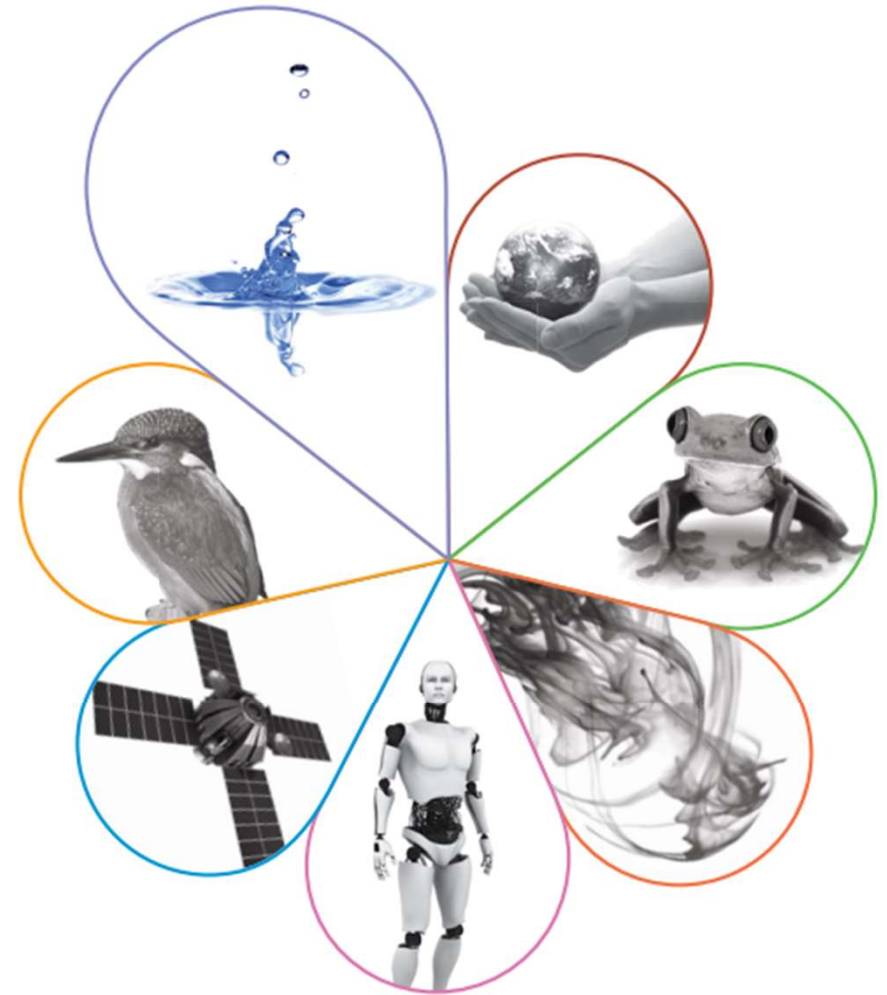
Specification at a glance

This qualification is linear. Linear means that students will sit all their exams at the end of the course.

Subject content

Chemistry

- 8. Atomic structure and the periodic table
- 9. Bonding, structure, and the properties of matter
- 10. Quantitative chemistry
- 11. Chemical changes
- 12. Energy changes
- 13. The rate and extent of chemical change
- 14. Organic chemistry
- 15. Chemical analysis
- 16. Chemistry of the atmosphere
- 17. Using resources
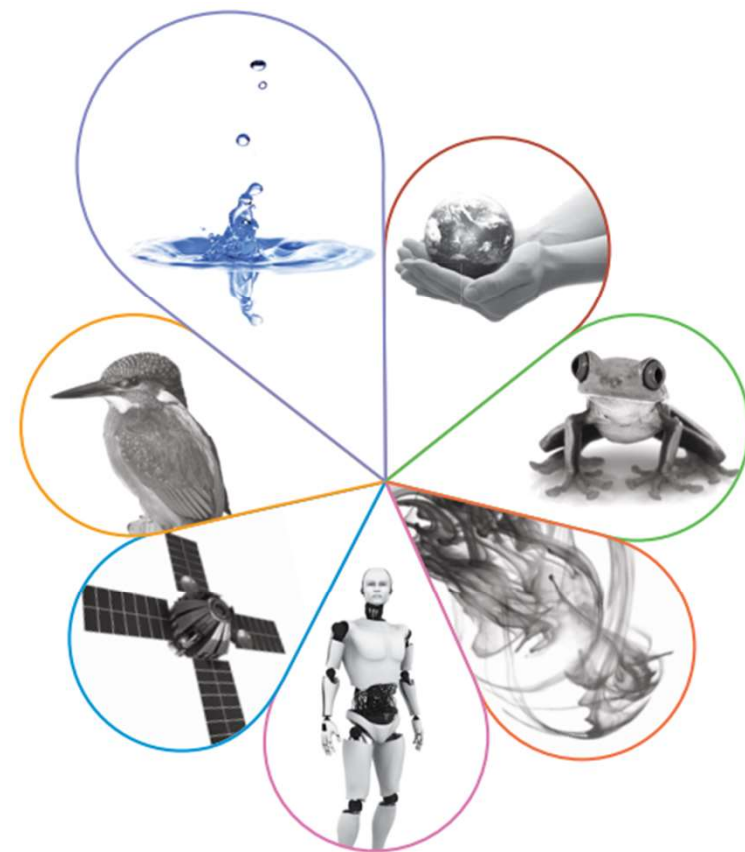
Specification at a glance

This qualification is linear. Linear means that students will sit all their exams at the end of the course.

Subject content

Physics

- 18. Energy
- 19. Electricity
- 20. Particle model of matter
- 21. Atomic structure
- 22. Forces
- 23. Waves
- 24. Magnetism and electromagnetism

Separate Biology, Chemistry and Physics GCSE in each subject.
2 exams of 1 hour 45 minutes in each subject.

AQA
Realising potential

GCSE
BIOLOGY
(8461)

Specification
For teaching from September 2016 onwards
For exams in 2018 onwards

Version 1.0 21 April 2016
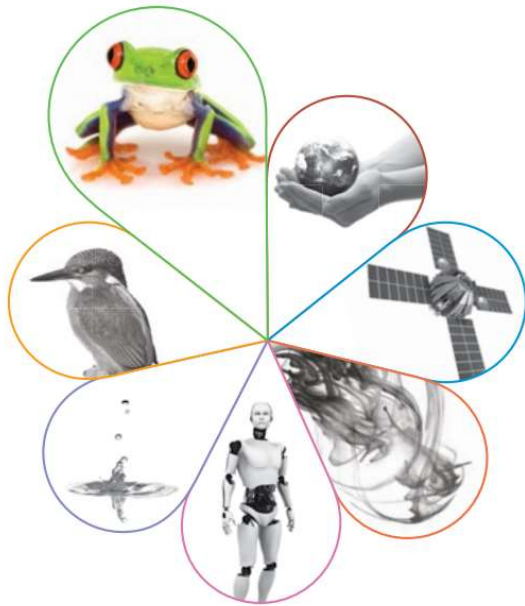
Subject content

4.1   Cell biology

4.2   Organisation

4.3   Infection and response

4.4   Bioenergetics

4.5   Homeostasis and response

4.6   Inheritance, variation and evolution

4.7   Ecology

4.8   Key ideas

AQA
Realising potential

GCSE
CHEMISTRY
(8462)

Specification
For teaching from September 2016 onwards
For exams in 2018 onwards

Version 1.1 04 October 2019

Subject content

- 1. Atomic structure and the periodic table
- 2. Bonding, structure, and the properties of matter
- 3. Quantitative chemistry
- 4. Chemical changes
- 5. Energy changes
- 6. The rate and extent of chemical change
- 7. Organic chemistry
- 8. Chemical analysis
- 9. Chemistry of the atmosphere
- 10. Using resources

AQA
Realising potential

GCSE
PHYSICS
(8463)

Specification
For teaching from September 2016 onwards
For exams in 2018 onwards

Version 1.1 30 September 2019
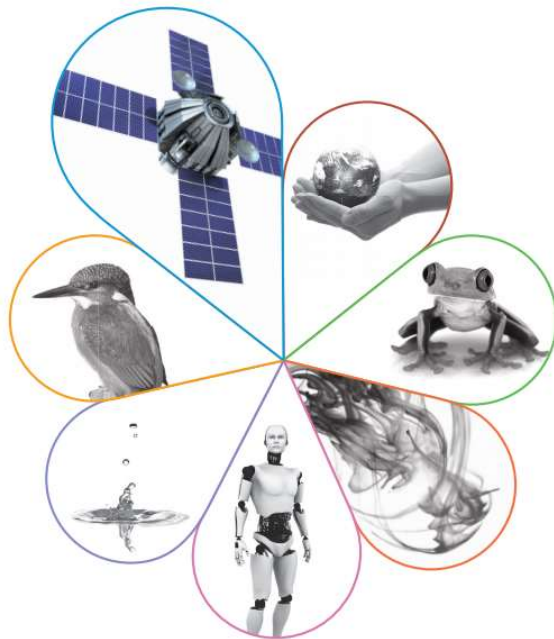
Subject content

- 1. Energy
- 2. Electricity
- 3. Particle model of matter
- 4. Atomic structure
- 5. Forces
- 6. Waves
- 7. Magnetism and electromagnetism
- 8. Space physics (physics only)

Foundation or Higher – what's best?

The level of demand of the questions in each tier will determine the suitability for each indivdual.

HIGHER TIER

60% **Equivalent to 252 marks** Trilogy combined — High demand

40% **Equivalent to 168 marks** Trilogy combined — Standard demand

FOUNDATION TIER

60% **Equivalent to 252 marks** Trilogy combined — Low demand
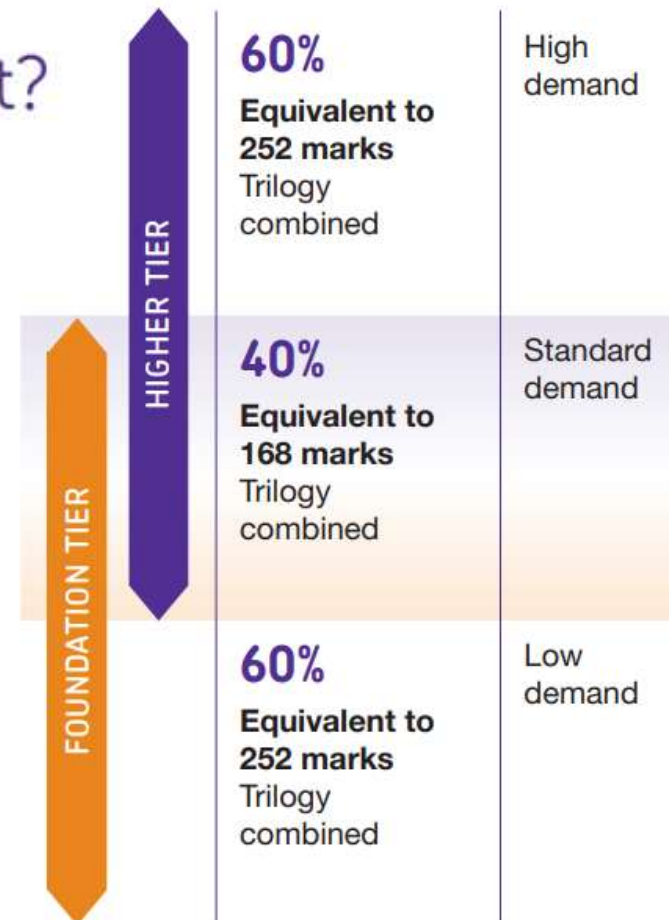
30% of the marks are common between tiers. These are standard demand.

There are no low demand questions on the Higher tier.

Figure 1 shows the human digestive system.

Figure 1

A

B

C

D

E
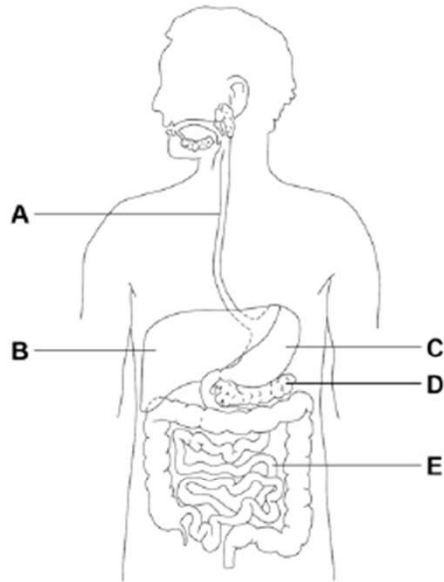
Foundation tier Grade 5-1

Questions tend to be more scaffolded especially at the start of the exam paper.

(a)   Which organ in **Figure 1** produces acid?

Tick **one** box.

A ☐   B ☐   C ☐   D ☐   E ☐

(b)   Which organ in **Figure 1** produces bile?

Tick **one** box.

A ☐   B ☐   C ☐   D ☐   E ☐

(a) A food contains protein. Describe, in as much detail as you can, what happens to this protein after the food is swallowed.

_____

_____

_____

_____

_____

_____

_____

_____

(c) Bile is produced in the liver and is released into the small intestine.

Explain how bile helps the digestion of milk.

_____

_____

_____

_____

Required practical activities per specification

The below table shows which required practical activities must be covered by each of the five GCSE science specifications.

Required practical activity	Synergy	Trilogy	Biology	Chemistry	Physics
Microscopy	✓	✓	✓		
Osmosis	✓	✓	✓		
Enzymes	✓	✓	✓		
Food tests	✓	✓	✓		
Photosynthesis	✓	✓	✓		
Reaction time	✓	✓	✓		
Field investigations	✓	✓	✓		
Plant responses			✓		
Decay			✓		
Microbiology			✓		
Making salts	✓	✓		✓	
Temperature changes	✓	✓		✓	
Rates of reaction	✓	✓		✓	
Chromatography	✓	✓		✓	
Water purification	✓	✓		✓	
Electrolysis	✓	✓		✓	
Neutralisation				✓	
Identifying ions				✓	
Specific heat capacity	✓	✓			✓
Resistance	✓	✓			✓
I-V characteristics	✓	✓			✓
Density	✓	✓			✓
Force and extension	✓	✓			✓
Acceleration	✓	✓			✓
Waves	✓	✓			✓
Radiation and absorption	✓	✓			✓
Thermal insulation					✓
Light					✓

Figure 1 shows a root hair viewed using a microscope.

Figure 1
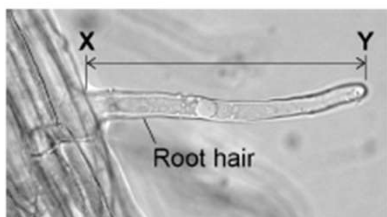
Root hair

(a) The root hair was viewed at a magnification of ×50

The image length of the root hair **X–Y** is 43 mm

Calculate the real length of the root hair in micrometres (µm).

_____

_____

_____

_____

_____

Real length = _____ µm

(b) A microscope has a ×5 eyepiece lens.

Describe how to use this microscope to observe a prepared slide of root hair cells at a magnification of ×50

_____

_____

A student observed slides of onion cells using a microscope.

Figure 2 shows two of the slides the student observed.

Figure 2
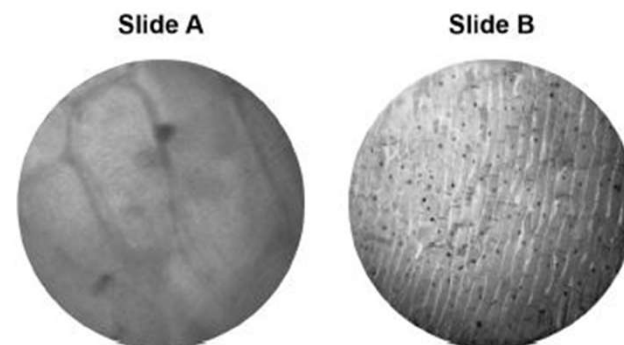
Slide A   Slide B

The cells on the slides are **not** clear to see.

(c) Describe how the student should adjust the microscope to see the cells on Slide A more clearly.

_____

_____

(d) Describe how the student should adjust the microscope to see the cells on Slide B more clearly.

_____

_____

_____

For each lesson of Science bring your calculator

Biology 10% of marks from mathematical content

Chemistry 20% of marks from mathematical content

Physics 30% of marks from mathematical content
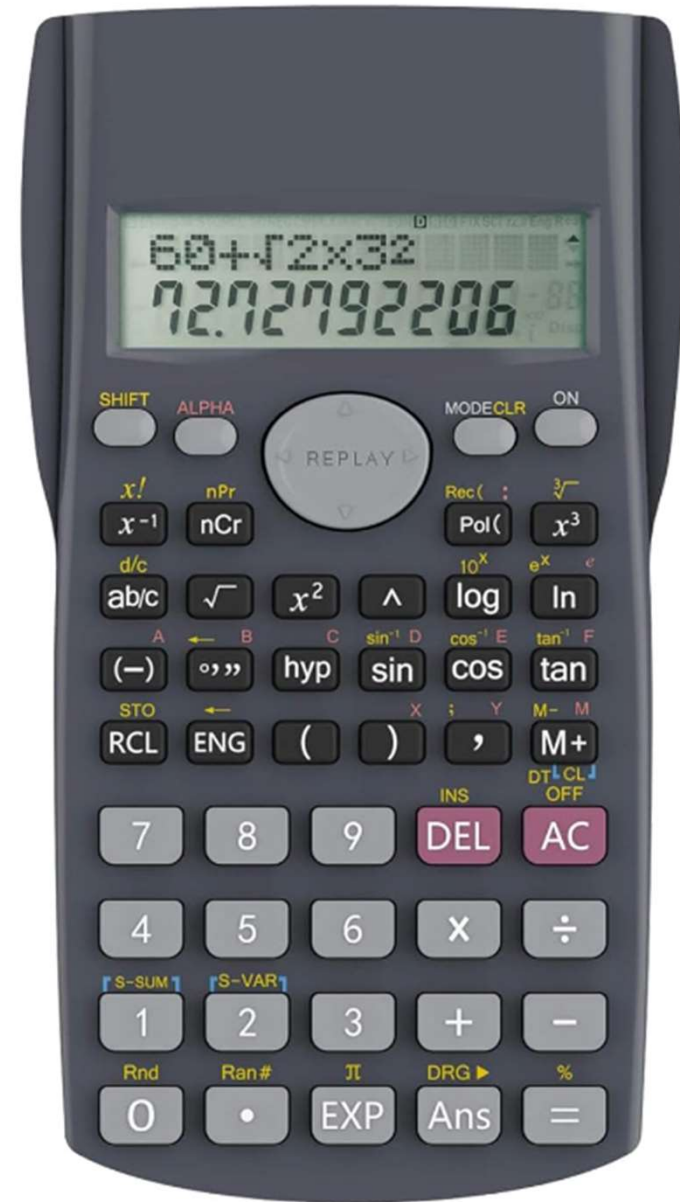
Accessing Kerboodle

Got to website https://www.kerboodle.com/users/login

Click on sign in with Microsoft

AQA GCSE Sciences (9–1)
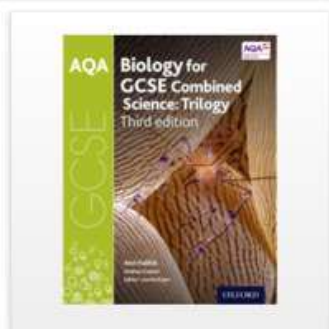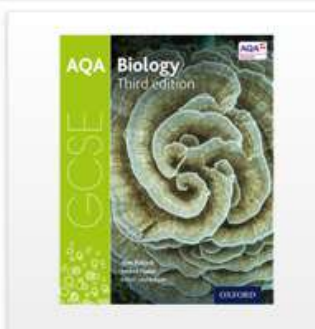
AQA Foundation: Combined Science Trilogy and Entry Level Certificate
AQA GCSE Sciences (9–1)

AQA Biology for GCSE Combined Science: Trilogy Third edition
AQA GCSE Sciences (9–1)

AQA Biology Third edition
AQA GCSE Sciences (9–1)

AQA Chemistry for GCSE Combined Science: Trilogy Third edition
GCSE Sciences (9–1)

AQA Chemistry Third edition
AQA GCSE Sciences (9–1)

AQA Physics for GCSE Combined Science: Trilogy Third edition
AQA GCSE Sciences (9–1)

AQA Physics Third edition
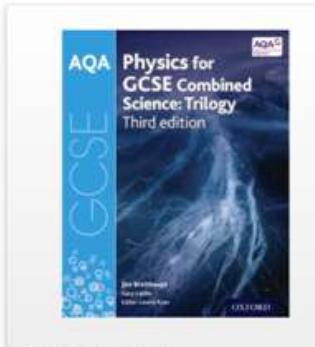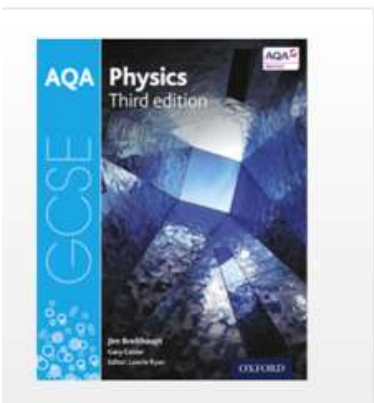
DIGITAL BOOK

Online versions of the Student Books for display and annotation

B 1 Cell structure and transport

1.1 The world of the microscope

Learning objectives

After this topic, you should know:

- how microscopy techniques have developed over time
- the differences in magnification and resolution between a light microscope and an electron microscope
- how to calculate the magnification, real size, and image size of a specimen.
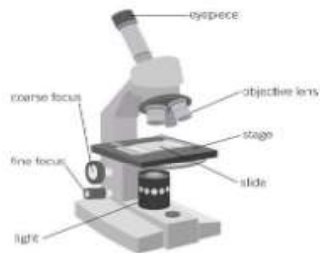
Living things are all made up of cells, but most cells are so small you can only see them using a microscope. It is important to grasp the units used for such tiny specimens before you start to look at them.

Using units

1 kilometre (km) = 1000 metres (m)

1 m = 100 centimetres (cm)

1 cm = 10 millimetres (mm)

1 mm = 1000 micrometres (µm)

1 µm = 1000 nanometres (nm) – so a nanometre is 0.000 000 001 metres (or written in standard form as 1×10^{-9} m).

The first light microscopes were developed in the mid-17th century. Their development has continued ever since and they are still widely used to look at cells. Light microscopes use a beam of light to form an image of an object and the best can magnify around 2000 times (×2000), although school microscopes usually only magnify several hundred times. They are relatively cheap, can be used almost anywhere, and can magnify live specimens (Figures 1 and 2).

The invention of the electron microscope in the 1930s allowed biologists to see and understand more about the subcellular structures inside cells. These instruments use a beam of electrons to form an image and can magnify objects up to around 2000 000 times. Transmission electron microscopes give 2D images with very high magnification and resolution. Scanning electron microscopes give dramatic 3D images but lower magnifications (Figure 3). Electron microscopes are large, very expensive, and have to be kept in special temperature, pressure, and humidity-controlled rooms.

Figure 1 A light microscope

Calculating magnification

You can calculate the magnification you are using with a light microscope very simply. You multiply the magnification of the eyepiece lens by the magnification of the objective lens. So if your eyepiece lens is ×4 and your objective lens is ×10, your overall magnification is:

$4 \times 10 = \times 40$

When you label drawings made using a microscope, make it clear that the magnification you give is the magnification at which you looked at the specimen (e.g., as viewed at ×40).

Calculating the size of an object

You will want to calculate the size of objects under the microscope. There is a simple formula for this, based on the magnification triangle.

As long as you know or can measure two of the factors, you can find the third.

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

For example, if you know you are working at magnification ×40, and the image of the cell you are looking at measures 1 mm, you can work out the actual diameter of the cell:

$$\text{size of real object} = \frac{\text{size of image}}{\text{magnification}}$$

so

$$= \frac{1}{40} \text{mm} = 0.025 \text{mm or } 25 \text{µm}$$

Your cell has a diameter of **25 µm**.

Magnifying and resolving power

Microscopes are useful because they magnify things, making them look bigger. The height of an average person magnified by one of the best light microscopes would look about 3.5 km, and by an electron microscope about 3500 km. There is, however, a minimum distance between two objects when you can see them clearly as two separate things. If they are closer together than this, they appear as one object. Resolution is the ability to distinguish between two separate points and it is the **resolving power** of a microscope that affects how much detail it can show. A light microscope has a resolving power of about 200 nm, a scanning electron microscope of about 10 nm and a transmission electron microscope of about 0.2 nm – that is approximately the distance apart of two atoms in a solid substance!

1 State one advantage and one disadvantage of using:
   a a light microscope [2 marks]   b an electron microscope. [2 marks]
2 a A student measured the diameter of a human capillary on a micrograph. The image measures 5 mm and the student knows the magnification is ×1000. How many micrometres is the diameter of the capillary? [3 marks]
   b A student is told the image of the cell has a diameter of 800 µm. The actual cell has a diameter of 20 µm. At what magnification has the cell been observed? [2 marks]
3 Evaluate the use of an electron microscope and a light microscope, giving one example where each type of microscope might be used. [6 marks]

Figure 2 Onion cells dividing as seen through a light microscope – magnification ×570

Figure 3 Chromosomes during cell division seen with a scanning electron microscope – magnification ×4500

Synoptic links

You can learn more about writing very small or very large numbers in standard form in Maths skills MS1b.

For more information on cell division look at Chapter B2.

Study tip

Make sure you can work out the magnification, the size of a cell, or the size of the image depending on the information you are given.

Key points

- Light microscopes magnify up to about ×2000, and have a resolving power of about 200 nm.
- Electron microscopes magnify up to about ×2000 000, and have a resolving power of around 0.2 nm.
- $\text{magnification} = \dfrac{\text{size of image}}{\text{size of real object}}$

Notebook

4 | 5

. You can make revision notes and they will be here next time you open the text book.

B *I*

Cell structure and transport

.1 The world of the mi...

Dr O'Brien said that this is important and ....

Objectives
you should know:
...g techniques have
...time
...n magnification and
...n a light microscope
...microscope
...the magnification,
...ge size of a specimen.

Living things are all made up of cells, but n...
only see them using a microscope. It is imp...
such tiny specimens before you start to loo...

Using units
1 kilometre (km) = 1000 metres (m)
1 m = 100 centimetres (cm)
1 cm = 10 millimetres (mm)
1 mm = 1000 micrometres (µm)
1 µm = 1000 nanometres (nm) – so a nanometre is 0.000 000 001 metres (or written in standard form as 1×10^{-9} m).

The first light mic...   ...century.
Their developmen...   ...still widely
used to look at ce...   ...to form an
image of an objec...   ...times (×2000),
although school...   ...hundred times.
They are relatively...   ...d can magnify
live specimens (Fi...

The invention of t...   ...ved
biologists to see a...   ...ar structures
inside cells. These...   ...rm an image
and can magnify...   ...smission
electron microsco...   ...fication and
resolution. Scanni...   ...D images
but lower magnif...   ...re large, very
expensive, and ha...   ...ssure, and
humidity-controll...

—eyepiece
—objective lens
—stage
—slide
...roscope

Calculating ...
You can calculate...   ...ht microscope
very simply. You...   ...e lens by the
magnification of...   ...is ×4 and your
objective lens is ×...

$4 \times 10 = \times 40$

When you label d...   ...t clear that
the magnification...   ...ou looked at
the specimen (eg...

Menu:
- ↶ Undo
- ↷ Redo
- ▶ Cursor
- ✎ Pen
- ✏ Highlighter
- ⌫ Eraser
- 🗒 Sticky Note
- 💡 Spotlight
- 💾 Save
- 🗑 Clear All
- ◉ Hide

Calculating the size of an object
You will want to calculate the size of objects under the microscope. There is a simple formula for this, based on the magnification triangle.

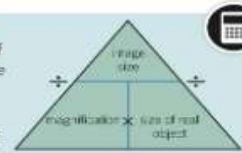As long as you know or can measure two of the factors, you can find the third.

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

For example, if you know you are working at magnification ×40, and the image of the cell you are looking at measures 1 mm, you can work out the actual diameter of the cell:

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Microscopes are useful because they magnify things, making them look bigger. The height of an average person magnified by one of the best light microscopes would look about 3.5 km, and by an electron microscope about 3500 km. There is, however, a minimum distance between two objects when you can see them clearly as two separate things. If they are closer together than this, they appear as one object. Resolution is the ability to distinguish between two separate points and it is the **resolving power** of a microscope that affects how much detail it can show. A light microscope has a resolving power of about 200 nm, a scanning electron microscope of about 10 nm and a transmission electron microscope of about 0.2 nm – that is approximately the distance apart of two atoms in a solid substance!

1 State one advantage and one disadvantage of using:
   a a light microscope [2 marks]   b an electron microscope. [2 marks]
2 a A student measured the diameter of a human capillary on a micrograph. The image measures 5 mm and the student knows the magnification is ×1000. How many micrometres is the diameter of the capillary? [3 marks]
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3 Evaluate the use of an electron microscope and a light microscope, giving one example where each type of microscope might be used. 🖊 [6 marks]
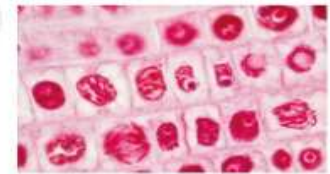
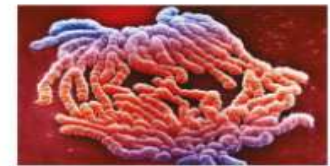**Figure 2** Onion cells dividing as seen through a light microscope – magnification ×570

Figure 3 Chromosomes during cell division seen with a scanning electron microscope – magnification ×4500

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Study tip
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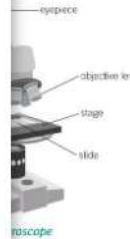- $\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$

📁 Resources   4 - 5

- the differences in magnification and resolution between a light microscope and an electron microscope
- how to calculate the magnification, real size, and image size of a specimen.

Using units

1 kilometre (km) = 1000 metres (m)

1 m = 100 centimetres (cm)

1 cm = 10 millimetres (mm)

1 mm = 1000 micrometres (µm)

1 µm = 1000 nanometres (nm) – so a nanometre is 0.000 000 001 metres (or written in standard form as 1×10^{-9} m).

The first light microscopes were developed in the mid-17th century. Their development has continued ever since and they are still widely used to look at cells. Light microscopes use a beam of light to form an image of an object and the best can magnify around 2000 times (×2000), although school microscopes usually only magnify several hundred times. They are relatively cheap, can be used almost anywhere, and can magnify live specimens (Figures 1 and 2).

The invention of the electron microscope in the 1930s allowed biologists to see and understand more about the subcellular structures inside cells. These instruments use a beam of electrons to form an image and can magnify objects up to around 2 000 000 times. Transmission electron microscopes give 2D images with very high magnification and resolution. Scanning electron microscopes give dramatic 3D images but lower magnifications (Figure 3). Electron microscopes are large, very expensive, and have to be kept in special temperature, pressure, and humidity-controlled rooms.

Figure 1 A light microscope

Calculating magnification

You can calculate the magnification you are using with a light microscope very simply. You multiply the magnification of the eyepiece lens by the magnification of the objective lens. So if your eyepiece lens is ×4 and your objective lens is ×10, your overall magnification is:

$4 \times 10 = \times 40$

When you label drawings made using a microscope, make it clear that the magnification you give is the magnification at which you looked at the specimen (eg., as viewed at ×40).

For example, if you know you are working at magnification ×40, and the image of the cell you are looking at measures 1 mm, you can work out the actual diameter of the cell:

$$\text{size of real object} = \frac{\text{size of image}}{\text{magnification}}$$

so

$$= \frac{1}{40} \text{ mm} = 0.025 \text{ mm or } 25 \,\mu\text{m}$$

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Figure 3 Chro[...]
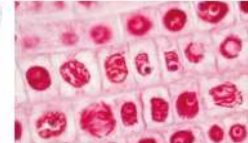seen with a sca[...]
magnification [...]

Synopti[...]

You can learn [...]
very small or [...]
standard for[...]

For more inf[...]
look at Chap[...]

Study ti[...]

Make sure yo[...]
magnification [...]
size of the im[...]
information y[...]

Key poin[...]

- Light micr[...]
  about ×20[...]
  power of [...]
- Electron [...]
  to about ×[...]
  resolving [...]
- magnifica[...]

B1 Retrieval questions

What are two types of eukaryotic cell?

B *I* U x² x₂ | ≔ ⋮≡

Enter text here

Click to reveal answer

exam
pulse

In this worksheet, you will answer a selection of questions about photosynthesis. Each question features a different command word.

1   Name the structure in plant cells where chlorophyll is found.

_____ (1 mark)

2   Explain the function of chlorophyll.

_____
_____
_____ (2 marks)

3   A student wants to study the effect of carbon dioxide concentration on the rate of photosynthesis.

They are provided with a selection of equipment including:

- beaker
- iodine solution
- conical flask
- sodium hydrogen carbonate powder
- measuring syringe
- pond weed
- measuring cylinder
- dandelion plant
- boiling tube
- lamp
- funnel
- thermometer
- Bunsen burner
- balance
- water bath
- metre ruler

Not all of the equipment is needed for the investigation.

Choose which equipment would be useful for this investigation.

_____
_____
_____ (5 marks)

4   Give a reason for each piece of equipment you chose.

_____
_____
_____
_____
_____ (5 marks)

Primrose Kitten Video 1: Five common mistakes in Chemistry

Press play to watch the video.

▶ 00:00 / 02:20 ◀)) ‖‖‖‖‖‖ ⤢

Reset

< Back   **2** of 2

SENECA

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Students, start here

Teachers, start here

Parents, start here

Good evening, Elizabeth!

Share topic ↱

Cell Differentiation

Cell differentiation is the process where a cell develops new sub-cellular structures (structures inside a cell) to let it perform a specific function. When this happens, the cell becomes specialised.

Embryos

- Cell differentiation happens during an organism's development.
- Organisms start as one cell.
- These cells divide to form embryos that differentiate (specialise) to produce cells that can perform all of the body's functions.

📢 Feedback?

● ○ ○

Typing speed: x1.5

AQA

🏠 / Find past papers and mark schemes

Find past papers and mark schemes

Here you can 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) ⌄

AQA

GCSE

COMBINED SCIENCE: TRILOGY

H

Higher Tier
Biology Paper 1H

Tuesday 14 May 2019   Afternoon   Time allowed: 1 hour 15 minutes

Materials
For this paper you must have:
- a ruler
- a scientific calculator.

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- In all calculations, show clearly how you work out your answer.

Information
- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
TOTAL	

AQA

GCSE

COMBINED SCIENCE: TRILOGY
8464/B/1H

Biology Paper 1H

Mark scheme

June 2019

Version: 1.0 Final

RS Curriculum
Mrs C. Ahmed-Swift
Head of Subject - RS

CROMPTON HOUSE
CofE SCHOOL

Full Course
Short Course

GCSE Religious Studies A
8062

AQA
Questions matter

- We study AQA A Specification (not AQA B)

- The RS GCSE is made up of 2 components:
- Component 1: *__The study of religions__*: beliefs, teachings and practices
- Component 2: *__Thematic__* studies

Component 1: *The study of religions*: beliefs, teachings and practices

- Paper 1 is the religion paper. We are required to study **two** religions

- At Crompton House we study Christianity and Judaism.

- Students will study:
1. Christian Beliefs
2. Christian Practices
3. Jewish Beliefs
4. Jewish Practices.

Component 1: The study of religions: beliefs, teachings and practices

What's assessed

Beliefs, teachings and practices of **two** from:

- Buddhism
- Christianity
- Catholic Christianity
- Hinduism
- Islam
- Judaism
- Sikhism.

Component 2: *Thematic* studies

- Paper 2 is the Themes Paper. We are required to study **four** themes.

- At Crompton House we study Theme A,B,D and E.

- Students will study:
1. Family and Relationships
2. Religion and Life
3. Religion, Peace and Conflict
4. Crime and Punishment.

- We **do not** study Theme C and F.

Component 2: Thematic studies

What's assessed

Religious, philosophical and ethical studies themes:

- Theme A: Relationships and families.
- Theme B: Religion and life.
- Theme C: The existence of God and revelation.
- Theme D: Religion, peace and conflict.
- Theme E: Religion, crime and punishment.
- Theme F: Religion, human rights and social justice.

Paper 1: Religion

resurrection

Creation beliefs

Nature of God.

crucifixion

The afterlife

Christian Beliefs

ascension

Incarnation

The trinity

Atonement
and Salvation

Respect &
Tolerance

Paper 1: Religion

Role of the church in the local Community

Pilgrimage

baptism

prayer

Reconciliation & persecution

Christian Practices

Worship

Response to world poverty

Mission, Evangelism and church growth

Easter & Christmas

Holy Communion

The Synagogue

Respect & Tolerance

Paper 1: Judaism

Food laws

Birth ceremonies

Worship and prayer

Death ceremonies

Jewish Practices

Festivals

Shabbat

The law

Bar Mitvah's & weddings

The synagogue

Respect & Tolerance

Individual Liberty

Rule of Law

Loving God, Caring for each other achieving excellence - Religious Studies – Crompton House.

Paper 2: Theme A

Family & Relationships

Purpose of family

Divorce and remarriage

Cohabitation

Nature and purpose of marriage

sexuality

Gender Equality

Nature of family

Same sex relationships

Sex outside of marriage

Contraception

Respect & Tolerance

Individual Liberty

SAPERE -- AUDE

Paper 2: Theme B

Abortion

Use and abuse of animals

Origins of life on earth

Life after death

Use and abuse of the environment

Animals for food

Religion and Life

Euthanasia

Pollution

Origins of the universe

Value of human life

The value of the world and the duty of humans to protect it

Animals for experimentation

Paper 2: Theme D

Pacifism and working for peace

Reasons for war

Holy War

Key words

Peace and Conflict

Victims of war

Just war

Violence and terrorism

Weapons of mass destruction

Paper 2: Theme E

Suffering and forgiveness

Corporal Punishment

Aims evaluated

What do religious people think about crimes and law breakers?

What is a crime?

Crime & Punishment

Capital Punishment

Prisons

Aims of punishment

Why do people commit crimes?

Democracy

Rule of Law

Individual Liberty

Respect & Tolerance

Loving God, Caring for each other achieving excellence - Religious Studies – Crompton House.

Assessment:

- RS GCSE is 100% exam – there is no coursework (NEA)
- Students will sit **two** exam papers.
  - Paper 1 – Religion
  - Paper 2 – Themes.

- Each Exam is 1 hour 45 minutes. Each paper accounts for 50% of their final GCSE grade.

Paper 1: Religion	Paper 2: Themes
1. Christian Beliefs	1. Family and Relationships
2. Christian Practices	2. Religion and Life
3. Jewish Beliefs	3. Religion, Peace and Conflict
4. Jewish Practices	4. Crime and Punishment

- In each paper students will answer 4 questions which are out of 24 marks.
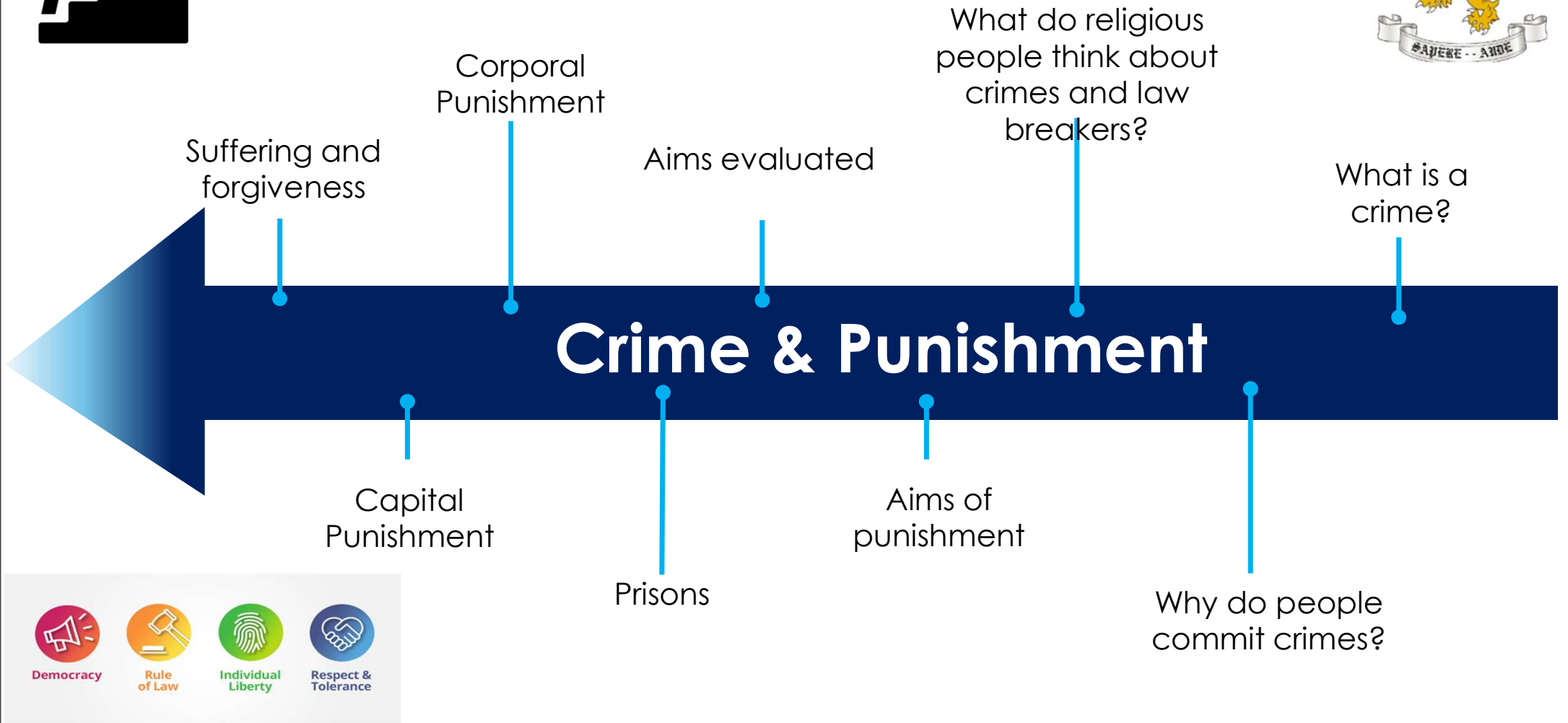- Each question follows a common structure of 1,2,4,5 and 12 mark questions – totalling 24 marks.
- There are 3 marks for SPaG.

You should answer **all** questions from **four** themes.

0 1   **Theme A: Relationships and families**

0 1 . 1 Which **one** of the following is the meaning of the term 'procreation'?

[1 mark]

A   Ending a marriage

B   Having children

C   Marrying more than one person

D   Treating people equally

0 1 . 2 Give **two** teachings about the role of parents in a religious family.

[2 marks]

0 1 . 3 Explain **two** contrasting religious beliefs in contemporary British society about contraception.

In your answer you must refer to the main religious tradition of Great Britain and one or more other religious traditions.

[4 marks]

0 1 . 4 Explain **two** religious beliefs about same-sex marriage.

Refer to sacred writings or another source of religious belief and teaching in your answer.

[5 marks]

0 1 . 5 'Religious believers should never divorce.'

Evaluate this statement.

In your answer you:
- should give reasoned arguments in support of this statement
- should give reasoned arguments to support a different point of view
- should refer to religious arguments
- may refer to non-religious arguments
- should reach a justified conclusion.

[12 marks]
[Plus SPaG 3 marks]

Homework:

- Homework has been mapped out across the whole course. Each unit of study has a homework booklet.

- Students are expected to complete 1 task a week and hand the booklet in at the end of each unit.

- The homework's alternate between tasks to further and deepen the current topic of study and retrieval of the previous units studied.

- The booklets have revision for exams and mocks embedded in them.

- Each task should take up to 1 hour and should be completed weekly.

GCSE Religious Studies: Short course

8061

AQA
Questions matter

- This is half a GCSE. It is not a foundation paper.
- Students can achieve grades 1-9 on this paper.
- Each year we have had students achieve grade 7. This paper is aspirational.
- The exam is the same. This paper is sat on the same day as the Full Course Paper 2 exam. The Themes questions are exactly the same questions for the full course and the short course. The exam structure is exactly the same.
- The difference is this course studies 4 units, not 8 and is therefore worth half a GCSE, not a full GCSE.

SHORT COURSE:

- The Short Course is assessed in **one** exam at the end of Year 11. This exam is 1 hour and 45 minutes long.

- The religions we study are Christianity and Judaism (the same as the full course). The Themes studied are chosen by the exam board.

- Students will study:
1. Christian Beliefs
2. Jewish Beliefs
3. Family and Relationships
4. Religion, Peace and Conflict

Paper 1: Religion	Paper 2: Themes
1. Christian Beliefs	1**. Family and Relationships**
2. Christian Practices	2. Religion and Life
3. Jewish Beliefs	**3. Religion, Peace and Conflict**
4. Jewish Practices	4. Crime and Punishment

SHORT COURSE:

- In the final exam students will answer 4 questions which are out of 24 marks.
- Each question follows a common structure of 1,2,4,5 and 12 mark questions – totalling 24 marks.
- There are 3 marks for SPaG.

---

0 1   **Theme A: Relationships and families**

0 1 . 1   Which **one** of the following is the meaning of the term 'procreation'?

[1 mark]

A   Ending a marriage

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- should give reasoned arguments in support of this statement
- should give reasoned arguments to support a different point of view
- should refer to religious arguments
- may refer to non-religious arguments
- should reach a justified conclusion.

[12 marks]
[Plus SPaG 3 marks]

Homework:

- At the end of each lesson students will be given key words / quotes to **memorise** these will be tested at the start of the next lesson.

- This means that students will receive 3 revision tasks across the two-week timetable.

The year ahead

Making EVERY lesson count!

Crompton House Expectations

Every member of staff and **every student** at Crompton House will consistently apply our **LEARN** expectations

L **Listen**
Listen respectfully to all staff at all times
Listen respectfully to the opinions of others

E **Engage**
Be fully equipped and ready to learn
Fully participate with lessons
Engage with extra-curricular activities

A **Attitude**
Arrive on time
Find opportunities to be kind to and care for each other
Demonstrate a positive attitude towards lessons and each other
Show pride in behaviour, language, presentation, homework & uniform

R **Resilience**
Don't give up!
Always try your best!
Set yourself ambitious goals that provide challenge and growth

N **No Negotiation**
Follow all staff instructions
Follow the classroom seating plan & put hands up when contributing
Follow all whole school rules

Follow LEARN and Achieve Excellence

✓ **Earn Crompton House Credits** ✓

C1: FIRST WARNING → **C2:** SECOND WARNING → **C3:** EXIT & DETENTION → **C4:** ON CALL & REFLECTION

Loving God : Caring for Each Other : Achieving Excellence

Attendance

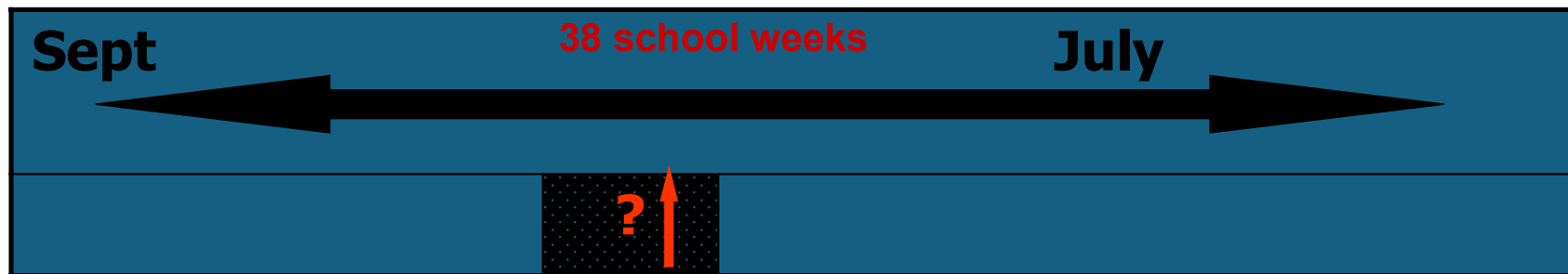Is **90%** attendance good?

90% attendance **=**
½ day missed every week!!

1 school year at **90%** attendance =

4 whole weeks of lessons **MISSED!!!**

Sept	38 school weeks	July

?

Absent for 4 weeks

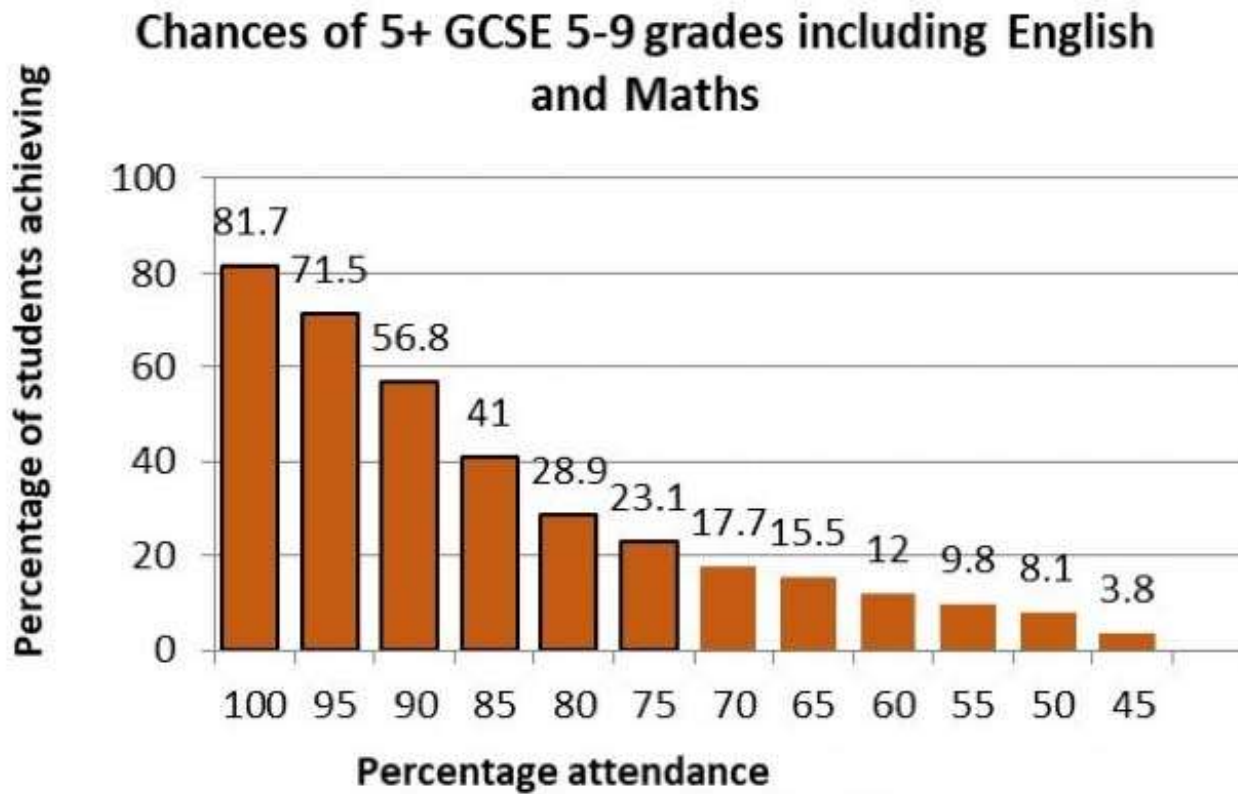**90% attendance over 2 years of secondary school....**

= 40 days or 200 lessons missed!

What's the impact of this…

Research suggests that **17 missed school days** a year **=** GCSE grade **DROP** in achievement. (DfES)

The greater the **attendance** the greater the **achievement**.

The data backs this up....

Chances of 5+ GCSE 5-9 grades including English and Maths

Standards
- Appearance
- Lates
- Behaviour for Learning

Appearance

- **Shoes**- Correct shoes must be worn at all times
- **Skirts**- Must not be rolled and be knee length
- **Make-up**- No make-up is to be worn to school
- **Jewellery**- No jewellery is to be worn to school
- **Hair-** Must be a natural colour. No extreme haircuts.
- **Socks**- Plain, white socks with no frills.
- **Jumpers**- Plain black v-neck jumpers.

Lates

- **Friday detention** - 60-minute detention for students late to class five times in a week.
- For every subsequent late arrival, an extra 10 minutes will be added to the detention, capping at a maximum finish time of 5 pm.
- This system reinforces the importance of punctuality and encourages students to value their educational commitments.

Lates

Stage 1 – 2 - Persistent late to lesson detentions – warning on class charts

Stage 2 – 4 – Persistent late to lesson detentions – meeting with Head of Year and 1 day in reflection

Stage 3 – 6 - Persistent late to lesson detention – meeting with Key Stage lead – 2 day in reflection

Stage 4 – 8 – Persistent late to lesson detention – FTE – return to school with Mrs Hegarty

CROMPTON HOUSE
Expectations of Students

Classroom Non-Negotiables:

- Arrive on time fully equipped and ready to learn.
- Follow the classroom seating plan.
- Listen respectfully to the teacher and others at all times.
- Put your hand up if you need to contribute.
- Present classwork and any homework neatly and on time.
- Work hard and make a positive contribution to the class.

Pastoral Care Matters

CROMPTON HOUSE
Wellbeing Charter - Students

Loving God : Caring for each other : Achieving Excellence

At Crompton House CofE School our intention is to ensure we have an enjoyable, rewarding, environment in which all students feel safe, valued, understood and accepted.

Pastoral Care Matters

This charter has been drawn up with the following principles in mind:

Take care of yourself.

Take care of others.

Take care of this school environment.

Pastoral Care Matters

We all have a responsibility to consider the impact we make on ourselves, others, and the school environment.

Be safe in our school environment.

Be kept safe from potential causes of physical, verbal, emotional and sexual abuse.

Have any special needs understood by the adults working with them.

Be given a voice to be listened to and responded to.

Be happy, learn and have fun within the school day.

Pastoral Care Matters

Pupils are encouraged to ...

Be proactive in looking after their own wellbeing

Make good choices to support their wellbeing, with the support of those around them.

Develop self-confidence.

Accept routines and activities that promote wellbeing, and develop independence where appropriate.

BE mindful

SUPPORT IN SCHOOL

UNIVERSAL SUPPORT

- A Head of Year
- Head of Year in the Hub
- Inclusion Hub
- Assemblies by KOOTH
- Mental health awareness day twice a year February and October
- PSHE Green Tuesdays Wellbeing and Mental health
- Be Well survey Years 9 and10
- Subject Student Voices on T and L
- Happiness calendar on screens around school and updated monthly in newsletter
- Youth team - Student mental health ambassadors
- Peer mentors
- Mental health and well being literature in the library.
- Understanding Stress Course. Years 10 and 11
- Student Diversity group
- Youth club drop in on Friday lunch
- #writeasmile project

SELECTED SUPPORT

- 38 Mental health first aiders in school
- MHST – Mental Health Support Team Thursday
- TOG Mind - Anxiety Course
- Exam stress group
- TOG Mind - One to one appointments Thursday and Friday
- Anxiety Course Mondays 2.40pm - 3.30pm

TARGETED SUPPORT

- Signposting material for services around Oldham
- Oldham Brokage Service
- School Counsellor – 5 days a week

Careers and Further Education Advice

- **Tuesday/Wednesday lunch time drop ins All in 6th Form**

October

- **08/10/2024   Oldham College -vocation courses Year 10-11**

- **015/10/24   Hopwood Hall – vocational courses year 10-11**

November

- **05/11/2024   Creative Access college – Musical College also suitable for year 10-13s interested in FE and HE in Music**

- **12/11/24   RAF year 10-13**

- **19/11/24   The Manchester College year 10-11**

December

- **03/12/2024   Race Ahead Training year 10-11 interested in Childcare**

Conclusions
Mr D. Slack
Associate Deputy Headteacher