

GCSE Science Hub schools network

Autumn update

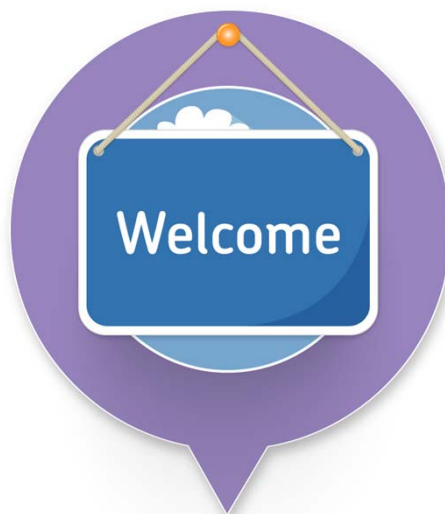
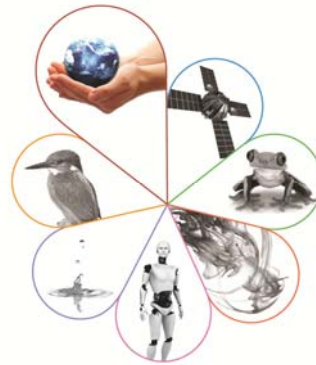
Presentation slides

Published: Autumn 2018



Science hub schools network

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This meeting will be recorded

Exam boards have an Ofqual requirement to record event audio.

Recordings are kept for the lifetime of the specification and not shared as an accompaniment to session resources.

The recording will begin now.

Agenda

- Provisional results for GCE and GCSE: national data
- AQA insight reports:
 - what went well
 - areas of challenge
- Using student exemplars to inform teaching practice
- Reflection on use of ERA (enhanced results analysis)
- Updates

Provisional GCSE results summer 2018

GCSE	Total entries	Grade 1	Grade 4	Grade 7	Grade 9
Combined Science	742 648 (NA)	98.1 (99.0)	55.1 (55.8)	7.5 (7.9)	0.8 (NA)
Biology	165 245 (143 340)	99.1 (99.9)	89.2 (90.4)	41.5 (42.2)	12.0 (NA)
Chemistry	158 410 (141 867)	99.3 (99.9)	89.7 (89.9)	43.1 (42.4)	12.6 (NA)
Physics	156 720 (141 977)	99.3 (99.9)	90.6 (90.8)	42.5 (41.9)	12.2 (NA)

<https://www.jcq.org.uk/examination-results/gcses/2018>

*Combined Science numbers are double-counted

GCSE Entry patterns 2018

GCSE	Total entries	Foundation (%)	Higher (%)
Combined Trilogy	285 671 (NA)	58 (NA)	42 (NA)
Combined Synergy	5898 (NA)	73 (NA)	27 (NA)
Biology	130 020 (84 976)	13 (7)	87 (93)
Chemistry	124 785 (83 870)	11 (8)	89 (92)
Physics	123 820 (84 598)	12 (7)	88 (93)

Combined Science Higher grade 3-3

- Ofqual 'safety net' grade for Higher tier students just below the 4-4 boundary, to avoid being unclassified.
- 'Safety net' for 2018 intended to be 4-3.
- More students than expected were getting a U.
- Ofqual consider many of these students would have achieved a grade if entered for the Foundation tier.
- For this summer, all boards allowed to use a grade 3-3.
- The 3-3 is a full grade width below the 4-3.
- <https://ofqual.blog.gov.uk/2018/08/20/gcse-results-day-what-to-expect/>

Grade boundaries and level of demand marks

Level of demand is a useful indicator of the intended grade outcome, but student attainment is based on performance across the papers and the whole mark allocation. Individual performance can vary hugely depending on the topic and skill area.

Subject (total)	Tier	Mark ratio	5-5	5-4	4-4
Combined Science (420)	F	252:168	253	235	218
	H	168:252	136	117	98
Biology (200)	F	120:80	121		107
	H	80:120	69		53
Chemistry (200)	F	120:80	127		109
	H	80:120	72		52
Physics (200)	F	120:80	123		107
	H	80:120	68		51

Provisional GCE results summer 2018

	Entries	Grade E	Grade C	Grade A
AS Biology	21,850 (38,744)	83.6 (84.4)	50.4 (52.1)	17.2 (18.0)
A-level Biology	63,819 (61,908)	96.6 (96.8)	69.8 (70.8)	25.9 (26.2)
AS Chemistry	18,084 (32,909)	83.7 (84.2)	53.9 (53.7)	20.1 (20.7)
A-level Chemistry	54,134 (52,331)	96.6 (97.0)	74.3 (75.6)	31.1 (31.7)
AS Physics	13,007 (25,331)	83.7 (83.8)	53.4 (55.0)	22.1 (22.6)
A-level Physics	37,806 (36,578)	95.8 (95.8)	70.1 (69.7)	29.6 (29.2)

<https://www.jcq.org.uk/examination-results/a-levels/2018>

AQA Insight Reports

- Replace the Executive Summaries
- Highlight key points for each paper
- Headlines only
- Detailed information in Reports on the Exam

What went well

- In general, appropriate tier entered
- Writing to the end of the paper
- Full range of marks covered
- Discrimination
- Performance at different levels of demand
- Performance on common questions

Areas of challenge

- Application of knowledge
- Reading and understanding the question
- Writing coherent responses
- Basic maths skills
- Complex calculations including unit conversion
- Synoptic linking of ideas

Examples from 2018 papers

- Complex calculations:
 - the importance of showing working
- Language in responses:
 - clarity of expression and correct use of scientific terms
- Using the same topic:
 - assessing at different levels of demand

8464/P/1H: question 05.4

- Students need to:
 1. Convert MJ into J (1)
 2. Convert minutes into seconds (1)
 3. Substitute into $P = E/t$ (which they must recall) (1)
 4. Calculate a final value (1)
- Students can score marks for steps 3 and 4 if they make mistakes in converting the energy and the time, as long as steps 3 and 4 are done correctly.

8464/P/1H: question 5.4, example 1

0 5 4 To heat the house, the boiler transfers 15 MJ of energy in 10 minutes.

Calculate the power of the boiler.

Write any equation that you use.

[4 marks]

$$\text{Power} = \frac{\text{energy transferred (J)}}{\text{time (s)}}$$

$$15 \times 100 = 1500 \quad 60 \times 10 = 600 \text{ seconds}$$

$$1500 \text{ J} \times 600 \text{ s} = 900,000 \text{ W}$$

$$\text{Power} = 900,000 \text{ W}$$

8464/P/1H: question 5.4, example 2

0 5 4 To heat the house, the boiler transfers 15 MJ of energy in 10 minutes.

Calculate the power of the boiler.

Write any equation that you use.

[4 marks]

$$\text{Power} = \frac{\text{Energy Transferred}}{\text{time}}$$

$$\text{Power} = \frac{15 \text{ MJ}}{10 \text{ minutes}}$$

$$\text{Power} = \frac{1500 \text{ J}}{10 \text{ s}} = 150$$

$$\text{Power} = 150 \text{ W}$$

What can we take from this?

- Students could benefit from:
 - more practice with rearranging correctly
 - looking at values and thinking which equations link these values
 - looking out for unit conversions
 - thinking about what they need to know
 - breaking steps down and clearly showing intermediary values.

8462/1F: question 2.4

Students need to:

- use their knowledge to state how reactivity changes as you move down Group 7
- use information from the results table to explain how the order is derived.

Low demand question, so answers allowed in terms of reactions.

8462/1F: question 2.4, example 7

0 2 4 Explain how the reactivity of the halogens changes going down Group 7.

Use the results in **Table 1**.

[3 marks]

the solutions of halogens with solutions of their salts seem to stay the same as for example Bromine and iodine in the potassium Chloride (colourless) solution seem to both not have any change.

8462/1F: question 2.4, example 8

0 2 4 Explain how the reactivity of the halogens changes going down Group 7.

Use the results in **Table 1**.

[3 marks]

The reactivity of the halogens become less reactive as you go down group 7 as iodine does not react with either solution it's tested with, and chlorine is in total more reactive than bromine when tested with the solutions.

Assessing at different levels of demand

- Trilogy Biology paper 2F and 1H
- Cover the same specification content
- Progressing demand low → standard → high
- Compare:
 - F3.3 and H4.1
 - F3.4 and H4.2
 - F3.5 and H4.5

Reflections on use of ERA

- Did you use ERA this summer?
- Did you do anything different this year than in previous years?
- What areas did your students particularly struggle with?
- Were these what you expected?
- Why do you think they found these difficult?

<https://www.aqa.org.uk/contact-us/secure-services/enhanced-results-analysis>

Updates

- Feedback meetings Autumn 2018:
<https://www.aqa.org.uk/professional-development/search?f.Subjects%7CD=Science&collection=aqa-cpd&form=course-search>
- Updates to GCSE specifications
- Assessment resources on Exampro
- Use of 2018 papers as mocks for next year: MERiT
- CLEAPS practical equipment

Resources

The electronic materials from this event will be made available to you in the customer portal of our online booking system.

Once we receive notification that you have attended the course, you will be sent a certificate of attendance by email. When you receive your certificate, please log in to your account and the materials will be available on the my resources tab from the welcome screen.

The essential exam preparation tool for teachers

Create customised assessments in minutes using AQA questions aligned to the current specifications. Save time compiling targeted topic tests, homework or revision exercises.

Spec	Level	Type	Maths	Maths Demand	Topic	Source
						ALL
						3.1 Biological molecules
						3.2 Cells
						3.3 Organisms + substance exchange
						3.4 Genetic info/variation/relationships
						3.5 Energy transfers in + between organisms (A-Level Only)
						3.6 Organisms: responses to their environment (A-Level Only)
						3.7 Genetics/populations/evolution/ecosystems (A-Level Only)
						3.8 The control of gene expression (A-Level Only)
						General essay

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10% off your renewal with promo code: **6EBB3**

exampro.co.uk

Want to understand students' results and how you can use them in your teaching?

That's where we come in.

You can:

- Use ERA to explore your students' results
- Download an GCSE Insight Report: 2018 results at a glance
- Attend a Feedback events for an in-depth insight into student answers and how our papers performed
- Understand the national picture of the summer 18 exam series

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.

You should have been emailed the evaluation form. Please check your inbox (possibly your junk mail folder). If you haven't received it please give your trainer your name, centre name/number and email address so that we can look into it for you.

Thank you.

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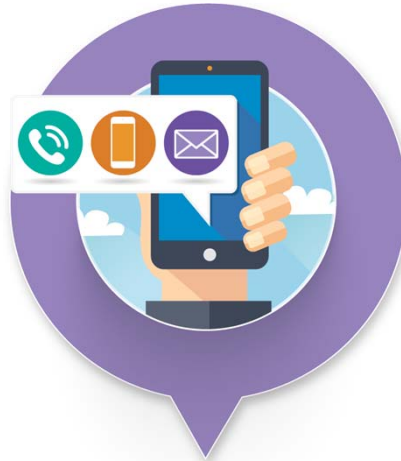
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