

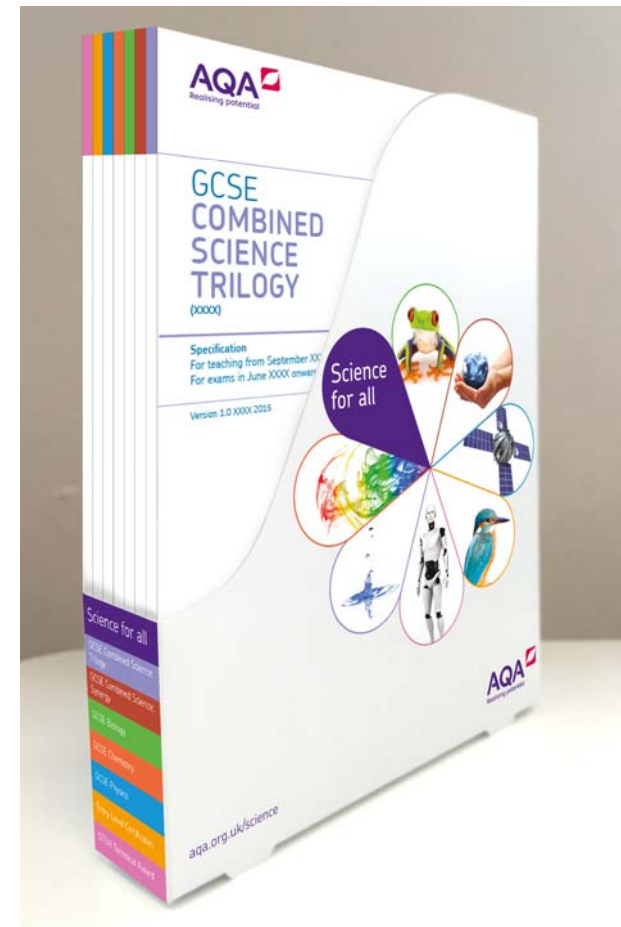


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# AQA network meeting spring 2017

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AQA presenters:



# Agenda

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- Resource update.
- Discussion workshops:
  1. teaching and learning of the required practicals
  2. meeting the challenge of Combined Science
  3. stretch and challenge
  4. managing formative assessment
  5. A-level discussion – mock papers.
- CPD events information.
- Ideas for discussion workshops summer meeting (June).

# Areas covered in autumn 2016 hub meeting

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- Exam feedback summer 2016 series – executive summary reports and student exemplars – on SKM (e-AQA).
- Discussion about why it is not possible to set grade boundaries for 2018 papers but what is available to support assessment and tracking.
- AQA grade descriptor threads (Ofqual).
- GCSE and A-level resources update – see previous presentation.
- Exampro – tour of the new functions, PowerPoint available.

# Materials from autumn meeting



## Free hub schools network meetings



Hear the latest news about reform, meet other teachers and share ideas at one of our free Hub School meetings. [Check hub school meeting dates and availability](#) so that you can get involved.

## Previous meetings and resources

### Autumn 2016

The autumn hub meetings gave an overview of the new GCSE grade boundaries, feedback from the summer 2016 exam series, and updates on the A-level monitoring visits. These meetings were also an opportunity for teachers to get a tour of the new functions for Exampro.

- [Presentation slides](#)
- [Exampro for Science presentation](#)
- [Grade descriptors](#)

Executive summaries for the new GCSE specifications and the exemplars for GCSE Biology, Chemistry and Physics are available to download from e-AQA.

## Biology

[subject pages on aqa.org.uk](#)

▶ [Question Papers and Mark Schemes](#)

[subject pages on aqa.org.uk](#)

▼ [Reports on the Examination](#)

[subject pages on aqa.org.uk](#)

- [GCSE Sciences - Executive Summary of the 2014 series](#)
- [GCSE Sciences - Executive Summary of the 2015 series](#)
- [GCSE Sciences - Executive Summary of the 2016 series](#)

▶ [June 2016](#)

[subject pages on aqa.org.uk](#)

# Resources: A-level

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- Environmental Science has been accredited:
  - PTT meetings in the summer
  - information sheet in pack.
- Updated practical handbook – live.
- A-level technicians – technician advisers, contact directly by email.
- Practically speaking blog – updated monthly in 2017.
- 2<sup>nd</sup> set of sample assessments:
  - A-level mock papers 1, 2 and 3 live on secure key materials (e-AQA).
- Biology essay support resources – live.
- Extra chemistry SOW – live.

# Practical page

[aqa.org.uk/resources/science/as-and-a-level/teach/practicals](http://aqa.org.uk/resources/science/as-and-a-level/teach/practicals)



## Practicals

We've created a variety of resources to help you meet the new A-level practical requirements, giving you more time to concentrate on sparking your students' interest and excitement for all things practical.

They're designed to support required learning objectives, and to help you assess your students' progress through the Common Practical Assessment Criteria (CPAC).

If you have any questions, call our A-level science team on 01483 477 756 or email us.

### Handbooks

- > Overarching: PDF | Word
- > Biology: PDF | Word
- > Chemistry: PDF | Word
- > Physics: PDF | Word

### Training

- > Online practical endorsement training
- > ASE Conference 2017 slides: A-level Biology practical science endorsement
- > ASE Conference 2017 slides: A-level Chemistry CPAC best practice
- > ASE Conference 2017 slides: A-level Physics CPAC best practice
- > Frequently Asked Questions about practicals – June 2016
- > Webinar: Changes to practical assessment in A-level sciences from September 2015
- > Webinar: Practical skills endorsement – best practice one year in – July 2016
- > Research report: The new A-level science practical skills endorsement – improving science education

### Practical visits

- > Practical visit timeline
- > Practical visit checklist
- > Practical endorsement visit guidance for lead teachers

### Practicals apparatus set-up guides

- > Biology set-up guides – coming soon
- > Chemistry set-up guides – coming soon
- > Physics set-up guides

# Practical page



## Contact our technician advisers

- › [Technician advisers](#)

## Our practicals blog

- › [Practically speaking](#)

## Assessment

- › [Teacher worksheets for assessing the CPAC](#)
- › [CPAC student pen portraits](#)
- › [Sample endorsement trackers for ☒ Biology, ☒ Chemistry and ☒ Physics](#)
- › [Sample endorsement trackers with sub-competency tracking for ☒ Biology, ☒ Chemistry and ☒ Physics](#)

## External resources

- › [CLEAPSS: the science advisory service](#)
- › [Biology – Practical resources guide](#)
- › [Think Physics: A-level Physics required practicals](#)

## Examples of good practice

- › [Biological drawings guidance \(CLEAPSS\)](#)
- › [Student handbook: Building up student independence through CPAC assessment](#)
- › [Guide to keeping a lab book](#)
- › [Using a departmental handbook to support CPAC](#)
- › [Sample worksheet: CPAC assessment scaffolding](#)
- › [Research task template: Chemistry CPAC](#)

## Contact your adviser

There is one technician adviser for each of the three sciences. You can email them directly with your questions. They all still work as full-time technicians, but will do their best to respond to emails as soon as they can.

### Biology: Dr Maxine Opperman



I started working in laboratories many years ago – assisting at the local vets, part-time work at the university – before graduating in microbiology and moving into food and agricultural research at Rothamsted research station. Several publications, a PhD and postdoctoral work later, I left academia and returned to laboratory work.

I'm a very practical scientist and have worked in private education, teaching and preparing science lessons. I also spent several years managing laboratories for environmental consultancy companies.

Email Maxine

### Chemistry: Jo-Anne Collins



I started out as trainee technician at Sheffield Hallam University (Sheffield Polytechnic in those days!), where I studied for my technician council exams finishing with an HNC in Chemistry. I've worked in the science community ever since, working my way up to chemistry lab team leader.

Email Jo-Anne

### Physics: Marcin Poblacki



Since graduating with a master's degree in physics in 2006, I've worked as an IT technician, engineer and physics technician. I really enjoy my job because it complements my hobbies (physics, robotics, electronics, 3D printing, astronomy and programming) and gives me an opportunity to develop new experiments and apparatus.

I've also volunteered at Fab Lab Manchester since 2013, purely for the joy of learning and sharing science with others. At Fab Lab, I've gained extensive knowledge of equipment such as Computer Numeric Control (CNC) machines, laser cutters and 3D printers, as well as software design skills. I also volunteer at Manchester Museum of Science and Industry as a STEM ambassador.

Email Marcin

# Resources: Biology essay



## Assessment resources

- [Assessment guides: essays](#)
- [Examprom Student exemplar answers with examiner commentary](#)
- [Examprom: Searchable past paper questions, marks and examiner comments](#)

## Assessment guides: essays

We've created these essay resources to support your teaching of the new AS and A-level Biology specifications and help you prepare students for the essay in A-level Paper 3.

### Training

- [Teacher training guide: A-level Paper 3 essay](#)
- [Marking guidance: A-level Paper 3 essay](#)
- [Training materials presentation: Preparing for the Biology Paper 3 essay](#)
- [Previous essay titles and mark schemes](#)

### Specimen answers

- [Specimen answer 1](#)
- [Specimen answer 2](#)
- [Specimen answer 3](#)
- [Specimen answer 4](#)
- [Specimen answer 5](#)
- [Specimen answer 6](#)
- [Specimen answer 7](#)
- [Specimen answer 8](#)
- [Specimen answer 9](#)
- [Specimen answer 10](#)



# Resources: GCSE

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- Reviewing the practical handbooks, current updated version **3.8** is on website.
- ELC – sets 1 and 2 of externally set assignments – live.
- ELC editable writing frames to help support students recording Teacher Devised Assignments (TDAs) presently called worksheets (writing frames).
- Second set of sample assessment material will be available for use as Year 11 mock in December 2017.
  - Being written at same time as live papers by the same examiners to ensure consistency.

# Resources: ELC 5960



## Teaching resources

-  Scheme of work: Chemistry in our world (37.5 KB)
-  Scheme of work: Electricity, magnetism and waves (73.6 KB)
-  Scheme of work: Elements, mixtures and compounds (70.9 KB)
-  Scheme of work: Energy, forces and the structure of matter (69.5 KB)
-  Scheme of work: Environment, evolution and inheritance (45.3 KB)
-  Scheme of work: The human body (46.8 KB)
-  Student worksheet: Biology Component 1 – How the body works (Outcome 4) (1.1 MB)
-  Student worksheet: Biology Component 2 – Environment, evolution and inheritance (Outcome 7) (1.1 MB)
-  Student worksheet: Chemistry Component 3 – Elements, mixtures and compounds (Outcome 3) (1.1 MB)
-  Student worksheet: Component 4 – Chemistry in our world (Outcome 10) (1.1 MB)
-  Student worksheet: Physics Component 5 – Energy, forces and structure of matter (Outcome 2) (1.1 MB)
-  Student worksheet: Physics Component 6 – Electricity, magnetism and waves (Outcome 3) (1.1 MB)
-  Teaching guide (3.2 MB)



# End of Year 10 test: two tests

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## **Combined Trilogy** (made up of Biology, Chemistry and Physics)

- Foundation and Higher tier.
- 90 marks in total, 30 for each science (90 mins long).
- Common questions between tiers – standard demand.
- Written by examiners who are writing the live papers.
- Structure of the test reflects question type including maths and required practicals and balance of AO.

### Topics covered:

- Biology: Cell biology, Organisations, Infection and response.
- Chemistry: Atomic structure, Bonding, Quantitative chemistry, Chemical change, Energy changes.
- Physics: Energy, Electricity, Particle model of matter.

# End of Year 10 test: two tests

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**Combined Synergy** made up of paper 1 and 2 to reflect the live summer paper

- Foundation and Higher Tier papers are available.
- 90 marks in total, 45 on each paper.
- Common questions between tiers – standard demand.
- Written by examiners who are writing the live papers.
- Structure of the test reflects question type, including maths and required practicals and balance of AO.

The exams will cover the following topics:

- Life and environment: building blocks and transport over large distances.
- Physical science: building blocks for understanding; interactions over small and large distances.

# End of Year 10 test

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- Papers will be on SKM end of April 2017.
  - We suggest students sit the test the week of 2 May, but papers will stay up on secure key materials (e-AQA).
- Online standardisation of mark scheme for your department to ensure consistent marking and greater understanding of the mark scheme.
- Analysis tool:
  - rank order of your students
  - analysis of individual student performance on the test on AO, maths, working scientifically and required practical marks
  - sample population of 1,000 students who did the test in January
  - compare your students' overall performance against the sample.

# End of Year 10 test

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- Health warnings:
  - not a national comparison but a representative sample
  - AQA can not guarantee the standard of marking so this is a best fit
  - no grade boundaries, but can compare students performance at the three levels of demand.

# Grade boundaries: Ofqual update

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[ofqual.blog.gov.uk/2017/02/03/grade-boundaries-the-problems-with-predictions](https://ofqual.blog.gov.uk/2017/02/03/grade-boundaries-the-problems-with-predictions)

Exam boards are not predicting the boundary marks, and are rightly urging caution. Other organisations, responding to teacher requests, are far less cautious. Some organisations have had their member schools sitting their own mock exams and have provided ‘results’ and ‘grade boundaries’ on the basis of that exercise. That’s really helpful, yes?

Actually, no.

There are many good reasons to be cautious ahead of 2017. Here are our top three.

- 1. Even in well-established qualifications, grade boundaries are never set in advance.**
- 2. 2017 sees the first live exams of new GCSEs in English language, English literature and maths.**
- 3. Statistics will play a key role in making sure this year’s students are not disadvantaged by being the first to sit these new GCSEs.**

# Extract from Ofsted School inspection update, March 2017

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[gov.uk/government/publications/school-inspection-newsletter-academic-year-2016-to-2017](https://www.gov.uk/government/publications/school-inspection-newsletter-academic-year-2016-to-2017)

Part of understanding the GCSE reforms is being aware of the volatility of grade boundaries as the new qualifications bed in. Even when qualifications are well established, trying to guess where boundaries lie to predict grades for a particular examination is difficult.

As inspectors, we can help schools by not asking them during inspections to provide predictions for cohorts about to take tests and examinations. It's impossible to do so with any accuracy until after the tests and examinations have been taken, so we should not put schools under any pressure to do so – it's meaningless.

Much better to ask schools how they have assessed whether pupils are making the kind of progress they should in their studies and if not, what their teachers have been doing to support them to better achievement.



# Discussion workshops

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Discussion workshops: look at a selection of the workshops

1. Teaching and learning of the required practicals.
2. Meeting the challenge of Combined Science.
3. Stretch and challenge.
4. Managing formative assessment.
5. A-level discussion – mock papers.

# 1. Teaching and learning of the Required Practicals

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- What's been taught so far? Positives and challenges.
- How have you approached the teaching and learning of AT and RPs?  
For example:
  - fully integrated into the teaching of WS and content
  - taught separately from the teaching of WS and content other?
- How are learning outcomes determined by individual teachers?
- What conclusions have arisen as a result of department discussion about this?
- What are students recording for their 'contemporaneous' record?
- Discussion opportunity on materials being used and sample student responses.

## 2. Meeting the challenge of Combined Science

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What are the issues for the potential 1-3 Foundation learner?

- Accessing content and RPs - progression of content from the ELC outcomes through the Foundation tier.
- Achievable assessments to motivate students - use ELC assessments as part of your formative assessments.
- Use suitable required practicals to cover the Teacher Deviced Assessments.
- For a hands-on approach to teaching, use the working scientifically statements as a starting point and teach topics through these, embedding these important skills.
- Making decisions on entry and awarding March 2018.

## Other resources and next steps (2)

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- Teachit – interactive resources, quizzes, games, science and maths.
- Start early with KS3 syllabus to ensure students know basic concepts by teaching through the big ideas.
- Maths PowerPoints.
- ASE – and language of maths.
- CPD
  - effective delivery of the new ELC
  - realising the potential of your foundation learners 1-3.
- Next steps – in your departments plan a progressive route through the next topic using ELC as a starting point for the learning.

### 3. Stretch and challenge

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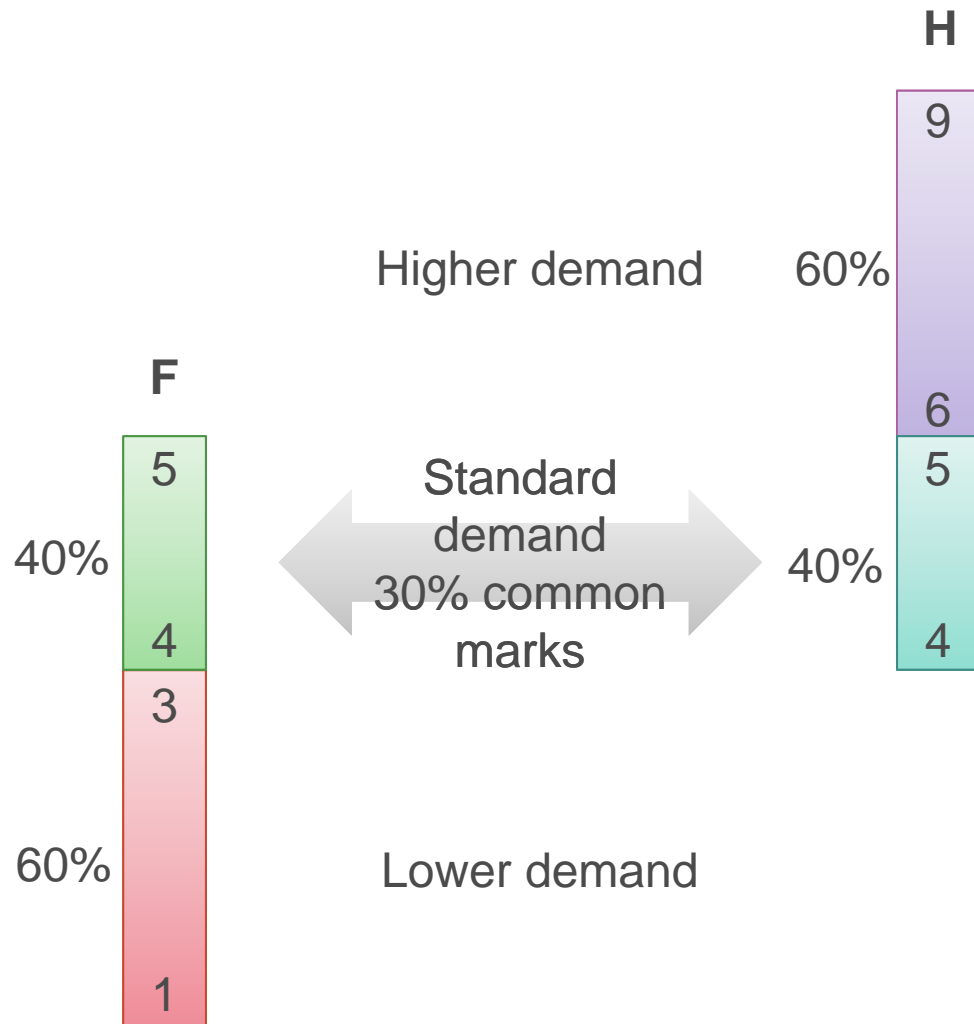
- What are the characteristics of your current Year 11 A and A\* pupils?
- How will this be different for the new specifications?
- Will the teaching and learning approach need to be different?
- What do high demand questions look like?
- Does practice make perfect?
- What skills/techniques do students need to develop from year 7 onwards?
- What do the current A and A\* students currently struggle with?

## 4. Managing formative assessment

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- Consider the assessment calendar for a two or three year GCSE course:
  - How often and when are you more formally assessing learning over the GCSE period?
  - What form do your assessments take (eg collation of Exampro questions, teacher assessed tasks)?
  - How are you tracking students' learning and progress?
  - If using the 1-9 grades, what methodology are you using to base these grades on?
  - To what extent (and how) are you informing students and their parents/guardians of the uncertainty of this data until the first cohort has been through the first exams in 2018?
- Discussion opportunity on schools assessments:
  - What do these tasks assess?
  - To what extent (and how) do they assess **working scientifically, apparatus and techniques** and **mathematical requirements**?

## Grade descriptors and grade boundaries (4)



**Assessment structure of the summer 2018 series Trilogy, Synergy and Separate sciences.**

15% of marks assess **practical skills** – all papers.

Combined Science, 20% of marks assess **maths skills** – covering all 3 levels of demand B-10%, C-20%, P-30%.

No QWC marks.

# Changes to the assessment model (4)

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- Removal of coursework.
- Practical skills being assessed on the papers.
- Maths weighting.
- Recall of equations.
- Re-designation of content from higher to foundation.
- 2 year linear assessment.
- Assessment objects include:
  - scientific enquiry, techniques and procedures analyse information and ideas to:
    - interpret and evaluate
    - make judgements and draw conclusions
    - develop and improve experimental procedures.



## 5. A-level discussion – mock papers

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- Have you used papers 1 and 2 yet or when are you planning to use them?
- How did/will you use them?
- If you've already used them:
  - how did you mark them? (Internal standardisation)
  - how did the students find the papers in general?
  - how did they perform on the maths questions?
  - were they able to do the practical questions?
  - what areas did students find the most challenging?
- Would you like to attend as a separate A-level network to share good practice ?

## Next steps

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- Try some of the suggested activities with your department in order to disseminate the materials covered.
- Ideas for summer meeting:
  - effective use of End of Year 10 analysis tool
  - transition guides
    - Year 11 to Year 12
    - six week teaching pack Biomimicry – ready for GCSE
    - Year 7 test
  - review and planning of the GCSE courses.

# Support for the whole journey

[aqa.org.uk/subjects/science/ks3-ks5-science-support-for-the-whole-journey](http://aqa.org.uk/subjects/science/ks3-ks5-science-support-for-the-whole-journey)

Key Stage 3	Key Stage 4	Key Stage 5
<p><a href="#">Key Stage 3 Science Syllabus</a> – Cover the programme of study with 10 big ideas taught across two to three years.</p> <p><a href="#">Key Stage 3 on screen assessments</a> – A comprehensive online package to monitor students' understanding and progress.</p> <p><a href="#">Year 7/Year 9 transition tests</a> – Assess the skills students need for the transition to either Key Stage 3 or GCSE.</p> <p><a href="#">Student checklists</a> – Track your students' work during their KS3 Science studies.</p> <p><a href="#">Teachit</a> – Professionally edited resources for teaching and learning. <a href="#">Testbase</a> – Test questions, mark schemes and examiner comments.</p>	<p><a href="#">Science for all suite</a> – Our range of qualifications designed to help you bring out the best in every student.</p> <p><a href="#">Year 10 exams/results and analysis tool</a> – End-of-year exam to help prepare your students for success at GCSE. Available summer 2017</p> <p><a href="#">GCSE topic tests</a> – Ready-made tests for each GCSE topic; free to Exampro subscribers. Available autumn 2016</p> <p><a href="#">GCSE mock exams</a> – A second, secure set of sample assessment materials for use in mock exams. Available autumn 2017</p> <p><a href="#">Exampro</a> – Searchable past paper questions, mark schemes and examiner comment.</p> <p><a href="#">Maths skills in GCSE sciences</a> – Information and resources to help you integrate maths skills into the classroom.</p> <p><a href="#">GCSE Practicals Resources</a> – Teacher notes, student sheets and technical support for required practical activities.</p> <p><a href="#">Teachit</a> – Professionally edited resources for teaching and learning.</p>	<p><a href="#">AS and A-levels designed with progression in mind</a> – Co-teachable biology, chemistry and physics qualifications.</p> <p><a href="#">Applied General Science</a> – Vocational qualifications to give post-16 learners a practical introduction to science.</p> <p><a href="#">A-level Environmental Science</a> – Interactive and practical qualifications exploring contemporary issues and thinking.</p> <p><a href="#">AS and A-level practicals resources</a> – Understand the CPAC and bring best practice into your classroom.</p> <p><a href="#">AS and A-level mock exams</a> – A second, secure set of sample assessment materials for use in mock exams. Available January 2017</p> <p><a href="#">AS and A-level transition guides</a> – Biology, chemistry and physics packs to help students hit the ground running. Available summer 2016</p> <p><a href="#">Exampro</a> – searchable past paper questions, mark schemes and examiner comment.</p> <p><a href="#">Maths skills briefings for A-level sciences</a> – Resources to help you teach the specific maths skills needed.</p>

## CPD Events information: all chargeable

Subject	Level	Course	Delivery Channel	Dates & locations
Biology	KS5	Practical skills for 2017	Face-2-face	<ul style="list-style-type: none"> <li>• 14 March: London</li> <li>• 21 March: Manchester</li> <li>• 27 June: London</li> <li>• 4 July: Manchester</li> </ul>
Biology	A -level	Fieldwork and maths skills: RP 12 and beyond.	Online	<ul style="list-style-type: none"> <li>• 13 March</li> </ul>
Biology	A-level	Essay Writing skills	Online	
Biology	A-level	Getting Started	Online	<ul style="list-style-type: none"> <li>• Summer term (June/July)</li> </ul>
Chemistry	A-level	Getting Started	Online	<ul style="list-style-type: none"> <li>• Summer term (June/July)</li> </ul>
Chemistry	KS5	Practical skills for 2017	Face-to-face	<ul style="list-style-type: none"> <li>• 15 March: London</li> <li>• 23 March: Manchester</li> <li>• 28 June: London</li> <li>• 6 July: Manchester</li> </ul>
Physics	A-level	Getting Started	Online	<ul style="list-style-type: none"> <li>• Summer term (June/July)</li> </ul>
Physics	KS5	Practical skills for 2017	Face-to-face	<ul style="list-style-type: none"> <li>• 30 June: London</li> <li>• 19 July: Manchester</li> </ul>

## Events (cont)

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<b>Science</b>	GCSE	Realising potential (working title)	Online	
<b>Science</b>	GCSE	GCSE Science: Planning and teaching the New GCSE course	Face-to-face	<ul style="list-style-type: none"><li>• 22 June: London</li><li>• 13 July: Manchester</li></ul>
<b>Science</b>	GCSE	Preparing students for terminally assessed courses	Face-to-face	<ul style="list-style-type: none"><li>• 7 July: London</li></ul>
<b>Science</b>	GCSE	Making in impact delivering the new mathematical requirements in GCSE science	Face-to-face	
<b>Science</b>	GCSE	How to make the most of our assessment materials	Online	
<b>Science</b>	KS3	Making KS3 Science work	Face-to-face	<ul style="list-style-type: none"><li>• 21 June: London</li><li>• 12 July: Manchester</li></ul>
<b>Science</b>	Certificate	Introduction to the New Science ELC Spec (5960)	Online	<ul style="list-style-type: none"><li>• 27 March</li></ul>

# Support list

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## **Science teacher services team**

T: 01483 477 756

E: [gcsescience@aqa.org.uk](mailto:gcsescience@aqa.org.uk)

E: [alevelscience@aqa.org.uk](mailto:alevelscience@aqa.org.uk)

## **Coursework Administration**

[courseworkadmin@aqa.org.uk](mailto:courseworkadmin@aqa.org.uk) / 01423 534 455

## **e-AQA**

[aqa.org.uk/help/eaqa.php](http://aqa.org.uk/help/eaqa.php)

You can access Secure Key Materials (SKM) via e-AQA. Login using the password for your school which you can obtain from your Examinations' officer.

## **Enhanced Results Analysis (ERA)**

[aqa.org.uk/about-us/what-we-do/products-and-services/enhanced-results-analysis](http://aqa.org.uk/about-us/what-we-do/products-and-services/enhanced-results-analysis)

# Support list

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## **Exampro**

[exampro.co.uk](http://exampro.co.uk)

## **Online course booking:**

[coursesandevents.aqa.org.uk](http://coursesandevents.aqa.org.uk)

## **In-school CPD**

[aqa.org.uk/professional-development/in-school-training](http://aqa.org.uk/professional-development/in-school-training)

## **TOLS (Teacher Online Standardisation)**

[aqa.org.uk/about-us/what-we-do/products-and-services/teacher-online-standardisation](http://aqa.org.uk/about-us/what-we-do/products-and-services/teacher-online-standardisation)

## **Exam change essentials**

[aqa.org.uk/news-and-policy/supporting-education/exam-change-essentials/exam-change-essentials-resources](http://aqa.org.uk/news-and-policy/supporting-education/exam-change-essentials/exam-change-essentials-resources)



# Thank you

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Please fill in the evaluation and say what topics you would like to discuss in the summer meeting.