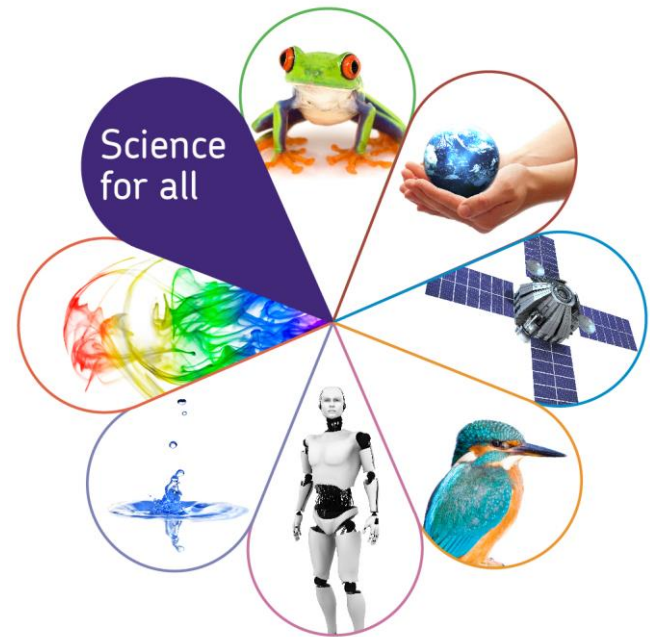


GCSE Science Spring Hub Network Meeting

Spring 2018



This meeting will be recorded

Exam boards have an Ofqual requirement to record event audio.

Recordings are kept for one year and not shared as an accompaniment to session resources.

The recording will begin now.

Agenda

- Feedback from the mock exams using MERiT (Exampro analysis tool)
- Intervention
- Revision resources and ideas
- Marking extended response questions
- Updates
- Focus for summer

Feedback from mock exams

Second set of specimen assessment materials

- Teacher feedback has identified some errors
- Where possible amendments have been made and new versions of papers and mark schemes have been posted on SKM
- We won't be able to discuss individual issues with questions in this meeting. Please refer any queries to the science team via teacher services
gcsescience@aqa.org.uk

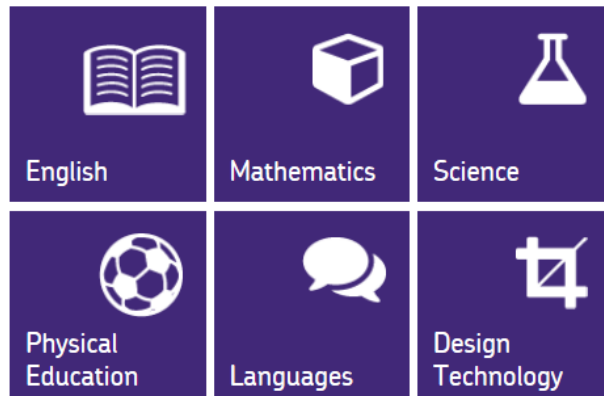
Accessing MERiT

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Accessing MERiT

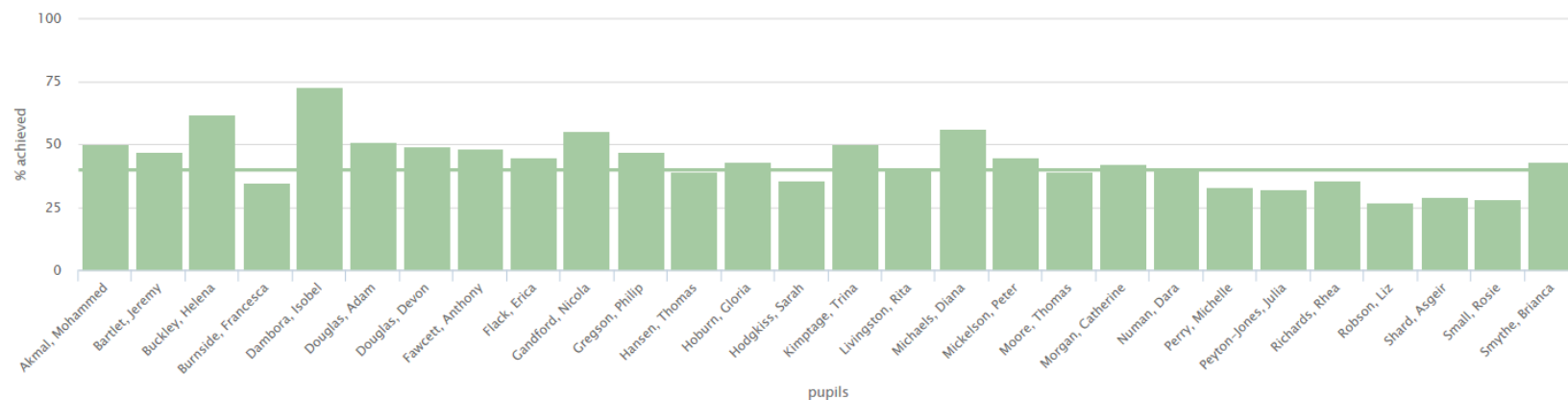
The table below provides information about the performance of your pupils at test and strand level.

Specification References Assessment Objectives

marks %

Test	Number of pupils	Marks available	Year group Mean score	POPULATION Mean score
Biology Higher	28	100	43.6	39.9
• SAMS 2 Paper 1H (8461/1H)	28	100	43.6	39.9
- Cell biology	28	36	14.9	14.8
- Organisation	28	35	15.5	12.3
- Infection and response	28	19	9.0	7.7
- Bioenergetics	28	10	4.3	5.2

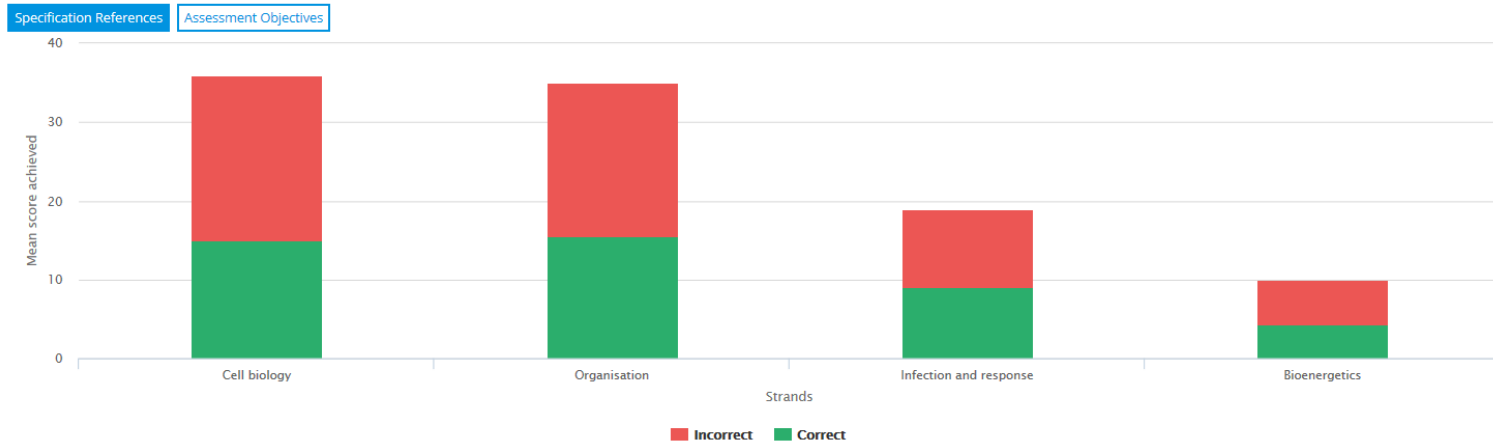
The graph below shows how your pupils performed in **Biology Higher**.



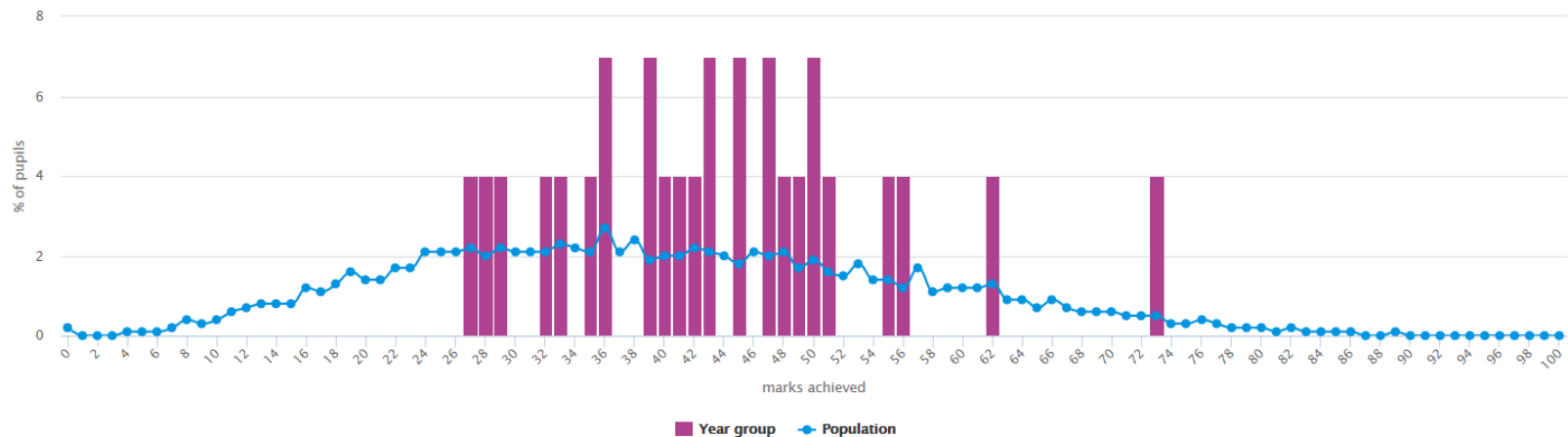
Accessing MERiT

The graph below shows how your pupils performed in each strand.

The height of each bar shows the number of marks available in the strand, and the proportion of the bar that is green shows the mean marks achieved. A large area of red would indicate an area of priority.



The graph below shows the score distribution in SAMS 2 Paper 1H (8461/1H) for your pupils.



Accessing MERiT

The graph below shows performance per question for **SAMS 2 Paper 1H (8461/1H)**.
Click the data point to view the **question** and **mark scheme** shown below the chart.



[Question](#) [Mark scheme](#) [Close](#)

0 1 .5 What is produced during anaerobic respiration in humans?

[1 mark]

Tick **one** box.

Carbon dioxide ☐

Carbon dioxide and lactic acid ☐

Lactic acid ☐

Oxygen and water ☐

Accessing MERiT

The table below provides information about the performance of your pupils on each question in SAMS 2 Paper 1H (8461/1H)

Order by:

1/2 Pupil name

1/2 Pupil score

Order by:

Question

Year group mean

		content ref	4.4	4.4	4.4	4.4	4.4	4.4	4.1	4.1	4.2	4.2	4.1	4.3	4.3	4.1	4.1	4.1	4.2	4.1	4.4	4.2	4.2
		year group avg.	0.60	0.80	0.60	0.90	0.20	0.60	0.50	1.10	1.00	1.10	2.00	0.80	2.50	1.60	0.70	0.80	0.80	0.60	0.50	1.40	0.90
		pop avg.	0.91	0.70	0.38	1.36	0.57	0.40	0.43	0.73	0.90	0.91	1.55	0.59	2.29	1.84	0.71	1.10	0.41	0.75	0.83	0.99	1.26
		max marks	1	2	1	2	1	1	1	2	2	3	4	1	6	3	1	2	1	1	2	2	2
Name / Marks			01.1	01.2	01.3	01.4	01.5	01.6	02.1	02.2	02.3	02.4	02.5	03.1	03.2	03.3	03.4	04.1	04.2	04.3	04.4	04.5	04.6
1. Akmal, Mohammed	50		0	1	0	1	1	1	0	1	2	1	0	1	6	1	1	0	1	1	0	1	1
2. Bartlet, Jeremy	47		1	0	1	2	0	0	0	0	3	2	1	4	0	1	0	1	1	0	2	1	
3. Buckley, Helena	62		1	0	0	2	0	0	1	1	2	0	2	1	0	3	1	0	1	1	0	2	2
4. Burnside, Francesca	35		0	2	1	0	0	1	0	2	1	0	4	0	3	0	1	2	0	0	2	0	0
5. Dambora, Isobel	73		1	1	0	2	0	1	1	2	1	2	3	1	5	3	1	1	1	1	0	2	0
6. Douglas, Adam	51		1	1	1	0	0	0	1	1	1	2	3	1	0	3	1	2	1	0	1	1	0
7. Douglas, Devon	49		1	0	1	1	0	1	0	1	2	1	3	1	5	3	0	1	1	0	1	2	1
8. Fawcett, Anthony	48		1	0	1	1	1	1	1	1	0	1	2	1	0	2	1	0	1	1	1	2	1
9. Flack, Erica	45		0	1	1	2	0	1	0	2	0	3	2	1	2	0	1	0	1	1	1	2	1
10. Gandford, Nicola	55		1	1	1	2	1	1	0	1	2	1	2	1	0	3	1	2	1	1	0	2	1
11. Gregson, Philip	47		1	0	0	0	0	0	0	1	1	1	1	1	2	3	1	2	1	1	1	2	1
12. Hansen, Thomas	39		1	1	1	1	0	1	1	0	0	0	0	1	1	0	1	0	1	0	1	1	0
13. Hoburn, Gloria	43		0	1	1	1	0	0	0	1	0	1	1	1	1	0	1	2	1	1	0	1	1
14. Hodgkiss, Sarah	36		0	1	1	0	0	1	1	1	2	1	2	1	2	2	1	1	1	1	0	1	1
15. Kimptage, Trina	50		1	0	0	1	0	1	0	1	1	1	1	1	3	3	1	2	1	0	1	2	2

Interpreting MERiT data

- Sample size is small compared with GCSE entry for example in 2017
 - Additional science in excess of 300,000
 - Separate science in excess of 140,000
- Mark scheme has not been standardised
- Teachers have not been standardised so marking may be inconsistent
- Final award is made on all papers combined
- Cannot know whether the sample is representative of the whole cohort

What does the analysis show?

- Rank order against the sample population.
- No indication of grades. For example the average mean mark on the Higher Tier doesn't correspond to a Grade 6.
- The type of questions students found challenging.

Analysis from MERiT: Trilogy

Taken 2/2/2018	Tier	Total marks	Mean mark	Mean %
Trilogy Biology	F	70	20	29
Trilogy Chemistry	F	70	17	24
Trilogy Physics	F	70	23	33
Trilogy Biology	H	70	18	26
Trilogy Chemistry	H	70	15	21
Trilogy Physics	H	70	19	27

Approximate entries:
Foundation Tier 12,000
Higher Tier 14,000

Analysis from MERiT: Synergy

Taken 2/2/2018	Tier	Total marks	No of students	Mean mark	Mean %
Paper 1	F	100	287	30	32
Paper 2	F	100	74	23	23
Paper 3	F	100	206	32	32
Paper 4	F	100	47	28	32
Paper 1	H	100	262	21	22
Paper 2	H	100	128	21	19
Paper 3	H	100	93	22	23
Paper 4	H	100	73	22	39

Approximate entries: 300 entries for each tier

Analysis from MERiT: Separate sciences

Taken 2/2/2018	Tier	Total marks	Mean mark	Mean %
Biology	F	100	33	33
Chemistry	F	100	33	33
Physics	F	100	30	30
Biology	H	100	39	39
Chemistry	H	100	36	36
Physics	H	100	37	37

Approximate entries:
Foundation Tier 1,000
Higher Tier 10,000

Headlines from item analysis:

Types of question students found challenging:

- Applying knowledge and understanding in unfamiliar contexts.
- Using formulae in unfamiliar contexts.
- Using maths skills in a scientific context.
- Linking ideas from different parts of specification.
- ‘Explain’ questions.

Headlines from item analysis:

- At low demand, students could use formulae but found unit conversion challenging.
- At standard demand, students couldn't recall equations correctly, so couldn't apply them.
- Lack of understanding of language of working scientifically: accurate, precise, resolution, controls.
- Lack of knowledge of why repeats are done, what particular pieces of equipment are used for.

What did you find out from your school data?

- In general, how did your students find the papers?
- Did students have enough time to finish the paper?
- Were there particular types of question students found challenging?
- How did your students manage with the physics formulae?

Intervention

Intervention

- One approach is to put the required practicals at the heart of the revision lesson.
- Revise content, maths skills, scientific language and working scientifically through the required practical.
- Examples on Teachit:
 - microscopes
 - rates of reactions

Intervention: how to address areas of concern

The next step is to consider how to tackle some of these areas of concern in the short time available.

In summary the main areas seem to be around:

- how to revise the basics
- how to address AO2
- all things practical
- maths in science
- understanding and applying formulas

Intervention: how to address areas of concern

Choose one of the areas mentioned, or something else that you have identified in your school.

Discuss how your department is going to tackle this.

Revision resources

Revision resources

- Please share any good revision resources/strategies you are using.
- [21 GCSE Physics Equations song](#)
- [Dunlosky research on how improving how students learn](#)

Revision resources

- Guardian article: [What every teacher should know about memory](#)
- Required practical videos:
 - are there any references to working scientifically and the ATs?
 - does the presenter use the subject specific vocabulary connected to the practical?

Extended response questions and mark schemes

What is extended response?

An extended response is defined by Ofqual as:

“...evidence generated by a Learner which is of sufficient length to allow that Learner to demonstrate the ability to construct and develop a sustained line of reasoning which is **coherent, relevant, substantiated and logically structured**”.

Use a holistic approach to marking, which takes into account the many ways a student can correctly answer a given question.

What does this mean for our assessments?

- May require linking in terms of knowledge, understanding and skills.
- Can be a multi-step calculation.
- Typically use the following command words: describe, explain, design/plan, compare, evaluate, calculate.
- Requires an answer that clearly communicates scientific ideas (4–6 marks).
- Not all questions worth 4–6 marks will be classified as extended response.
- Requires a coherent and relevant sustained line of reasoning.

Levels of response mark schemes

- Allow students to gain credit for the science they know using a holistic marking technique.
- Generic level descriptors linked to specific command words.
- Same descriptors apply to all GCSE science specifications.
- Different from QWC as there is no communication mark as it is incorporated into the holistic marking approach.

Applying the levels of response mark scheme

- First determine the level by:
 - holistically looking at the overall quality of the answer
 - taking into account the descriptor for each level
 - looking at the indicative content
 - using a 'best-fit' approach.
- Then determine the mark within the level.

Choose one of the student responses and mark it.

How did you do?

Marks awarded

Example	Question reference	Marks awarded		
1	SAMs 1 Physics 2H Explain	2	4	
2	SAMs 2 Physics 2H Describe	1	6	3
3	SAMs 2 Synergy 3F Explain	3	1	
4	SAMs 2 Trilogy Chemistry 2F Plan	1	6	
5	SAMs 2 Biology 1H Evaluate	5	3	
6	SAMs 2 Trilogy Biology 2H Explain	1	3	

Updates

GCSE resources update

- Updated practical handbook
 - titles not changed
 - removed extension activities from methods
 - removed any inappropriate ATs
 - not editable format
- Technician advisors for GCSE as well as A-level
- Extended end of Year 10 test will be available in May 2018

- Teachers need to standardise their marking using teacher online standardisation (T-OLS)
- T-OLS has examples of marked TDAs to support
- Your exams officer can set you up with log-in details
- A teacher network group is being set up

Suggestions for the summer meetings

- Exam results analysis (ERA)
- Teaching ideas for setting the required practicals in an unfamiliar context
- Resources for new teachers
- Review of route through course:
 - What went well?
 - What needs attention?
- Mapping required practicals, working scientifically, subject specific vocab

How did we do?

Please take a moment to complete a brief evaluation form for today's event. Your feedback is very important to us as it helps us improve and plan future training.

Get in touch

For qualification information, resources and support, please visit:

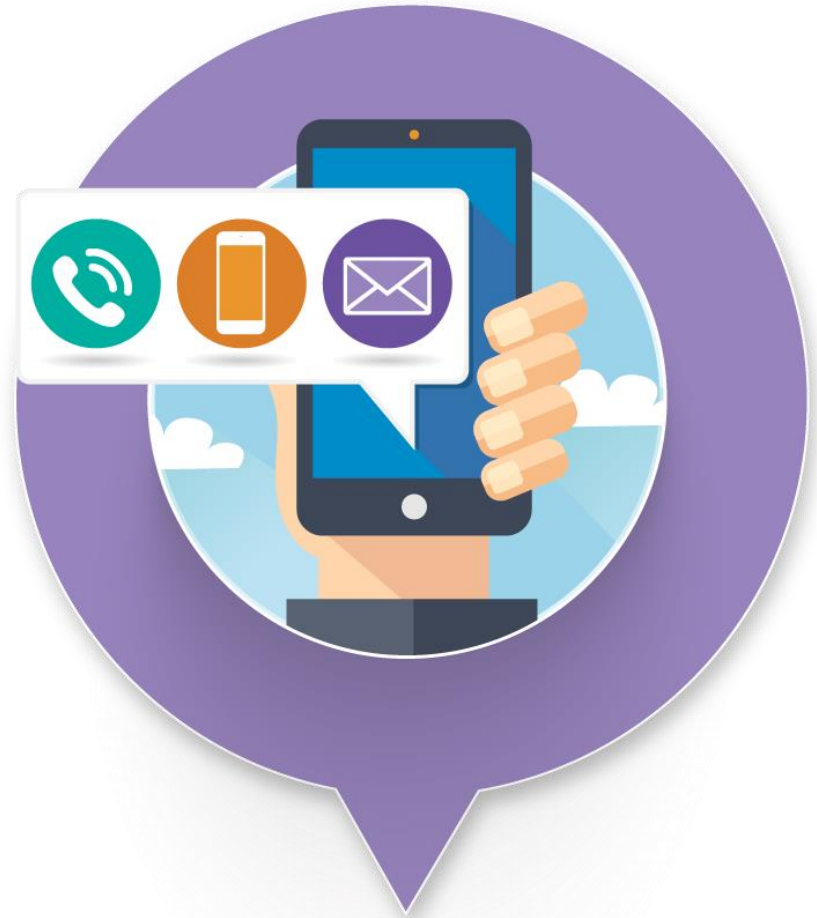
aqa.org.uk/science

Email:

gcsescience@aqa.org.uk

alevelscience@aqa.org.uk

Call: 01483 477756



Thank you
