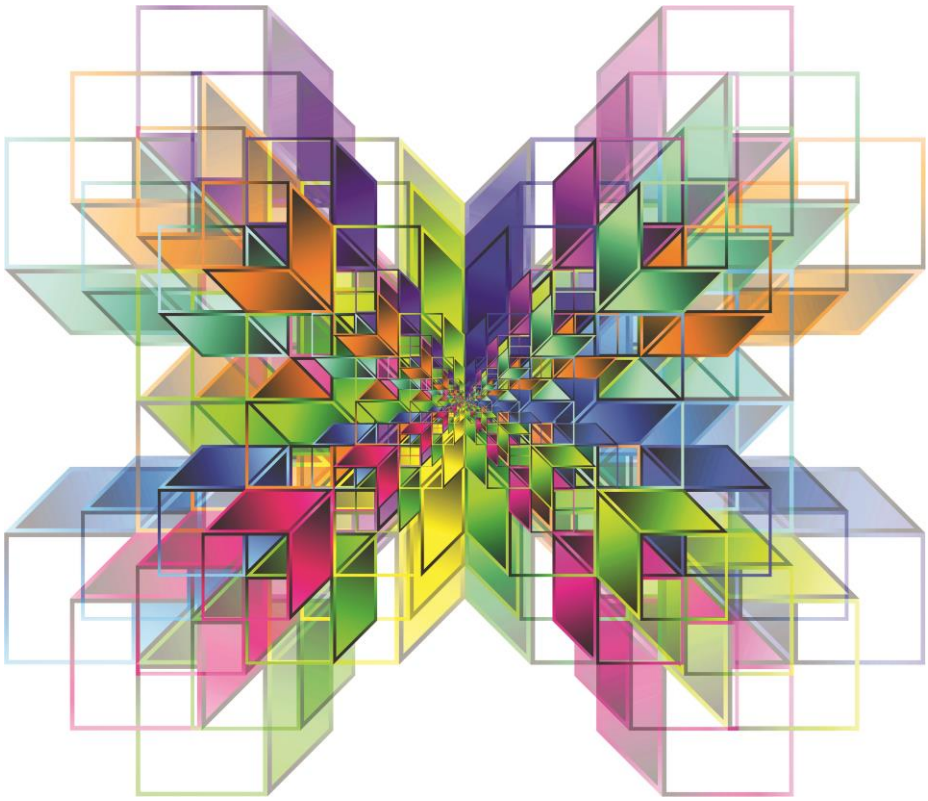
AQA
Realising potential

GCSE
MATHS

Autumn hub network meeting

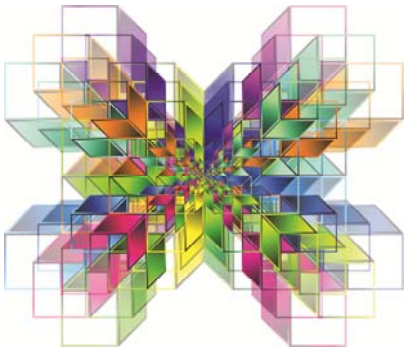
Presentation slides booklet

Published: Autumn 2019



Autumn Maths Hub

Autumn 2019



Welcome

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

- Welcome
- Summer 2019 GCSE exam performance
- Looking at questions which distinguish grades 3 and 4

GCSE Maths 2019

2019 entries: AQA GCSE Maths (1)

- **720,000 entries for GCSE Maths in England**
  - Up 4% on last year, c. 695,000
- **204,000 results for AQA GCSE Maths in England (-6,000 entries from 2018)**
  - 59% Foundation (last year 57%)
  - 41% Higher (last year 43%)

2019 entries: AQA GCSE Maths (2)

- **145,500 results for 16-year-olds (-6,500 entries from 2018)**
  - 45% Foundation (= to 2018)
  - 55% Higher (= to 2018)
- **57,000 post-16 results (+1000 entries from 2018)**
  - 93% Foundation (+2% from 2018)
  - 7% Higher (-2% from 2018)

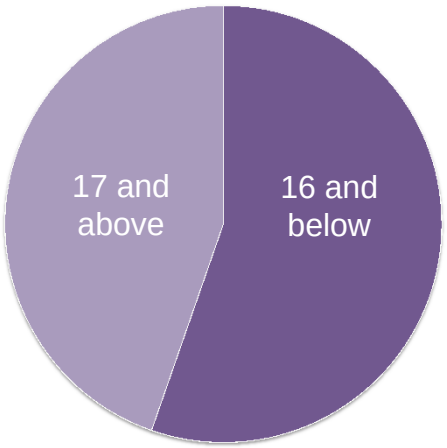
GCSE Maths outcomes: all candidates

Grade	9	8	7	6	5	4	3	2	1
2019 cum %	2.8	8.4	16.0	24.6	39.9	59.5	77.8	91.0	98.2
2019 % at grade	2.8	5.6	7.6	8.6	15.3	19.6	18.4	13.2	7.3
% change	+0.1	+0.7	+0.2	-0.9	+0.7	=	+0.6	=	-0.3

Overall impressions

- We are very happy with the consistency of our papers and our grades.
- We set out to produce good, reliable assessments and we believe we have done that. Students using our papers to revise would have had a very similar experience to the past papers.
- More students getting 8s and 9s; also an increase at 4 and 5.

Outcomes by age: Foundation Tier (1)

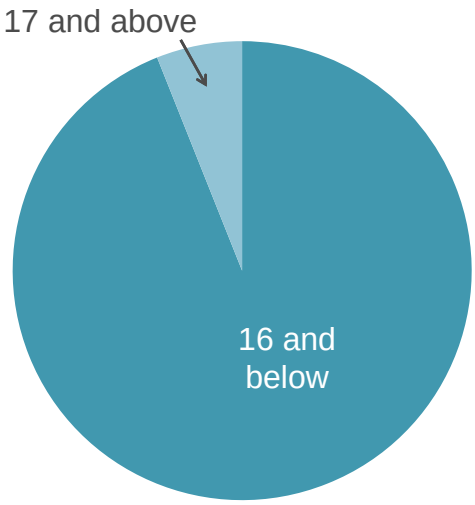


Outcomes by age: Foundation Tier (2)

16-	5	4	3	2	1
% (cum)	13.5	40.7	64.5	83.1	96.3
% change	+3.3	+3.1	+2.4	+1.3	+0.3

17+	5	4	3	2	1
% (cum)	3.3	18.1	53.5	81.7	96.6
% change	-0.3	-2.6	-3.8	-2.8	-0.3

Outcomes by age: Higher Tier



Outcomes by age: Higher Tier

16-	9	8	7	6	5	4	3
% (cum)	6.7	20.1	38.0	58.5	81.9	97.4	99.6
% change	+0.2	+1.7	+1.8	-1.1	-2.1	-0.8	-0.1

17+	9	8	7	6	5	4	3
% (cum)	2.8	8.9	19.4	33.2	51.1	73.1	88.2
% change	+0.7	+2.0	+3.4	+2.9	+1.3	-1.5	-0.6

Grade boundaries and outcomes: 16yo overall

AQA and national (JCQ – all boards in England)
(brackets indicate difference from 2018)

Grade	9	8	7	6	5	4	3	2	1
AQA % at grade	3.7 (+0.2)	7.3 (+0.7)	9.9 (+0.1)	11.3 (-1.4)	19.0 (+0.8)	20.7 (+0.5)	11.9 (+0.1)	8.4 (-0.5)	5.9 (-0.5)
AQA cum %	3.7 (+0.2)	11.0 (+0.9)	20.9 (+1.0)	32.2 (-0.4)	51.2 (+0.4)	71.9 (+0.9)	83.8 (+1.0)	92.2 (+0.5)	98.1 (=)
JCQ cum	3.7 (+0.1)	10.9 (+0.4)	20.4 (+0.4)	31.9 (=)	50.1 (-0.3)	71.5 (+0.5)	84.2 (+0.4)	92.8 (+0.1)	98.2 (+0.1)

Boundaries and outcomes: 16yo Foundation

Foundation Tier entry: 65,350 (-2,980)

Grade	5	4	3	2	1
Boundary /240	157 (-4)	122 (-3)	89 (-3)	57 (-2)	25 (-2)
Boundary %	65.4	50.8	37.1	23.8	10.4
Cum % of tier	13.5	40.7	64.5	83.1	96.3
% change from 2018	+3.4	+3.2	+2.4	+1.2	+0.3

Boundaries and outcomes: 16yo Higher Tier

Higher Tier entry: 80,152 (-3898)

Grade	9	8	7	6	5	4	3 (allowed)
Boundary /240	206 (+5)	171 (+2)	136 (-2)	105 (-2)	74 (-3)	43 (-4)	27 (-5)
Boundary %	85.8	71.3	56.7	43.8	30.8	17.9	11.3
Cum % of tier	6.6	19.9	37.9	58.4	81.9	97.4	99.6
Change from 2018	+0.3	+1.7	+1.9	-0.8	-2.0	0.8	-0.1

Getting to grade 4

Getting to grade 4

- Looking at questions which distinguish grade 3 from grade 4

Our assessment philosophy (1)

- Know the basics.
- Master the topic.
- Apply to solve problems.

Our assessment philosophy (2)

There are marks available in the first two thirds of the paper to students who have mastered the less difficult topics and can use them to solve problems.

How we selected the questions

- Looked at the questions where a large percentage of students at grade 4 got full marks, compared to grade 3.
- Selected questions where there is more than a big difference (generally 20% or more)
- Only considered the first two thirds of each paper
- It's not scientific; it's intended to stimulate discussion

Number of students at each grade

Grade	5	4	3	2	1	U
Students	10,623	25,534	34,095	26,687	15,948	3,759

The data

95% of students who got a grade 5 got two marks.

Success rate at grade 4 is 19% higher than grade 3.

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
2	95%	85%	66%	34%	9%	1%
1	4%	8%	15%	20%	13%	3%
0	2%	7%	17%	36%	53%	52%
Not attempted	0%	0%	2%	9%	24%	44%

'Not attempted' means there was nothing to mark.

Each column represents 100% of students at that grade

AQA

Paper 1F Q4

4 Circle the calculation which works out half of 12

[1 mark]

$12 \div 0.5$ $2 \div 12$ $12 \times \frac{1}{2}$ $12 \div 50 \times 100$

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
1	83%	60%	34%	20%	18%	28%
0	17%	40%	65%	79%	80%	68%
Not attempted	0%	1%	1%	1%	2%	4%

AQA

Paper 1F Q17c

17 (c) Share £180 in the ratio 1 : 9

[2 marks]

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
2	95%	85%	66%	34%	9%	1%
1	4%	8%	15%	20%	13%	3%
0	2%	7%	17%	36%	53%	52%
Not attempted	0%	0%	2%	9%	24%	44%

Paper 1F Q19b

19 You are given that $4a - 2b = 10$

19 (b) Write down the value of $2b - 4a$

[1 mark]

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
1	74%	57%	36%	16%	5%	1%
0	23%	37%	54%	68%	71%	64%
Not attempted	3%	5%	10%	17%	24%	34%

Paper 2F Q6b

6 (b) Is your answer to part (a) sensible?

Check by rounding each of 9.75, 1.875 and 6.4 to the nearest whole number.
You **must** show your working.

[3 marks]

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
3	77%	63%	43%	19%	4%	0%
2	11%	12%	12%	7%	2%	0%
1	11%	21%	35%	48%	37%	10%
0	1%	4%	10%	23%	45%	59%
Not attempted	0%	0%	1%	3%	10%	21%

Paper 2F Q7 (1)

7 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/04/2019	Starting balance			
05/04/2019	Council tax		189.34	72.09
10/04/2019	Refund			86.75
12/04/2019	Salary	1430.29		

Paper 2F Q7 (2)

7 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/04/2019	Starting balance			

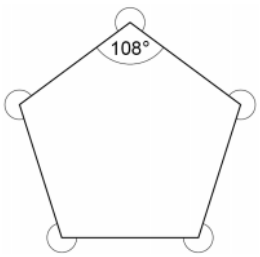
Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
3	83%	68%	48%	25%	7%	1%
2	8%	11%	12%	10%	5%	1%
1	3%	6%	9%	11%	9%	5%
0	5%	12%	24%	39%	50%	44%
Not attempted	1%	3%	7%	15%	25%	39%

Paper 2F Q8a (1)

8 (a) The interior angle of a regular pentagon is 108°

Work out the sum of the five **reflex** angles at the vertices of a regular pentagon.

[3 marks]



Not drawn accurately

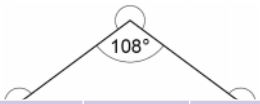
Paper 2F Q8a (2)

8 (a) The interior angle of a regular pentagon is 108°

Work out the sum of the five **reflex** angles at the vertices of a regular pentagon.

[3 marks]

Not drawn accurately



Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
3	80%	55%	29%	11%	2%	0%
2	1%	1%	1%	1%	0%	0%
1	12%	27%	40%	42%	32%	17%
0	6%	15%	25%	35%	42%	43%
Not attempted	0%	1%	4%	12%	21%	31%

Paper 2F Q12 (1)

12 A drawing has a scale of 1 : 40

On the drawing, a bedroom is a rectangle measuring 10 cm by 18 cm

A kitchen has an actual area of 300 000 cm^2

Which has the bigger actual area, the kitchen or the bedroom?

You **must** show your working.

[4 marks]

Paper 2F Q12 (2)

12 A drawing has a scale of 1 : 40

On the drawing, a bedroom is a rectangle measuring 10 cm by 18 cm

A kitchen has an actual area of 300 000 cm^2

Which has the bigger actual area, the kitchen or the bedroom?

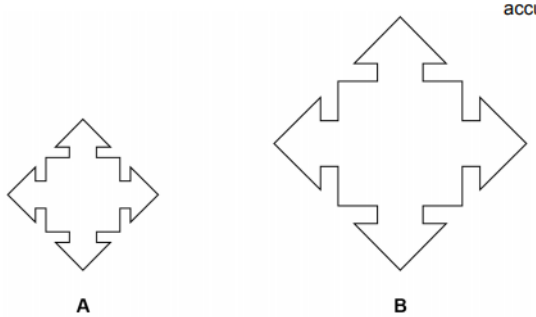
You **must** show your working.

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
4	63%	35%	14%	3%	1%	0%
3	2%	1%	1%	0%	0%	0%
2	1%	1%	0%	0%	0%	0%
1	6%	10%	12%	7%	2%	0%
0	29%	50%	66%	72%	68%	55%
Not attempted	0%	3%	8%	17%	27%	35%

Paper 2F Q13 (1)

13 Here are two similar shapes, A and B.

Not drawn accurately



length of edges in A : length of edges in B = 2 : 5

The perimeter of A is 210 mm

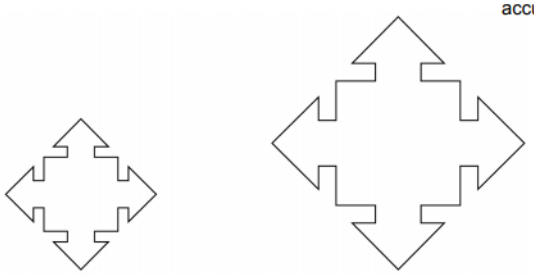
Work out the perimeter of B.

[2 marks]

Paper 2F Q13 (2)

13 Here are two similar shapes, A and B.

Not drawn accurately



Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
2	81%	58%	33%	14%	5%	3%
1	1%	1%	1%	0%	0%	0%
0	17%	39%	59%	70%	70%	57%
Not attempted	1%	3%	7%	15%	23%	31%

Paper 2F Q14a (1)

14 There are 135 passengers on a plane.

3 of the passengers in Business Class are flying for the first time.

In total, there are 15 passengers in Business Class.

$\frac{1}{4}$ of the passengers **not** in Business Class are flying for the first time.

14 (a) In the Venn diagram,

ξ = passengers on the plane

B = passengers in Business Class

F = passengers flying for the first time.

Complete the Venn diagram.

[4 marks]

Paper 2F Q14a (1)

14 There are 135 passengers on a plane.

3 of the passengers in Business Class are flying for the first time.

In total, there are 15 passengers in Business Class.

$\frac{1}{4}$ of the passengers **not** in Business Class are flying for the first time.

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
4	69%	49%	28%	10%	2%	0%
3	17%	24%	23%	14%	3%	0%
2	7%	14%	21%	22%	12%	3%
1	6%	10%	17%	25%	23%	9%
0	1%	4%	11%	25%	44%	48%
Not attempted	0%	0%	1%	3%	13%	31%

Paper 2f Q17b (1)

17 In a bag there are 10p coins, 20p coins and 50p coins.

There are two **fewer** 20p coins than 10p coins.

There are five **more** 50p coins than 10p coins.

17 (b) Altogether, there are 60 coins.

Work out the total **value** of the 20p coins.

[4 marks]

Paper 2f Q17b (2)

17 In a bag there are 10p coins, 20p coins and 50p coins.

There are two **fewer** 20p coins than 10p coins.

There are five **more** 50p coins than 10p coins.

17 (b) Altogether, there are 60 coins.

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
4	64%	40%	20%	7%	1%	0%
3	6%	4%	3%	1%	0%	0%
2	8%	7%	4%	2%	1%	0%
1	3%	3%	2%	0%	0%	0%
0	18%	41%	59%	65%	61%	52%
Not attempted	2%	5%	13%	25%	35%	39%

Paper 3F Q5

5 Put these numbers in order from smallest to largest.

$\frac{31}{40}$ $\frac{3}{4}$ $\frac{7}{10}$ 0.725

[2 marks]

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
2	90%	77%	57%	31%	10%	1%
1	10%	21%	34%	43%	33%	9%
0	1%	2%	9%	24%	49%	67%
Not attempted	0%	0%	0%	1%	2%	6%

Paper 3F Q10 (1)

10 In rectangle *ABCD*

triangle *ABE* is equilateral

triangle *CDE* is isosceles, with *CE* = *DE*

[4 marks]

Work out the size of angle x.

[4 marks]

Paper 3F Q10 (2)

10 In rectangle *ABCD*

triangle *ABE* is equilateral

triangle *CDE* is isosceles, with *CE* = *DE*

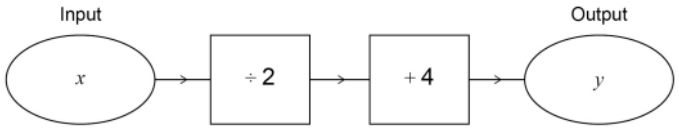
[4 marks]

Work out the size of angle x.

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
4	74%	43%	18%	5%	1%	0%
3	1%	1%	0%	0%	0%	0%
2	12%	17%	14%	7%	2%	1%
1	10%	22%	25%	16%	4%	1%
0	3%	15%	36%	57%	64%	51%
Not attempted	0%	2%	6%	14%	24%	30%

Paper 3F Q11b

11 (b) Write down the output y in terms of x.



[1 mark]

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
1	64%	44%	25%	10%	3%	1%
0	35%	51%	65%	70%	65%	49%
Not attempted	1%	5%	11%	19%	27%	33%

Paper 3F Q13

13 Write down **all** the prime numbers between 40 and 50

[2 marks]

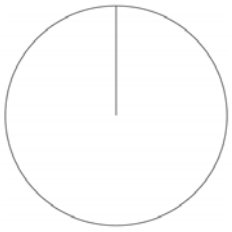
Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
2	81%	64%	42%	20%	5%	1%
1	15%	22%	25%	21%	11%	2%
0	4%	12%	26%	44%	56%	49%
Not attempted	1%	2%	7%	14%	23%	32%

Paper 3F Q17b (1)

17 (b) In one hour the shop sells 180 scoops of ice cream.
The number of scoops of each flavour is shown in the table.

Flavour	Vanilla	Strawberry	Chocolate	Mint
Number of scoops	45	75	50	10

Complete the pie chart to represent the data.



[4 marks]

AQA

Paper 3F Q17b (2)

17 (b) In one hour the shop sells 180 scoops of ice cream.
The number of scoops of each flavour is shown in the table.

Flavour	Vanilla	Strawberry	Chocolate	Mint
Number of scoops	45	75	50	10

Marks	% at 5	% at 4	% at 3	% at 2	% at 1	% at U
4	80%	56%	33%	12%	2%	0%
3	12%	17%	16%	10%	4%	1%
2	2%	4%	5%	4%	2%	1%
1	5%	12%	17%	19%	17%	10%
0	2%	10%	27%	50%	61%	51%
Not attempted	0%	1%	3%	5%	9%	19%

AQA

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.

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.

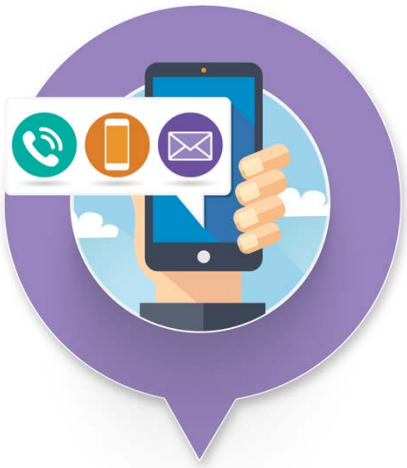
You should have been emailed the evaluation form. Please check your inbox (possibly your junk mail folder). If you haven't received it please give your trainer your name, centre name/number and email address so that we can look into it for you.

Thank you.

Get in touch

T: 0161 957 3852
E: maths@aqa.org.uk
8am–5pm Monday to Friday

aqa.org.uk



AQA Realising potential

Thank you

Contact us

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