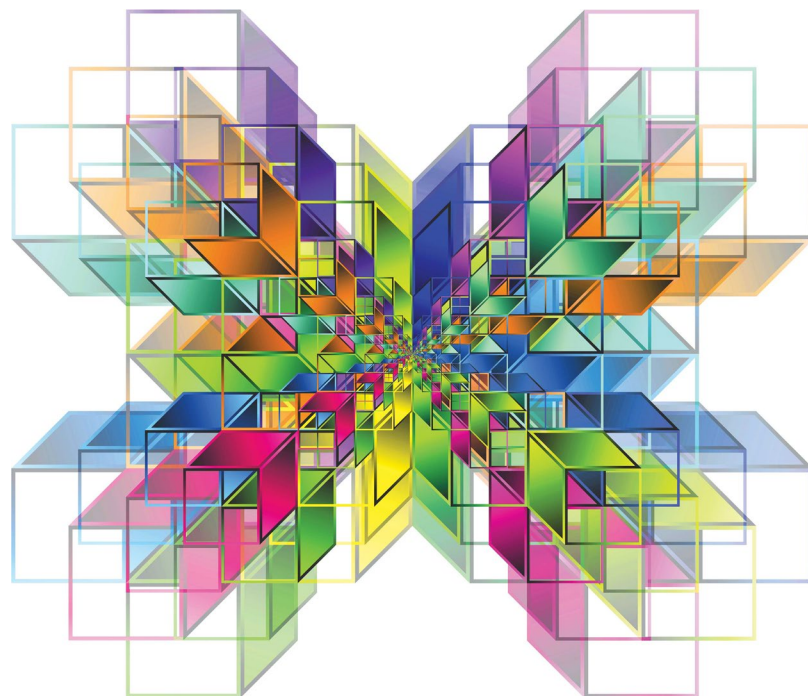


GCSE Maths Virtual Communities: Changes to exams in 2022 and 2023

Ian Andrews
Autumn 2022



Welcome



Agenda

- Introduction
- Rationale behind improvements
- Changes in Summer 2022
- Changes for Summer 2023
- Examples of how questions have changed
- Resources and teaching and learning

Introduction: Ian Andrews

- Maths and Statistics graduate.
- Maths teacher since 2007.
- Full time Head of department since 2015 in an 11–18 comprehensive in West Sussex.
- AQA Chair of examiners for GCSE Maths, GCSE Statistics and Level 2 Further maths since 2019 (part-time role).

Rationale for improvements

Changes aim to improve accessibility for students

- The 'new' GCSE specification is 7 years old! First taught in 2015 and first examined in 2017.
- The maths team at AQA wanted to improve the papers in 2 key areas:
 - Improve the performance of students at the start of the paper.
 - Improve the ramping of difficulty throughout the paper.
- The aim is to give students a fair start and the make the papers get gradually harder so as not to dishearten students.

Changes made in Summer 2022

In comments

A few changes were made to the Summer 2022 papers.

Did you notice anything?

Summer and November 2022 changes

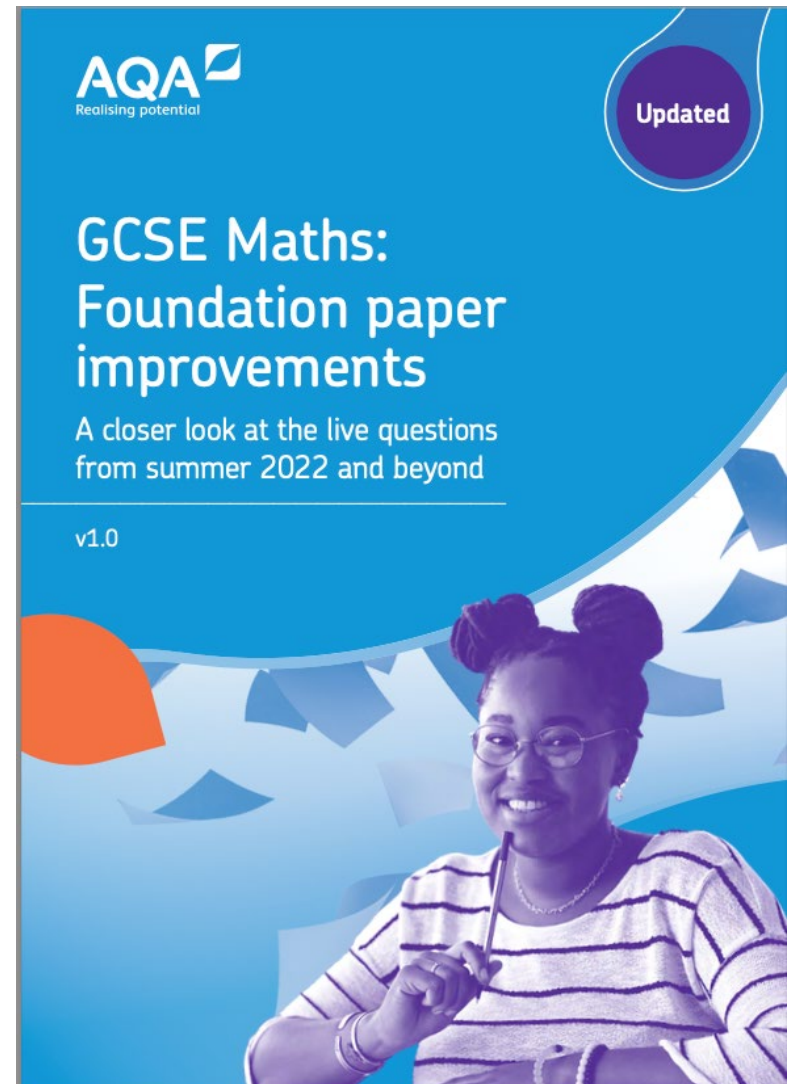
- Some subtle changes have already been made in the Summer and November resit papers for 2022.
- Earlier questions in the Foundation tier papers were re-written to ensure they were more accessible, especially for lower attaining candidates.
- For example, the wording may have been improved or the numbers made easier.
- During marking, the mark schemes were changed so there were more follow on marks or students weren't punished as much for having more than one attempt.
- This partly explains why grade boundaries increased in summer 2022.

Foundation paper improvements

Available on the AQA website.

Outlines some of the changes made in the 2022 papers.

This approach will continue and improve into the 2023 papers and beyond.



Example

Foundation Paper 1

Question 1a, Paper 1

1 (a) Circle the answer to $150 \div 5$

[1 mark]

3

30

300

3000

Review

A first question to genuinely settle the students. We believe that the vast majority will get this correct and will know they have it correct, so this will give students a good start. In earlier drafts, we were going to use a multistep calculation of $24 \div 4 + 2$, but felt this was too complex for the very first question.

Changes for Summer 2023 and beyond

Improving accessibility and fairness for students

The improvements come from the following key areas:

- Multiple choice questions (MCQs)
- Ramping of demand in the papers
- Question wording
- Working space and lines
- Mark schemes

1) No MCQ at start and ensure they're worth 1 mark

Whilst multiple choice questions have their place, evidence has shown students can find them difficult at the start of the paper.

Sometimes they require more work than a 1 mark question should need.

They will still be used later in the paper but with more emphasis on them only needing 1 mark's worth of working.

Examples of how MCQs will change

Old potential question 1 to 4

Example 1: Circle the factor of 10

3 5 15 20

What might the issue be?

No MCQ at start and ensure they're worth 1 mark

Old potential question 1 to 4

Example 1: Circle the factor of 10

3

5

15

20

Factor

Distractor: Multiple

No MCQ at start and ensure they're worth 1 mark

Old potential question 1 to 4

Example 1: Circle the factor of 10

3

5

15

20

Factor

Distractor: Multiple

Better to ask:

- Write down **one** factor of 10 (for one mark)
- OR Write down **all** the factors of 10 (for two marks)

How can we improve this question?

Example 2: Circle the fraction that is not equal in value to three-quarters

$$\frac{9}{12}$$

$$\frac{6}{8}$$

$$\frac{12}{15}$$

$$\frac{15}{20}$$

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Too many steps for 1 mark. A student might do 4 simplifications for one mark.

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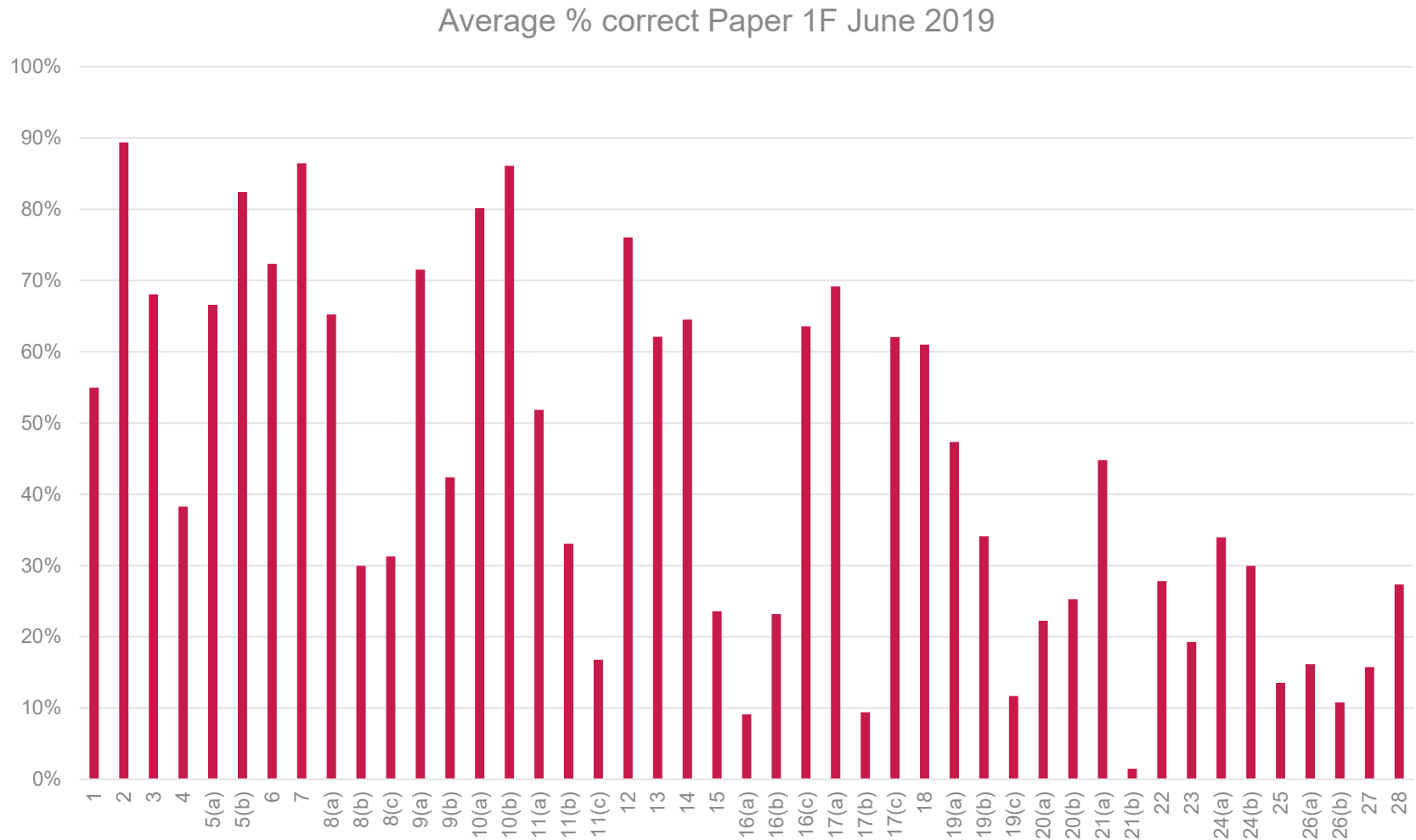
Better to ask

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OR

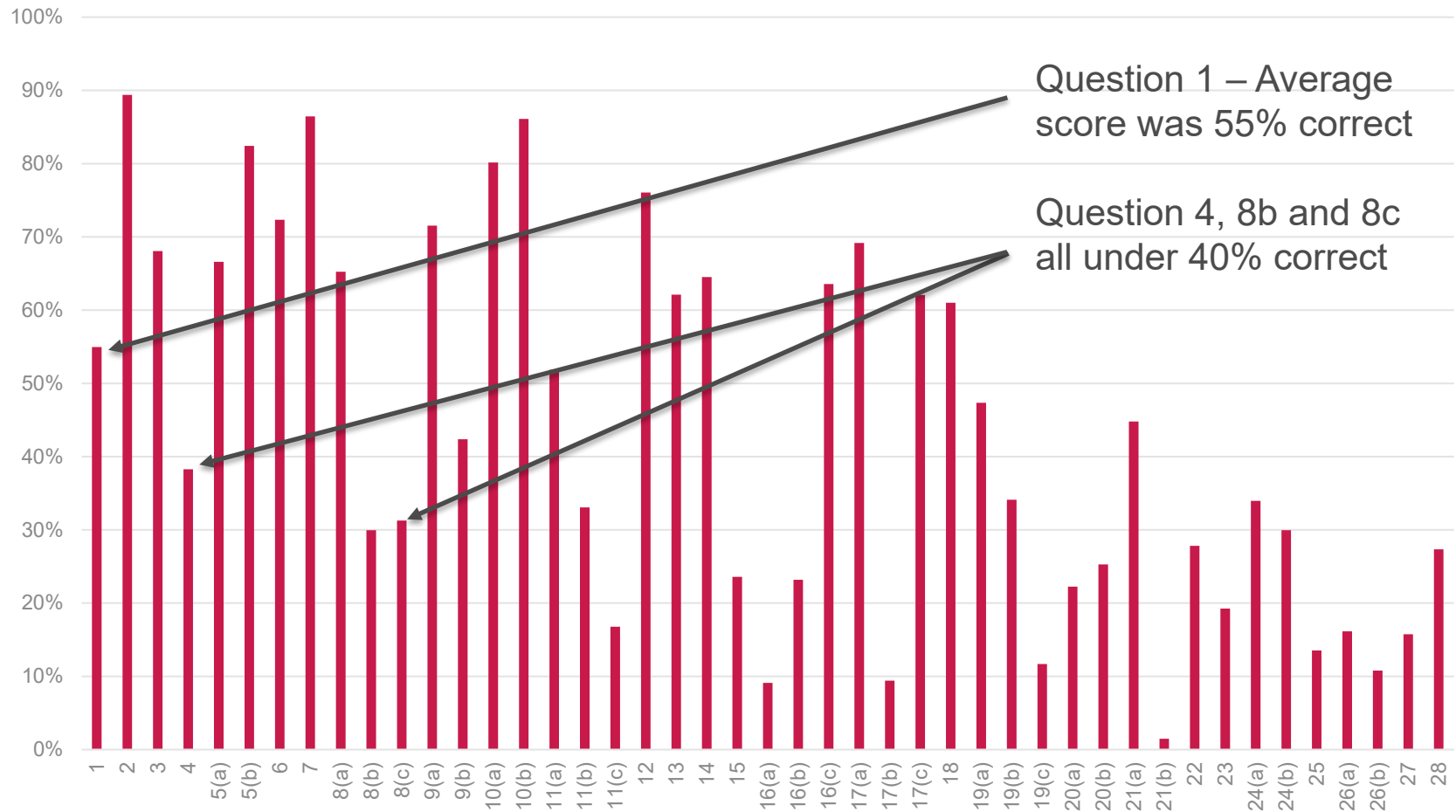
- Write the fraction $\frac{15}{20}$ in its simplest form.

2) Improve the Ramping of Demand



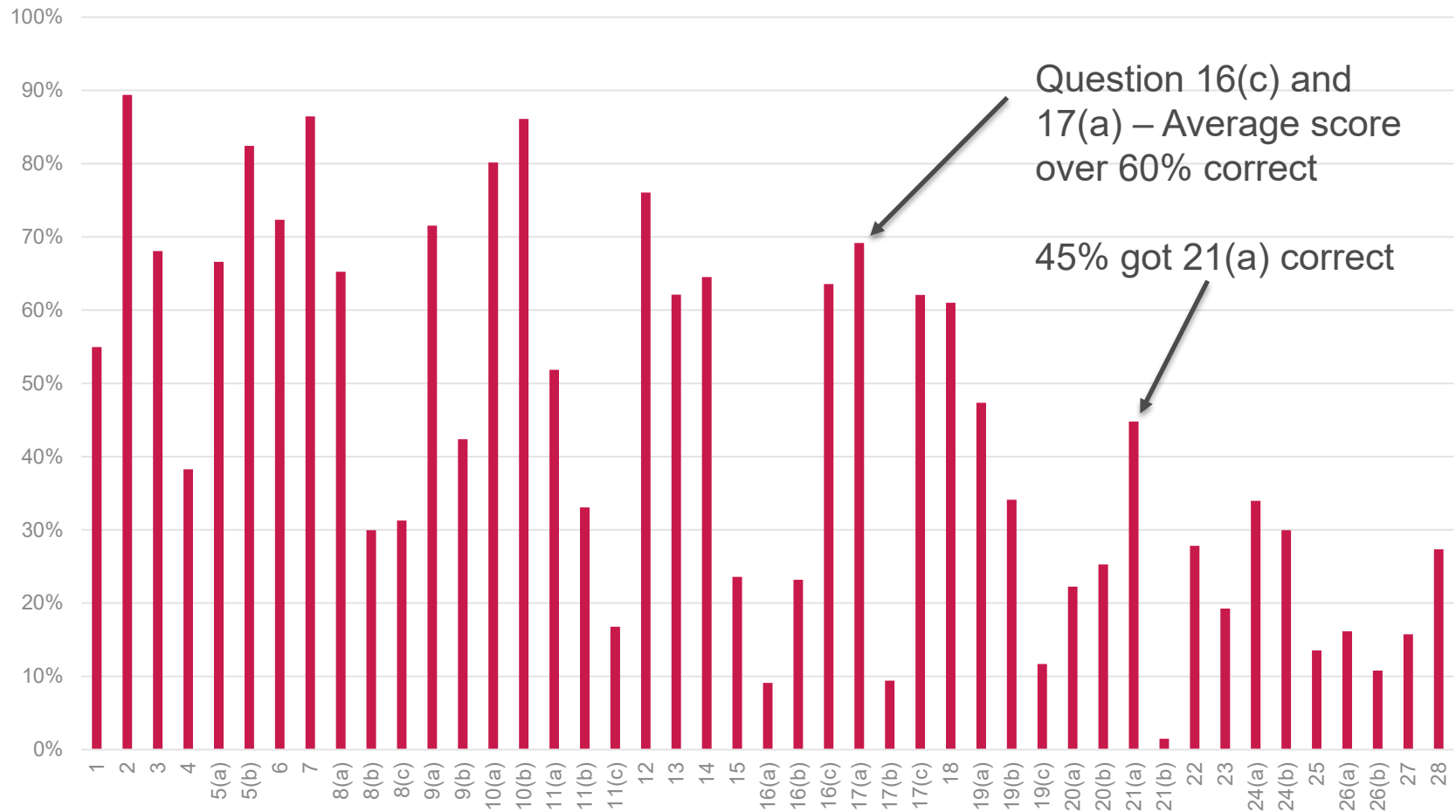
Ramping Demand

Average % correct Paper 1F June 2019

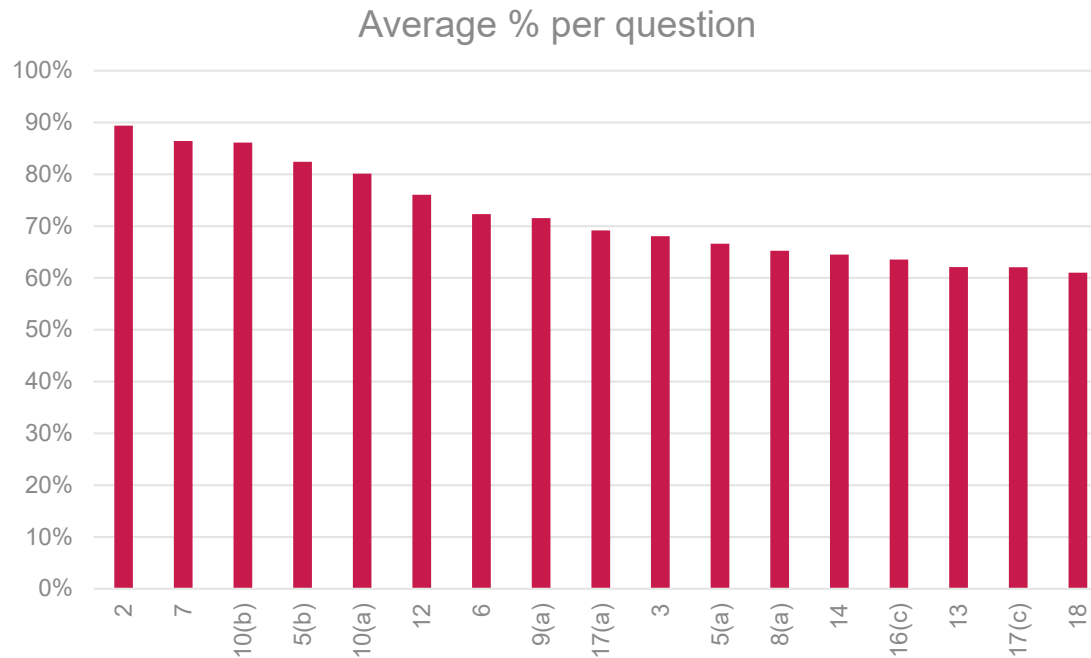


Ramping Demand

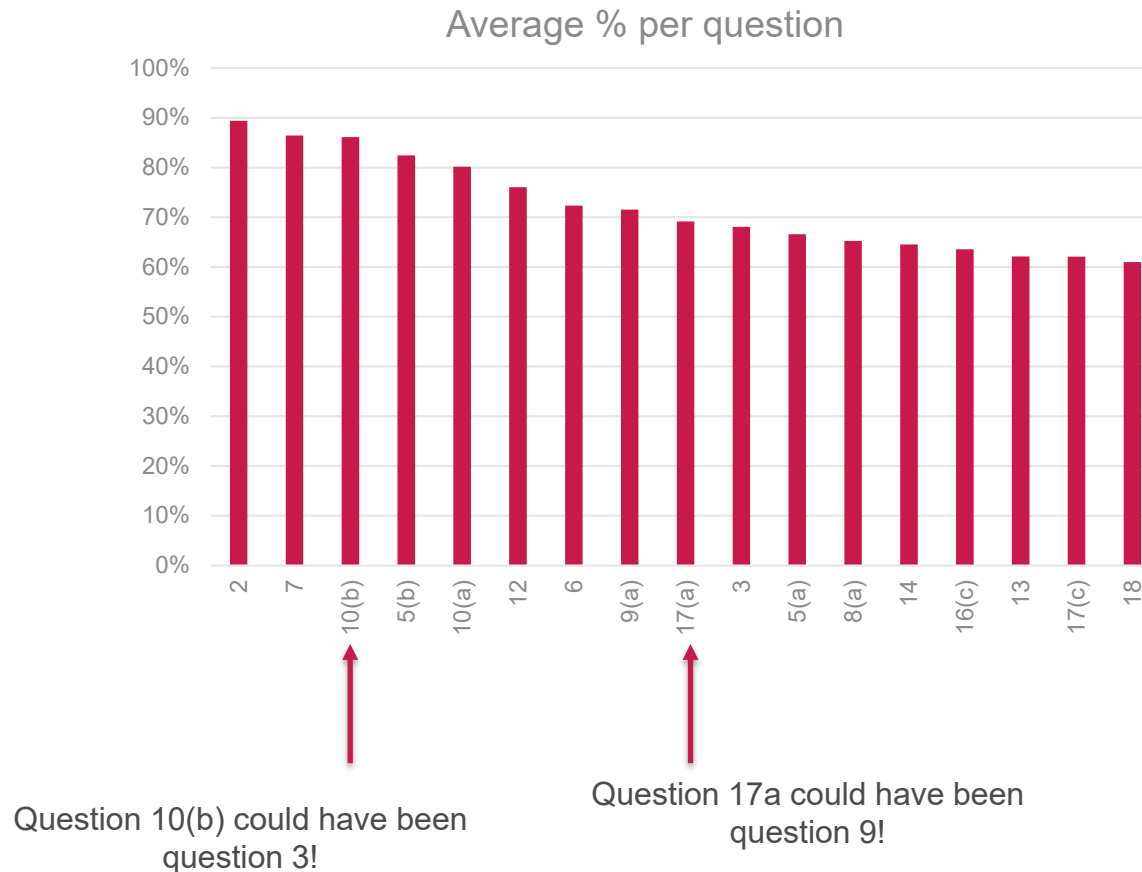
Average % correct Paper 1F June 2019



Ramping Demand - Reordered for start of the paper



Ramping Demand -Reordered for start of the paper



Improved Ramping – Especially at start of paper

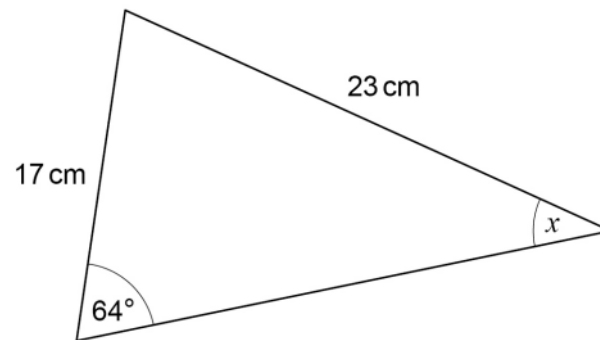
- You might not want all the paper ramped but certainly the start seems fairest for students.
- We now have 9 full papers of data. This enables us to learn how accurate questions writers are at estimating the facility (i.e estimated % get right) and can improve this.
- Aim for more linear progression throughout the paper.
- Aim for a high facility at the start of the paper:
 - Roughly first 10-15 marks foundation – aim for 80% facility.
 - Roughly first 6-10 marks of higher – aim for 65%+ facility.

3) Question wording

- AQA have strived to ensure that the question wording is as appropriate to the question as possible, especially ensuring there is no superfluous information in questions.
- This will continue and improvements will be made, especially in:
 - AO1 questions – removing context unless absolutely necessary OR genuinely helpful to students (ie money).
 - Minimum words will be used across all questions.
 - Unless information is needed to confirm something, diagrams will be stripped of unnecessary wording.

Example from Summer 2022 – more of this...

21



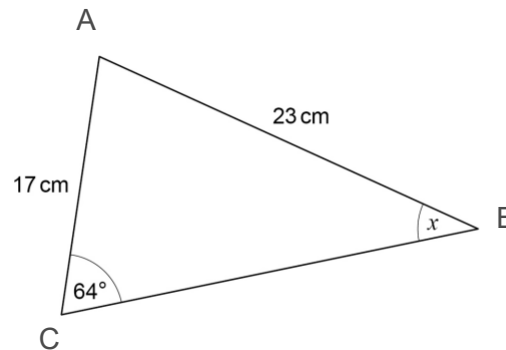
Not drawn
accurately

Use the sine rule to work out the size of angle x .

[3 marks]

....less of this

21



Not drawn
accurately

The diagram shows triangle ABC.

It has side length AB of 23cm and side length AC of 17cm.

Angle ACB is 64 degrees. Angle ABC is marked x.

Use the sine rule to work out angle x. [3 marks]

4) Working space and lines

Two main changes here:

- 1) More white space for working will be given for specific questions (ie around diagrams, prime factor decomposition etc).
- 2) The lines will appear more faint in the papers so students can be a bit more flexible with their working.

Example of prime factor decomposition

Q1.

Write 225 as the product of its prime factors.

Answer _____

(Total 2 marks)

Old version

New version

Q3.

Write 36 as a product of prime factors.

Give your answer in index form.

Answer _____

(Total 3 marks)

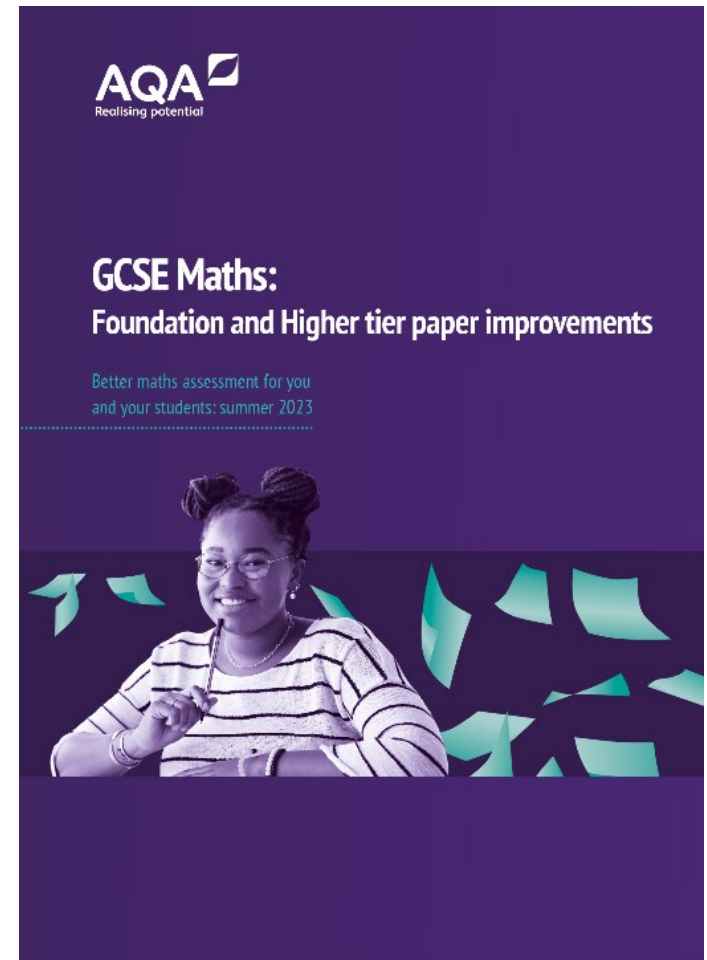
5) Ensure the mark schemes reward students

- Less obvious after the process but mark schemes are continuously refined whilst papers are being marked and standardised.
- We want to catch and reward students who show some good mathematical knowledge.
- More than ever before we are seeking to give the first mark for the smallest step on the correct road to a solution.
- We want questions to perform at all available marks so mark schemes can and will be altered to aid students with this.

Resources

More about our improved papers

[Notes and Guidance: Foundation and Higher tier paper improvements \(Summer 2023\)](#)



New style practice papers available soon

- Summer 2022 and Nov 2022 papers will be similar in style and give an initial flavour of some of the improvements.
- Changes mentioned before (ie, no MCQs at the start etc) will first occur in full in summer 2023.
- 4 sets of practice papers will be available in September, November, January and March.
- Will give the best idea how different the papers will be vs the older papers.

Sample paper 1 – 1F – Questions 1 and 2

1 (a) Write $\frac{1}{10}$ as a percentage.

[1 mark]

Answer _____ %

1 (b) Write 0.9 as a percentage.

[1 mark]

Answer _____ %

2 Write $\frac{8}{10}$ as a fraction in its simplest form.

[1 mark]

Answer _____

Sample paper 1 – 2H – Questions 1 and 2

1 Three of the angles of a quadrilateral are 100° , 100° and 80°

1 (a) Work out the size of the 4th angle.

[1 mark]

Answer _____

1 (b) Write down a possible name for this quadrilateral.

[1 mark]

Answer _____

2 Use your calculator to write down the improper fraction equivalent to 1.375

[1 mark]

Answer _____

In summary

In summary

- The starts of papers in summer 2023 should:
 - Have improved accessibility for students (i.e. easier questions at the very start).
 - Won't involve multiple choice questions.
- The wording of questions will improve further to reduce barriers to all questions.
- Working space will be more apparent and lines will be lighter to help this.
- Mark schemes will continue to be improved and aim to reward students for good attempts at questions.

Useful links

- Doc link

<https://filestore.aqa.org.uk/resources/mathematics/AQA-8300F-NG-IMPROVEMENTS.PDF>

- Link to sample papers

<https://allaboutmaths.aqa.org.uk/8300practicepapers>

Any questions?



Resources

Take advantage of our extra resources in the 'Plan', 'Teach' and 'Assess' sections of our website.

GCSE Mathematics

8300

Because of the impact of Coronavirus (COVID-19) there are some changes to how GCSE Mathematics will be assessed in 2022. [Find out more.](#)

Find all the information, support and resources you need to deliver our specification.

Teaching from: September 2015

Exams from: June 2017

QAN code: 601/4608/4

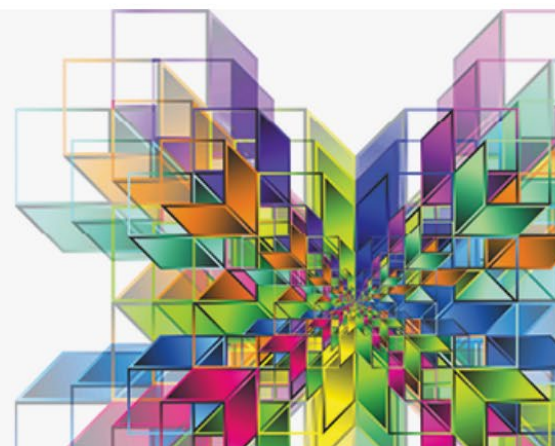
[Specification](#)

[Planning resources](#)

[Teaching resources](#)

[Assessment resources](#)

[Key dates](#)



More useful resources

Our dedicated website for Maths resources: AQA All About Maths

The screenshot shows the AQA All About Maths website. At the top left is the AQA logo. To the right are links for 'Ask AQA', 'Help', and 'Contact us'. Below the logo is a purple navigation bar with links: 'Welcome back', 'Edit details', 'Change password', 'Log out', and a search bar. The main content area has a 'Home' breadcrumb. On the left is a sidebar menu with links: 'Home', 'NEW A-level Maths and Further Maths', 'NEW GCSE Maths (8300)', 'NEW GCSE Statistics (8382)', 'About Us', 'Maths Qualifications', 'Teaching Resources', 'Question Papers', 'Key Stage 3', 'Andrew's comments (ADM only)', 'AQA Results Services', 'AQA Maths Advocates', 'AQA CPD', and 'AQA TESTING IN BANNER HOMEPAGE (ADMIN ONLY)'. The main content area features a large banner for 'AQA All About Maths' with a colorful graphic and text: 'Download our customisable AS and A-level route maps', 'GCSE Maths: Supporting you this summer >', 'AS and A-level Maths Teaching guidance out now', 'GCSE 8300 past papers', and 'See the question papers for the GCSE 8300 2017 exam series'. Below the banner is a section titled 'New GCSE Maths (8300)' with three buttons: 'Route Map', 'Teaching Guidance', and 'Practice Papers'. On the right side, there are several boxes: 'Site management >' with links 'Register interest >' and 'My AQA Maths >'; 'exampro' with text 'Access thousands of exam questions with Exampro Mathematics'; 'Quick links' with links 'AQA Maths', 'Register your interest', and 'Route Map'; 'VLE download >'; and 'Tweets' featuring a tweet from 'bettermaths @BetterMath'.

Event materials

The electronic materials from this event will be available to download shortly. If you aren't able to download them at this time, they 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 email. When you receive the email, please log in to your account and the materials will be available on the 'my resources' tab on the welcome screen.

Get in touch

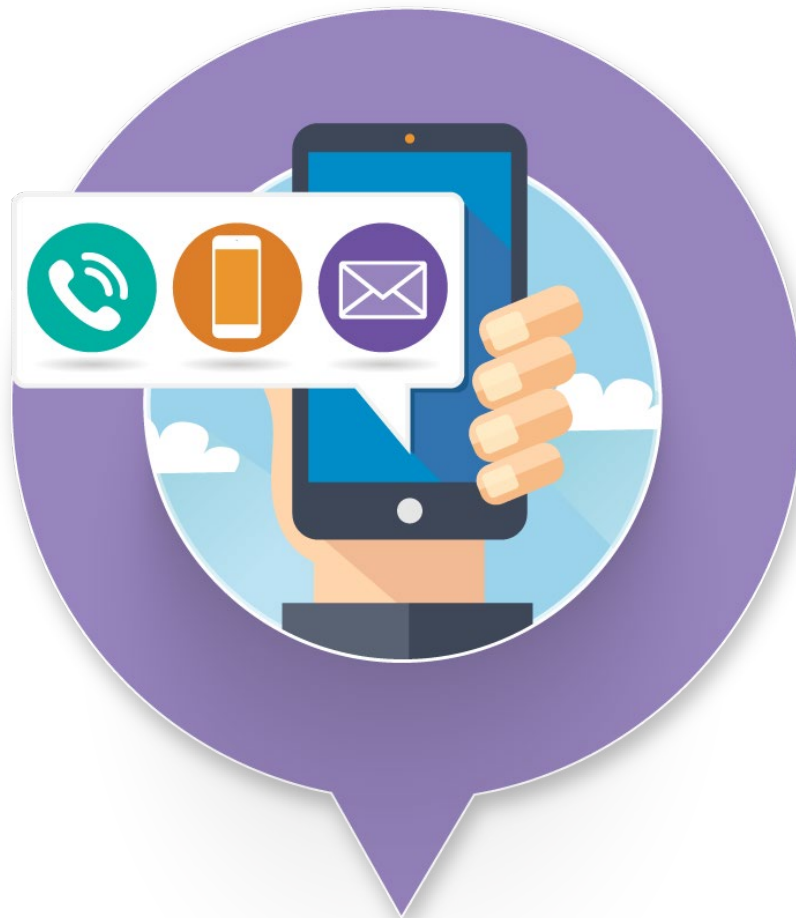
Our friendly team will be happy to support you between 8am and 5pm, Monday to Friday.

Tel: 0161 957 3852

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Thank you
