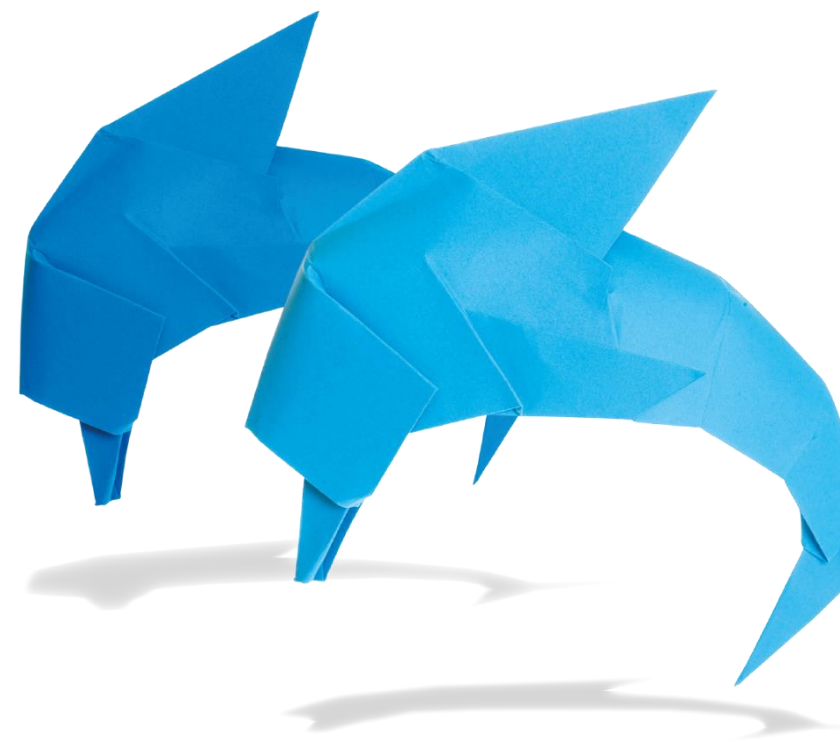


GCSE Mathematics

Using Performance Data to Identify
Areas of Improvement:
Ratio, Proportion, Rates of Change



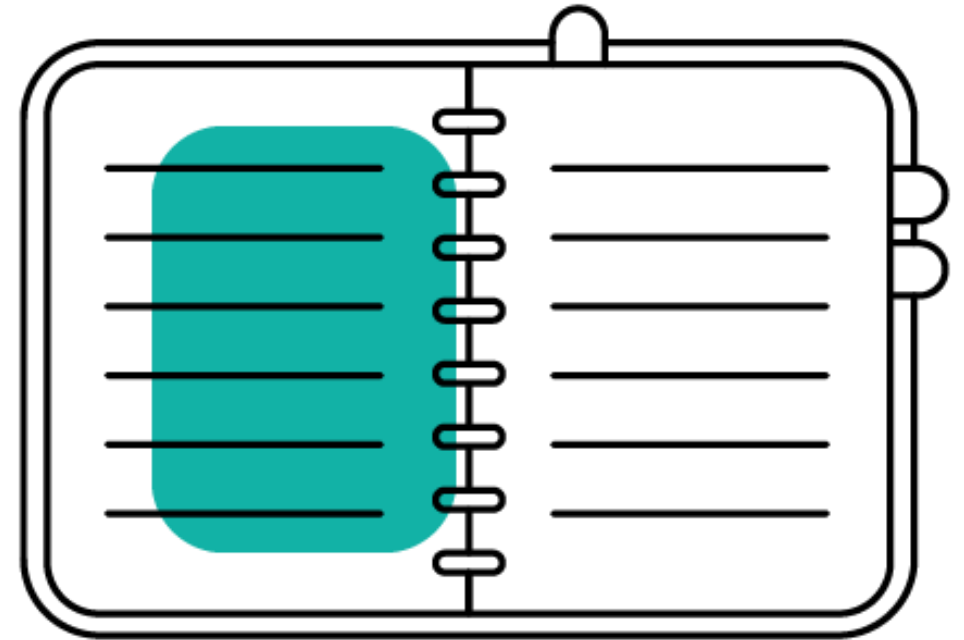
Chris Seager and Mel Muldowney



Aims and objectives

After this, we hope you will:

- Some ideas to support with Ratio, Proportion and Rates of Change
- Next Session? Need your views.
- But first ... it's all about context




Welcome!

First and foremost...we are teachers!

- Most improved school in England
- TES Maths Team of year
- JustMaths






REMEMBER – Download the Pearson Authenticator App!

 Pearson

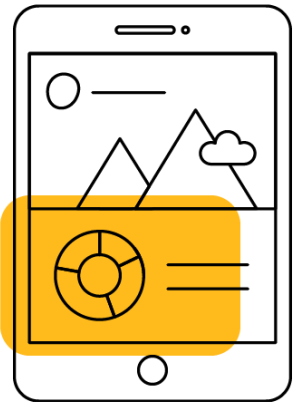
✓ Select verification method — 2 Authenticate — 3 Verified


Authenticator App Passcode


Enter the one-time 6-digit passcode located in the Pearson Authenticator App. 


Passcode  

Must be at least 6-digits



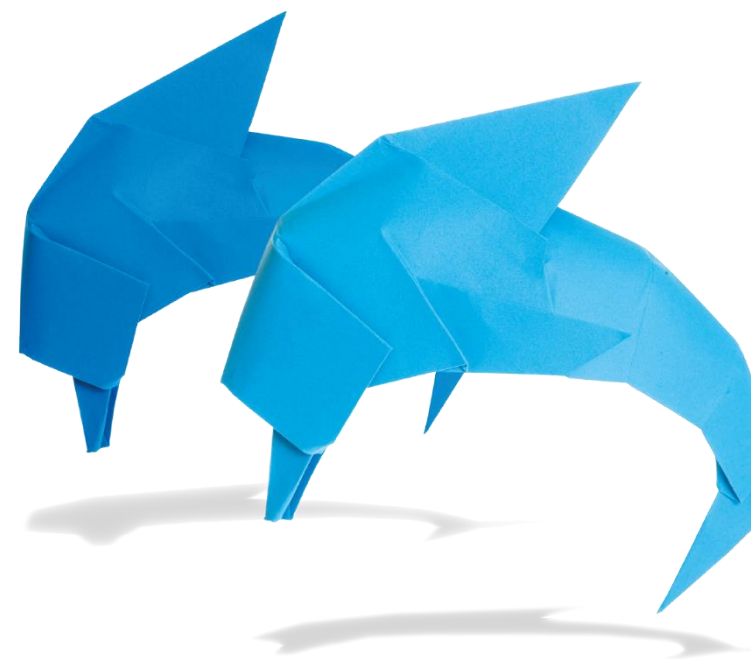
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What is ResultsPlus?



<https://qualifications.pearson.com/en/support/Services/ResultsPlus.html> (Google 'Results Plus')

From Edexcel Online

Speak to Exam Officer

From Google search

Sign In

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cseager@rss.shiresmat.org.uk

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ResultsPlus

Register for ResultsPlus

FAQs

New post-16 functionality

Functional Skills

BTEC Nationals

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T Levels

Services ResultsPlus

Online results analysis tool for teachers. Included as part of your ResultsPlus gives you a detailed breakdown of your students' performance in all exams and BTEC external assessments.

Why should I use ResultsPlus?

- Provide a detailed analysis of your learners performance.
- Identify potential topics, skills and types of question where students may need to develop their learning further.
- See actual scores for each exam question for a student, class or group.
- Understand how your students' performance compares with class and Pearson Edexcel national averages.
- Acquire data that may support effective learning and teaching approaches.

<https://qualifications.pearson.com/en/support/Services/ResultsPlus.html> (Google 'Results Plus')

ResultsPlus

[Home](#) > [Analysis options](#) > [Cohort options](#) > [Cohort search](#) > [Paper analysis](#)

EVESHAM ROAD (24304 - Edexcel)

1MA1 GCSE Unit : MATHEMATICS
June 2024

Print
Export

Analysis

Highlight report

Skills map

Exam documents

Show: All skills

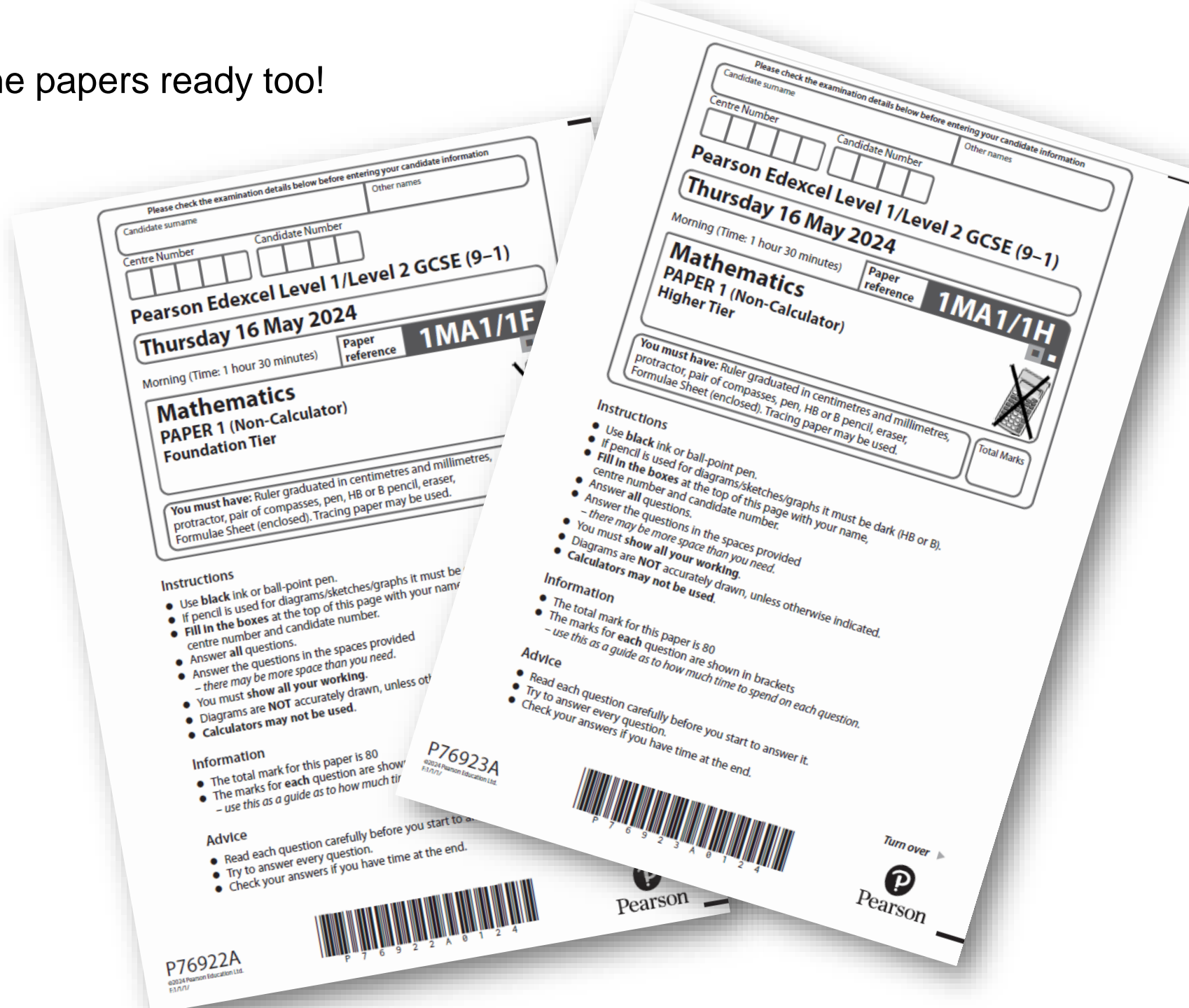
Skills map: gcse mathematics (1ma1) higher

Over 70% 35 - 70% Under 35% Not tested

Open all skills

	Score	Percentage	Edexcel Ave : ALL	Variance
gcse mathematics (1ma1) higher	125.23/240	45%	125.23/240	-7.50%
GCSE (9-1) Mathematics	125.23/240	45%	125.23/240	-7.50%
Number	21.31/34	53%	21.31/34	-9.29%
Algebra	32.68/72	38%	32.68/72	-7.36%
Ratio, proportion and rates of change	20.92/38	55%	24.74/38	-10.05%
Change between standard units and compound units	-	-	-	-
Scale factors, scale diagrams and maps	1.73/3	58%	2.05/3	-10.67%
One quantity as a fraction of another	-	-	-	-
Ratio notation, reduction to simplest form	-	-	-	-
Ratio in real context	5.88/9	65%	6.14/9	-2.89%
Multiplicative relationship between two quantities	0.50/3	17%	0.79/3	-9.67%

Download the papers ready too!



Case Study
Chris Seager
HoD Ridgeway Secondary School



Case Study 1

Chris Seager

FOUNDATION 2024

▼ ● Ratio, proportion and rates of change	34.07/56	61%	25.95/56	⬆️ +14.50%
▲ Change between standard units and compound units	1.62/2	81%	1.46/2	⬆️ +8.00%
▲ Scale factors, scale diagrams and maps	3.58/4	90%	2.98/4	⬆️ +15.00%
◆ One quantity as a fraction of another	-	-	-	-
▲ Ratio notation, reduction to simplest form	1.72/2	86%	1.49/2	⬆️ +11.50%
● Ratio in real context	3.77/9	42%	1.83/9	⬆️ +21.56%
◆ Multiplicative relationship between two quantities	-	-	-	-
◆ Proportion as equality of ratios	-	-	-	-
◆ Relate ratios to fractions and to linear functions	-	-	-	-
● Percentages and problems involving percentage change	7.28/11	66%	6.07/11	⬆️ +11.00%
▲ Solve problems involving direct and inverse proportion	6.79/8	85%	5.48/8	⬆️ +16.37%
● Use compound units	4.94/14	35%	4.38/14	⬆️ +4.00%
▲ Compare lengths, areas and volumes using ratio notation	1.65/2	83%	1.04/2	⬆️ +30.50%
◆ Construct and interpret equations that describe inverse proportion	-	-	-	-
◆ Rates of change	-	-	-	-
◆ Gradient at a point on a curve as the instantaneous rate of change	-	-	-	-
● Growth and decay, compound interest	2.73/4	68%	1.22/4	⬆️ +37.75%

Case Study 1

Chris Seager

HIGHER 2024

➤ ● Ratio, proportion and rates of change	20.92/38	55%	24.74/38	⬇️ -10.05%
◆ Change between standard units and compound units	-	-	-	-
● Scale factors, scale diagrams and maps	1.73/3	58%	2.05/3	⬇️ -10.67%
◆ One quantity as a fraction of another	-	-	-	-
◆ Ratio notation, reduction to simplest form	-	-	-	-
● Ratio in real context	5.88/9	65%	6.14/9	⬇️ -2.89%
■ Multiplicative relationship between two quantities	0.50/3	17%	0.79/3	⬇️ -9.67%
◆ Proportion as equality of ratios	-	-	-	-
◆ Relate ratios to fractions and to linear functions	-	-	-	-
● Percentages and problems involving percentage change	2.04/5	41%	2.69/5	⬇️ -13.00%
● Solve problems involving direct and inverse proportion	2.12/4	53%	2.99/4	⬇️ -21.75%
● Use compound units	3.38/5	68%	3.94/5	⬇️ -11.20%
◆ Compare lengths, areas and volumes using ratio notation	-	-	-	-
■ Construct and interpret equations that describe inverse proportion	0.31/2	16%	1.06/2	⬇️ -37.50%
◆ Rates of change	-	-	-	-
◆ Gradient at a point on a curve as the instantaneous rate of change	-	-	-	-
▲ Growth and decay, compound interest	4.96/7	71%	5.09/7	⬇️ -1.86%

Case Study 1

Chris Seager

Q10

1.72/2



1.49/2

↑ +11.50 %

F1

10 There are 24 cows and 36 sheep on a farm.

Write as a ratio the number of cows to the number of sheep.
Give your ratio in its simplest form.

Case Study 1

Chris Seager

Q16

2.40/3



1.83/3

↑ +19.00 %

F1

16 Batteries are sold in packs of 4, in packs of 8 and in packs of 12



£1.80



£3.20



£6.00

A pack of 4 batteries costs £1.80

A pack of 8 batteries costs £3.20

A pack of 12 batteries costs £6.00

Which pack gives the best value for money?

You must show how you get your answer.

Case Study 1

Chris Seager

Q26

1.64/5



0.83/5

↑ +16.20 %

F1&H1

26 Kasim has some small jars, some medium jars and some large jars. He has a total of 400 jars.

$\frac{3}{8}$ of the 400 jars are empty.

For the empty jars,

number of small jars : number of medium jars = 3 : 4

number of medium jars : number of large jars = 1 : 2

Work out the percentage of Kasim's jars that are empty small jars.

Q07

2.58/5



3.21/5

↓ -12.60 %

Case Study 1

Chris Seager

H2

12 f is inversely proportional to d^2

$f = 3.5$ when $d = 8$

(a) Find an equation for f in terms of d .

(2)

(b) Find the positive value of d when $f = 10$
Give your answer correct to 3 significant figures.

Q12a

0.31/2



1.06/2

↓ -37.50 %

Q12b

0.31/2



1.05/2

↓ -37.00 %

Case Study 1

Chris Seager

F3

6 A map has a scale of 1 cm represents 4 km.

On the map, the distance from town A to town B is 8 cm.

(a) Work out the real distance, in km, from town A to town B.

..... km
(2)

The real length of a road is 10 km.

(b) Work out the length of the road on the map.
Give the units of your answer.

Q06a	1.85/2	<div><div></div><div></div></div>	1.79/2	↑ +3.00 %
Q06b	1.73/2	<div><div></div><div></div><div></div></div>	1.19/2	↑ +27.00 %

Case Study 1

Chris Seager

F3

17 Here are the ingredients needed to make 20 shortbread biscuits.

Ingredients for 20 shortbread biscuits

120 g	of butter
200 g	of flour
50 g	of sugar

Heidi wants to make 30 shortbread biscuits.

How much of each ingredient will Heidi need?

17

2.88/3

2.36/3

↑ +17.33 %

Case Study 1

Chris Seager

H3

10 There are only red counters and yellow counters in bag A.

number of red counters : number of yellow counters = 3 : 5

There are only green counters and blue counters in bag B.

The number of counters in bag B is half the number of counters in bag A.

Given that there are x red counters in bag A,

use algebra to show that the total number of counters in bag A and bag B is $4x$

Q10

0.50/3

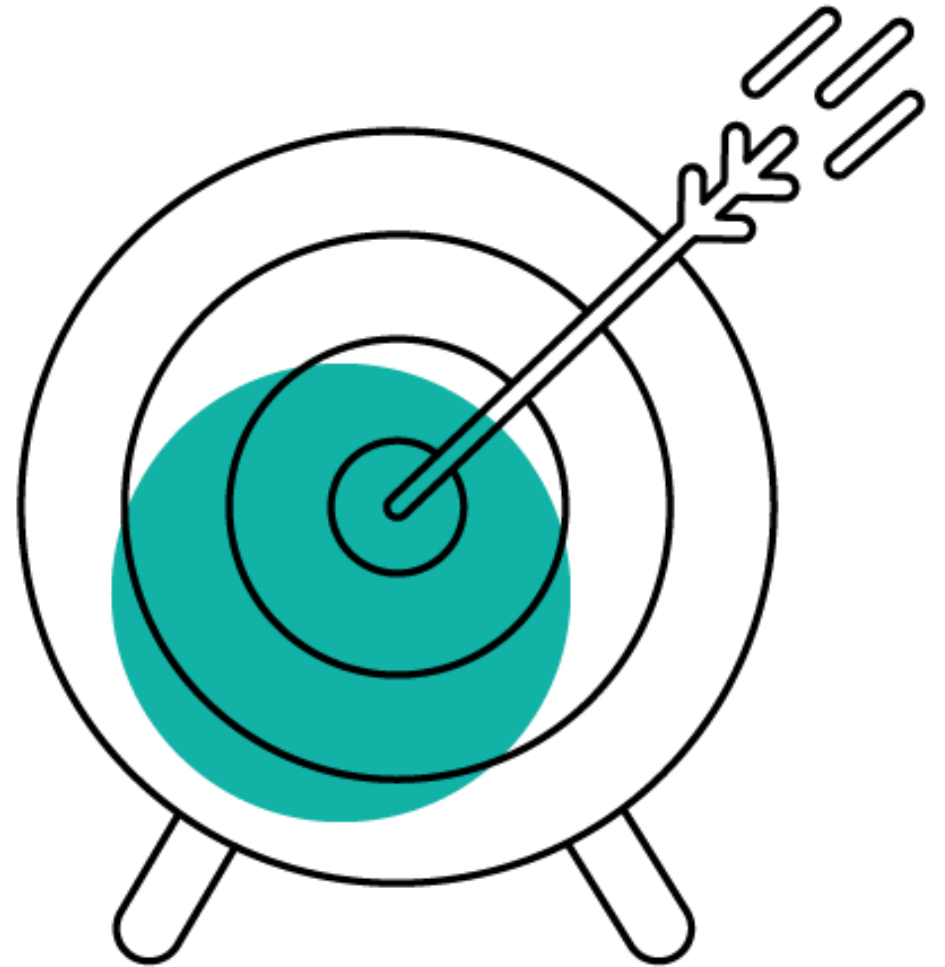


0.79/3

⬇ -9.67 %

Questions to ask ...

- Why are foundation outperforming higher on these topics? Or are they?
- Are similar approaches possible?
- Sharing good practice?
- Common misconceptions?
- Do the students 'see' this maths through the questions – particularly at higher?



Some other stuff ...

Mel Muldowney

Lead Prac Stratford upon Avon School



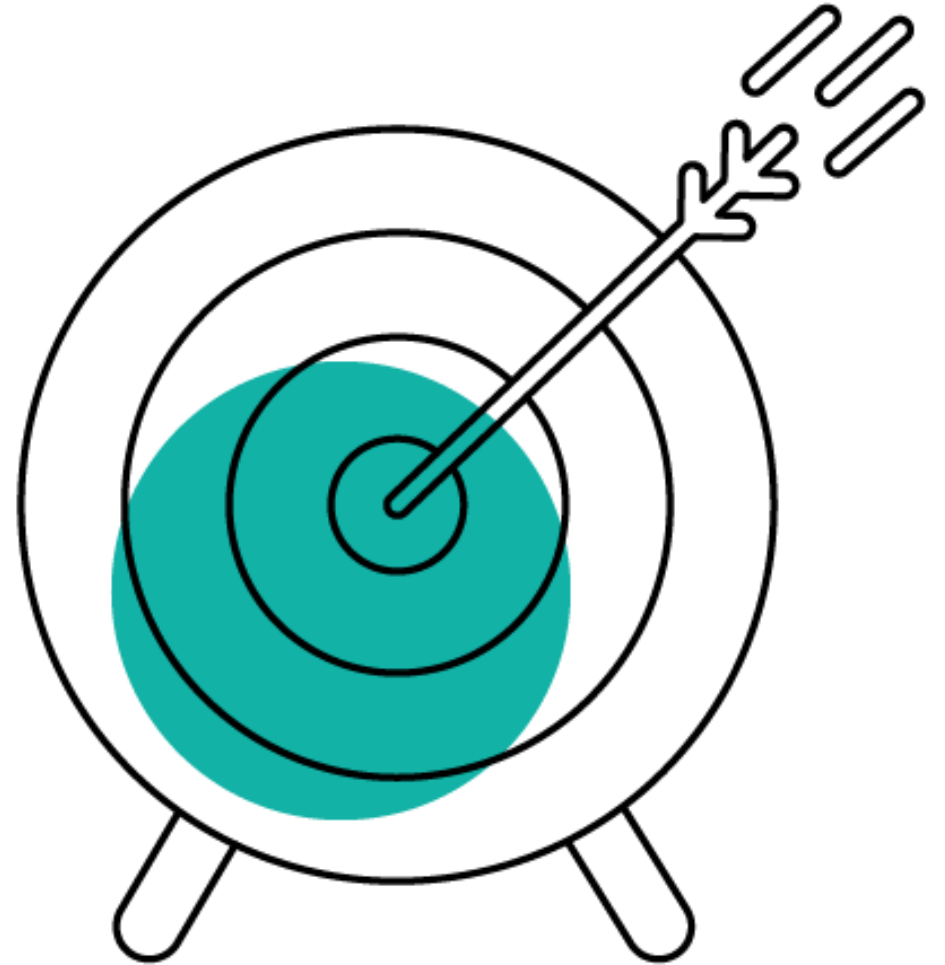
In the classroom

Introduce the concept of “direct” AND inverse proportion early

- common language (Scaling up / down)
 - Across the department ... agree it
 - What topics ?

Marking Training

- Know your “methods” and where marks are allocated.
- Examiners reports!!



F P1 Q10

10 There are 24 cows and 36 sheep on a farm.

Write as a ratio the number of cows to the number of sheep.
Give your ratio in its simplest form.

M1

$$\begin{array}{ccc} 24 & : & 36 \\ \div 12 \swarrow & & \searrow \div 12 \\ 2 & : & 3 \end{array}$$

A1 2:3

(Total for Question 10 is 2 marks)

2 : 3	M1	for 24 : 36 or 3 : 2 or 1.5 : 1	
	A1	2 : 3 or 1 : 1.5	Do not ISW from 2:3

F P1 Q10

10 There are 24 cows and 36 sheep on a farm.

Write as a ratio the number of cows to the number of sheep.
Give your ratio in its simplest form.

24
↓
12
↓
6
↓
3

36
↓
18
↓
9

M0

A0

3:9

(Total for Question 10 is 2 marks)

2 : 3

M1

for 24 : 36 or 3 : 2 or 1.5 : 1

A1

2 : 3 or 1 : 1.5

Do not ISW from 2:3

F P2 Q15

15 £3500 is invested in a bank for 6 years.
The bank pays **simple** interest at a rate of 2.5% per year.

Work out the total amount of simple interest paid.

$$3500 = 100\%$$

$$350 = 10\%$$

$$35 = 1\%$$

$$17.5 = 0.5\%$$

$$2\% = 70$$

$$2.5\% = 87.5$$

$$87.5 \times 6 = 525$$

M1A1

525

525

M1

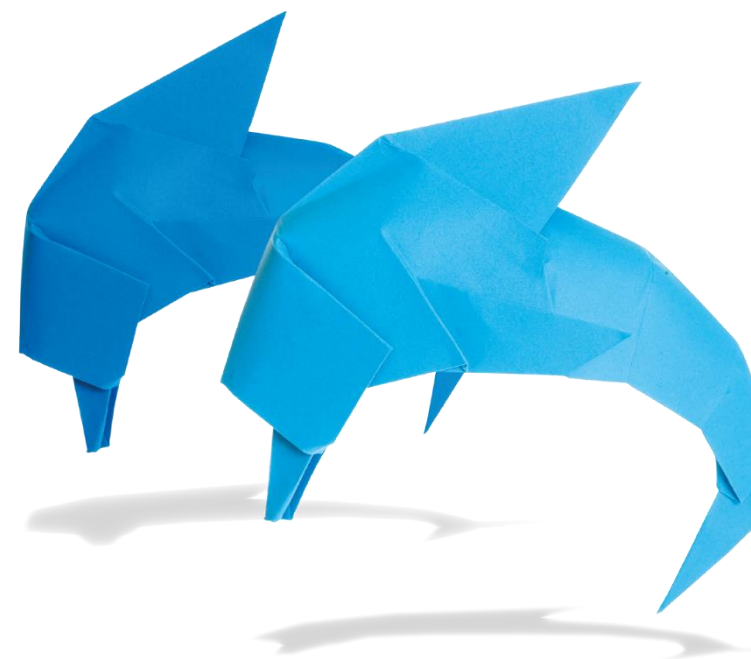
for method to find the interest after one year,
eg $3500 \times 2.5 \div 100 (= 87.5)$ oe
or $0.025 \times 6 (= 0.15)$ oe
or for a complete method, eg $3500 \times 2.5 \times 6 \div 100$ oe
or for 4025 or 2975

A1

cao

May be implied by, eg 3587.5(0)
Award M1 for 3500×1.025^n

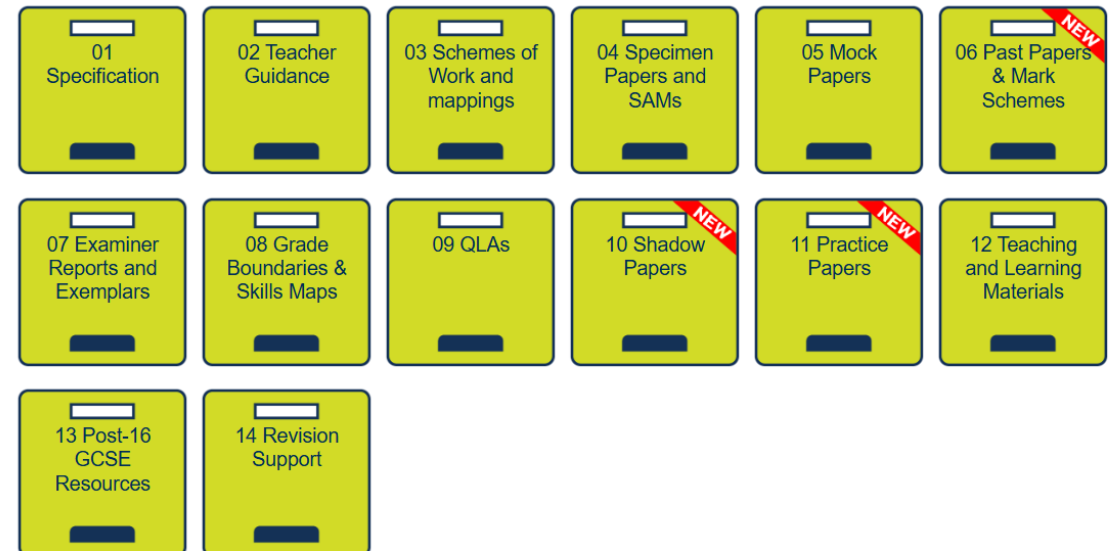
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- Shadow Papers
- Bronze Silver Gold (AO3 problem solving)
- Cross over papers
- Reordered papers

- Aiming for papers
- Skills maps (Enhanced)
- QLA (Enhanced)



Our subject specialists

- Our team of credible specialists is made up of current classroom practitioners that share their knowledge with our schools through centre visits, online training and networks



Next network – poll

We are planning on running another deep dive network on Tuesday 4 March (it will be found on the [PD Academy](#) by next week).

We would like your input on what you would like to be covered.

Based on the performance in the Summer 2024 exam series, the following were highlighted as areas for improvement:

- AO2 questions
- Transformations
- Solving/forming equations and inequalities
- Grouped data

Please vote on your preferred option for us to cover in March.

Contact us

Mel Muldowney
mel@justmaths.co.uk

Christian Seager
christian@justmaths.co.uk

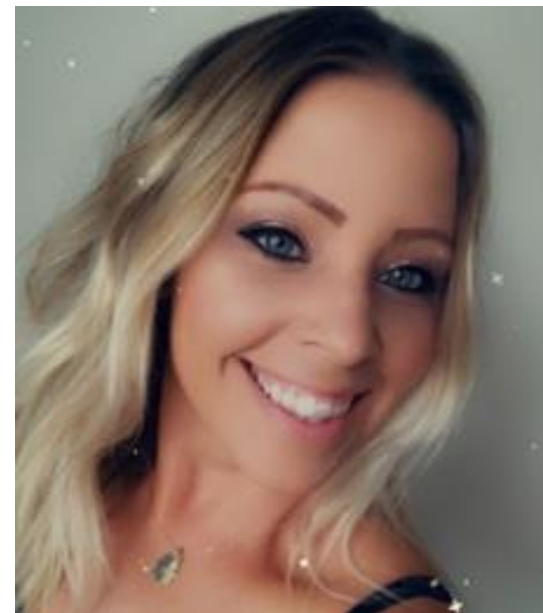
JustMaths

Meet your Maths and Statistics Subject Advisor and Partner



Vicky Wood

Vicky works closely with the wider maths team to support teachers in UK centres in delivering Pearson Edexcel qualifications in Mathematics and Statistics teachingmaths@pearson.com
[Sign up for Vicky's monthly updates](#)



Nicola Woodford-Smith

Nicola works as the maths Subject Partner in the maths team at Pearson Edexcel. She helps to create resources and delivers CPD to support you and your team through the lifecycle of our qualifications.

Follow [@miss_mathsgeek](#) (on X) for updates and information

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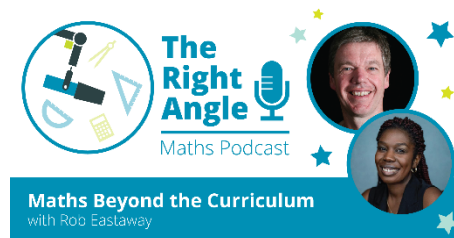
You can also find the [recordings](#) of our launch event and Getting Ready to Teach event on the Maths Emporium.



NEW Podcast: The Right Angle



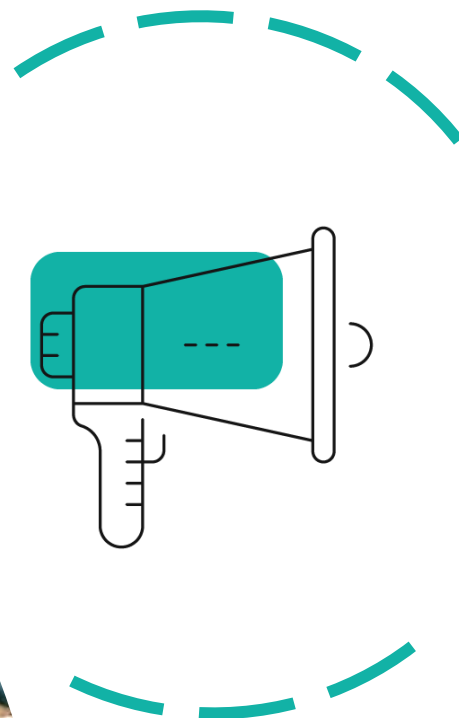
The Right Angle invites topical discussions, debates and insights from a range of thought leaders, award-winning maths educators and facilitators. Our subject partner hosts, Mark Heslop and Nicola Woodford-Smith lead conversations on themes such as the evolution of technology to support learning, student engagement and diversity and inclusion across the education of mathematics. Listen and subscribe for FREE on Apple Podcasts, Spotify and on Soundcloud.



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