

# GCSE Mathematics

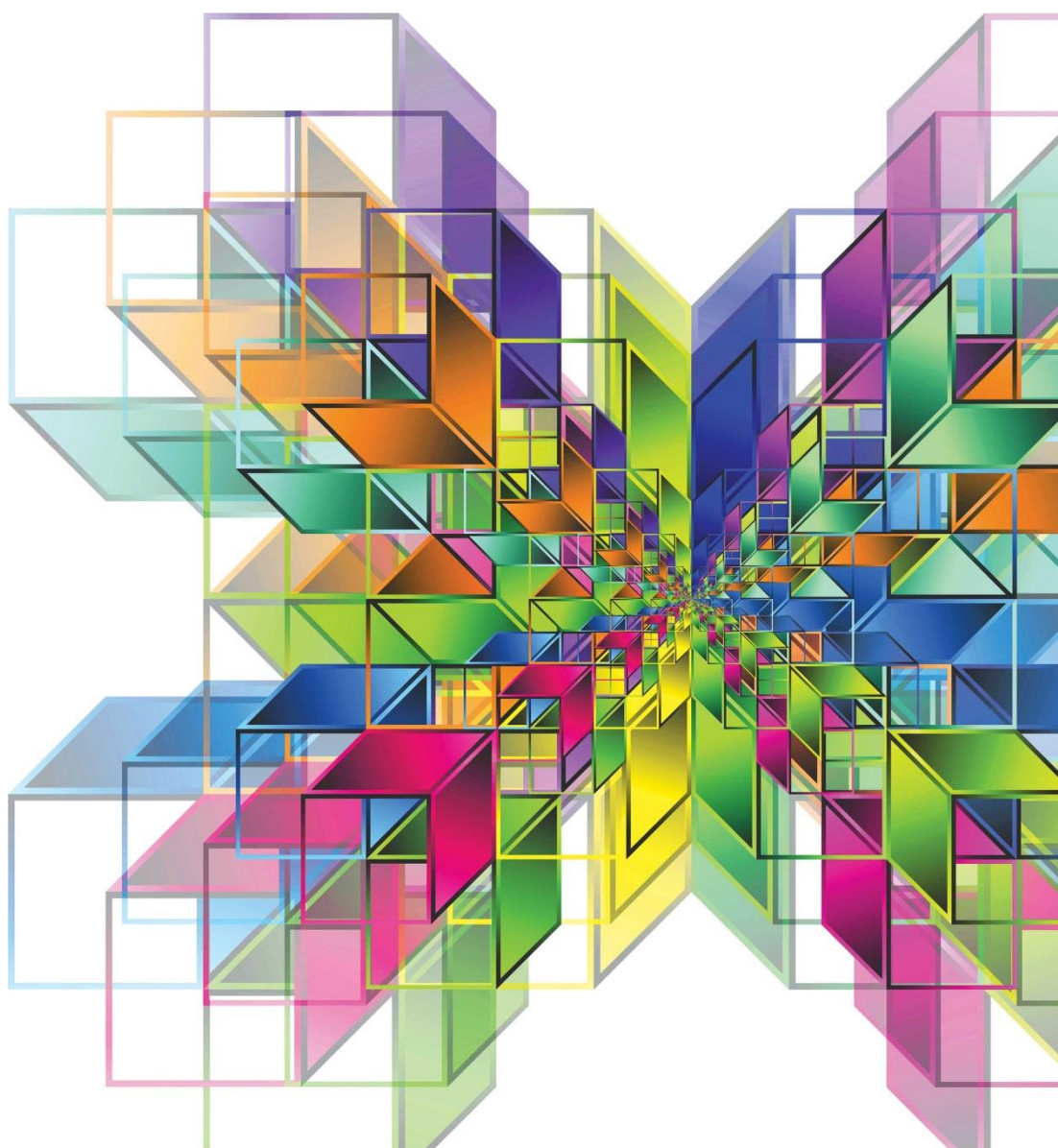
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**Foundation tier**

Insights from the first series, summer 2017

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Published: September 2017



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# Grade boundaries

Subject or paper	Max mark	Summer 2017 grade boundaries (raw mark)								
		1	2	3	4	5	6	7	8	9
Mathematics 8300F (Foundation)	240	27	59	91	124	156	-	-	-	-

## How to interpret grade boundaries

GCSE Mathematics is a reformed qualification. This means you don't need to convert your marks to the uniform mark scale (UMS). A final grade is based on marks from all papers.

### How grade boundaries are set: the 'statistical' element

Our Centre for Education Research and Compliance (CERP) use a range of statistics to make predictions that suggest the most appropriate grade boundaries. The statistical evidence considers the prior attainment of the given cohort as well as the distribution of marks.

### How grade boundaries are set: the 'judgemental' element

Senior examiners review a script sample to confirm that the statistically recommended marks are broadly sensible for the grade.

Grade boundary setting is overseen by the qualifications regulator.

To find more grade boundaries and learn how they are set, visit [aqa.org.uk/gradeboundaries](http://aqa.org.uk/gradeboundaries)

## Qualification summary

All three papers should be of the same demand so it was pleasing to see consistent performance across the papers. The means for papers 1, 2 and 3 were 45%, 47% and 44% respectively.

Paper 1 was generally accessible, and although many students appeared to have worked up to the end of the allotted time, there was no evidence that they found they had insufficient time.

Most students seemed to find Paper 2 accessible and were able to demonstrate mathematical ability at all levels, but they did not always set out their solutions clearly.

On Paper 3, the majority of students attempted most of the questions. The work was generally well presented but arithmetic errors caused problems for some students who hadn't used a calculator.

Overall, exam response data from summer 2017 show that question demand slowly ramped up throughout each of the three papers, meaning the most accessible marks weren't buried late in the papers. This is important for avoiding a confidence crash in students who hit difficulties.

# Paper 1 (Foundation)

This is a snapshot. Learn more about every question from the summer 2017 series in the Chief Examiner's reports. Visit [allaboutmaths.org.uk](http://allaboutmaths.org.uk), log in and follow:

Teaching Resources > Reports on the Examination > GCSE Maths Reports > June 2017 GCSE Examiner Reports.

Most successful topics	Least successful topics
<ul style="list-style-type: none"><li>• Time conversion</li><li>• Number of sides of shapes</li><li>• Simple equations</li><li>• Problem solving in a number context</li><li>• Conversion between mixed units</li></ul>	<ul style="list-style-type: none"><li>• Multiplying a fraction by an integer</li><li>• Drawing a straight-line graph</li><li>• Writing a worded number in standard form</li><li>• Writing a formula for two variables</li><li>• Interpreting a frequency table in terms of mean and range</li></ul>

## Highlights from summer 2017

### Questions 8, 14 and 21

These three questions were good differentiators between students of different abilities.

Question 8 was well attempted, with many good answers, although a number of students failed to carry out the final steps.

Question 14 generated many correct answers, with the more successful students demonstrating better knowledge of primes.

Most students made at least some progress in question 21. Very few didn't attempt it. Many methods were used for working with percentages. A common error was to add 13% to the initial total of £80.

### Question 19

Part (a) was better answered than part (b). Students mostly used the given conversion in part (a) correctly, but few could combine the variables to achieve an appropriate formula or connection between them in part (b).

### Question 28

This question tested a topic that was new to Foundation, but was answered reasonably well. Students who opted for a trial-and-error approach were often more successful than those who tried an algebraic approach. A significant number of students tried to eliminate  $x$ , when it would have been easier to eliminate  $y$ .

# Paper 2 (Foundation)

This is a snapshot. Learn more about every question from the summer 2017 series in the Chief Examiner's reports. Visit [allaboutmaths.org.uk](http://allaboutmaths.org.uk), log in and follow:

Teaching Resources > Reports on the Examination > GCSE Maths Reports > June 2017 GCSE Examiner Reports.

Most successful topics	Least successful topics
<ul style="list-style-type: none"><li>• Interpreting a pictogram</li><li>• Using a fraction greater than 1</li><li>• Solving an equation</li><li>• Angles at a point</li><li>• Combining conversions</li><li>• Volume and conversion</li><li>• Standard form</li></ul>	<ul style="list-style-type: none"><li>• Writing a fraction as a ratio</li><li>• Converting a percentage to a fraction</li><li>• Reasoning with and comparing ratios</li><li>• Evaluating a solution to identify the effect of an assumption</li><li>• Average speed</li><li>• Probability formula</li><li>• Rearranging a formula</li></ul>

## Highlights from summer 2017

### Question 6

The first two parts of question 6 were very well answered. In part (c), most students gave an answer referring to the sample only lasting an hour. Some students stated that the results were unfair because of the differing numbers of males, females and families.

### Questions 12 and 18

These questions were good differentiators between students of different abilities.

For question 12, the majority of students were able to at least find the total fuel cost. Students who performed better at this question worked out the total sales and then the percentage, a more efficient method than working day by day, as other students did.

Students who understood that profit is the difference between income and cost often went on to give a fully correct solution to question 18. Those who performed less well often only worked out the bonus payment or the annual salary, or failed to provide the required conclusion.

### Question 21

Many students made a good attempt at part (a). The most successful students set out their working clearly and labelled each stage. Common errors arose from confusing surface area and volume. Part (b) was generally poorly answered.

# Paper 3 (Foundation)

This is a snapshot. Learn more about every question from the summer 2017 series in the Chief Examiner's reports. Visit [allaboutmaths.org.uk](http://allaboutmaths.org.uk), log in and follow:

Teaching Resources > Reports on the Examination > GCSE Maths Reports > June 2017 GCSE Examiner Reports.

Most successful topics	Least successful topics
<ul style="list-style-type: none"><li>• Calculating a range from a diagram</li><li>• Deduction of dimensions of a rectangle</li><li>• Similar triangles</li><li>• Problem-solving with percentages</li><li>• Problem-solving with probability</li></ul>	<ul style="list-style-type: none"><li>• Algebraic manipulation</li><li>• Expanding a single bracket and collecting terms</li><li>• Calculating mean from a diagram</li><li>• Deduction of dimensions of a triangle</li><li>• Time and proportion</li><li>• Ordering probabilities as fractions, decimals and percentages</li><li>• Drawing a tangent to a circle</li><li>• Consecutive cube numbers</li><li>• Multi-step best value problem-solving</li><li>• Substitution into fractional algebraic expression</li><li>• Ratio</li><li>• Forming an algebraic equation from a geometrical context</li></ul>

## Highlights from summer 2017

### Question 5

Question 5 showed that the notation for algebraic simplification was generally well known. Common errors occurred when expanding or collecting terms.

### Questions 11 and 15

These two questions were good differentiators of the more able students.

Students who used 'build up' methods to answer question 11 generally performed poorly. In question 15, the more successful students showed a better understanding of the concept of a cube number. A small majority were able to correctly identify all five three-digit cube numbers.

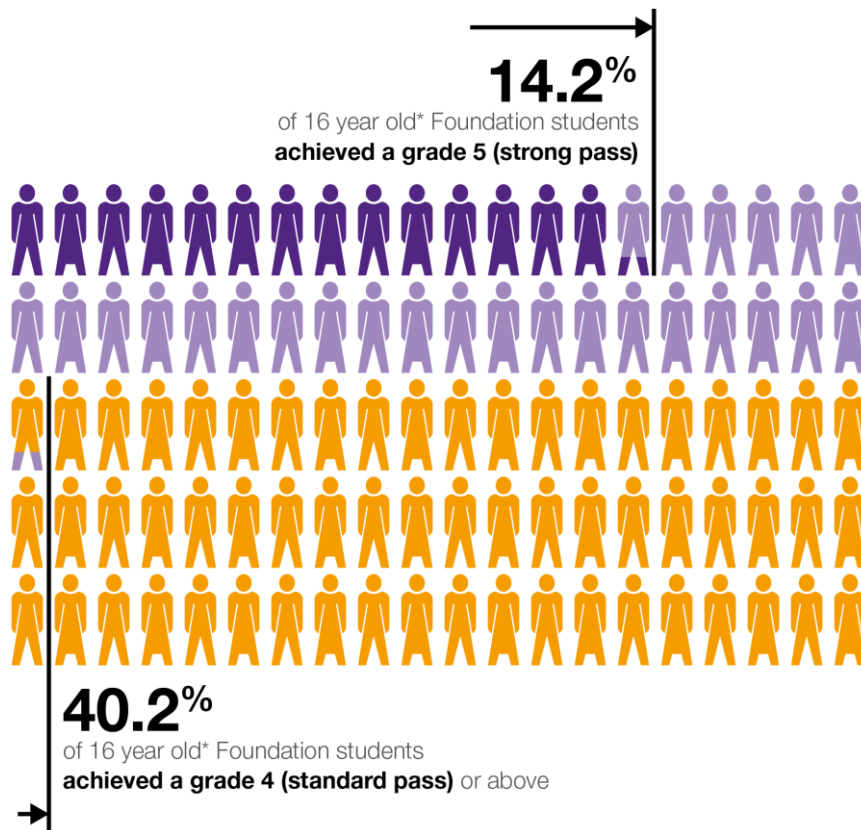
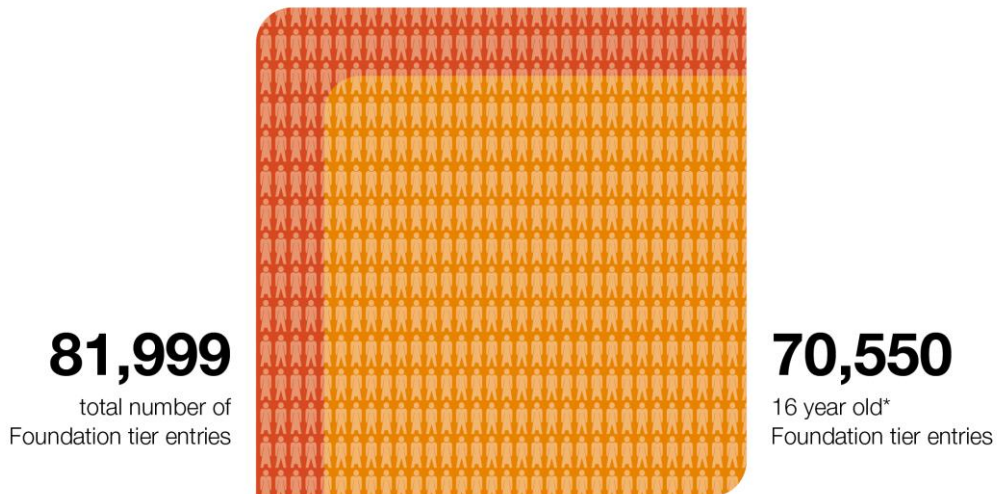
### Question 24

Question 24 was not well answered and a significant number of students did not attempt it. The most common errors in part (a) were:

- failing to equate two algebraic terms to form a correct equation
- incorrect manipulation in attempting to solve the equation
- failing to equate the two angles as corresponding and adding them to 180 instead.

# Foundation tier analysis

Conduct your own analysis based on item level data relevant to you. Use Enhanced Results Analysis (ERA) from [aqa.org.uk/e-aqa](http://aqa.org.uk/e-aqa)



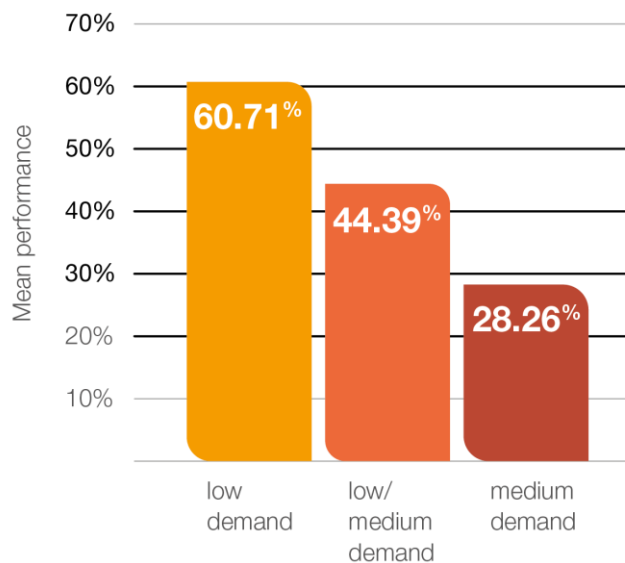
\*16 year old refers to students who turned 16 on or before 31 August 2017

# Foundation tier analysis cont.

Conduct your own analysis based on item level data relevant to you. Use Enhanced Results Analysis (ERA) from [aqa.org.uk/e-aqa](http://aqa.org.uk/e-aqa)

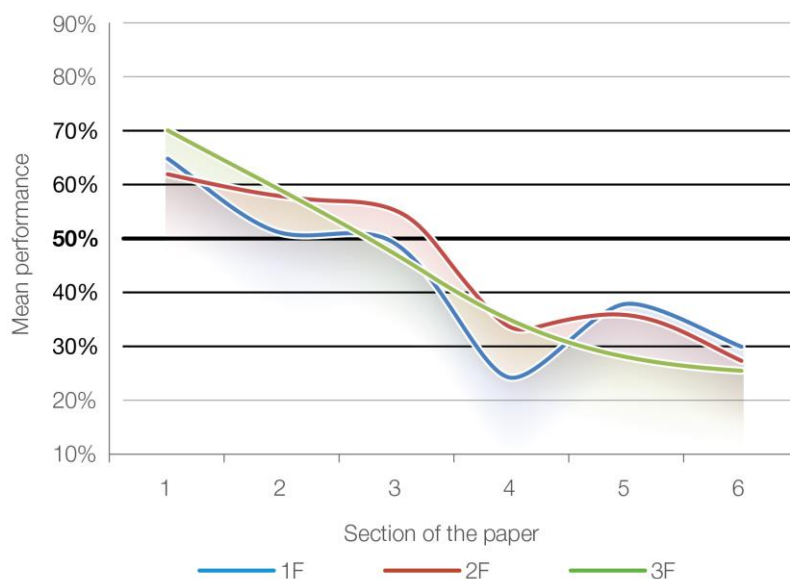
## Foundation tier attainment overall

We looked at the mean mark as a percentage of the total for each four-page section of each paper. We also considered the mean mark as a percentage of the total for 'low', 'low/medium' and 'medium' demand questions as judged by our writing team.



We did this for every paper and overall.

This graph shows the slow ramping of demand as students progressed through the papers.





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# Notes

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