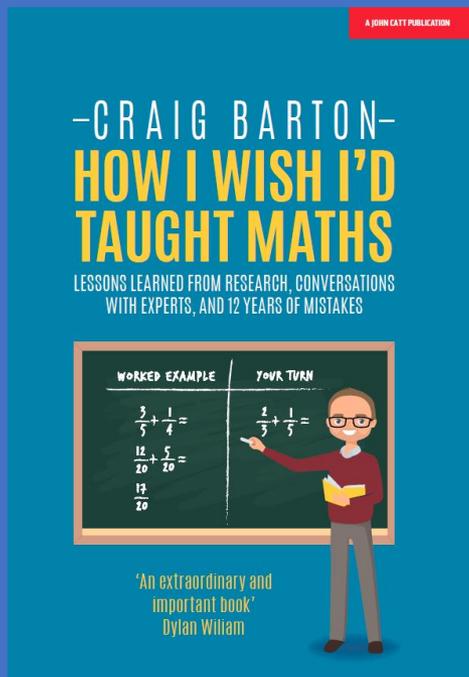


Formative assessment and diagnostic questions

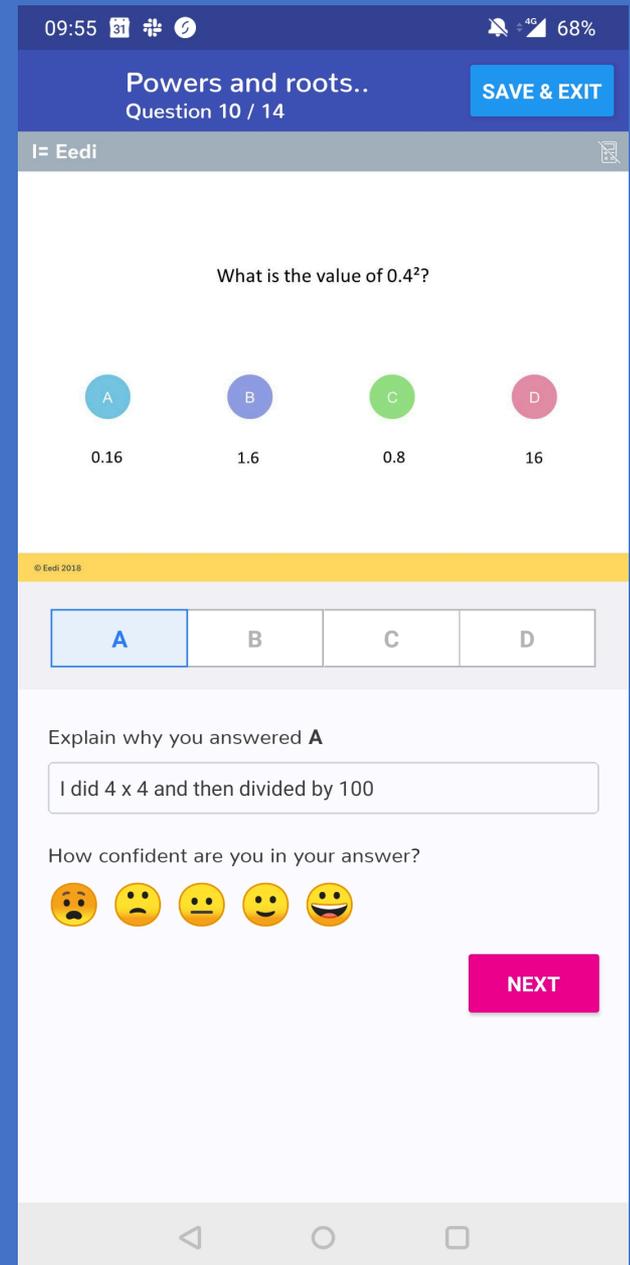


Craig Barton
@mrbartonmaths



Students can answer quizzes:

1. www.diagnosticquestions.com
2. www.eedi.co.uk
3. The eedi app



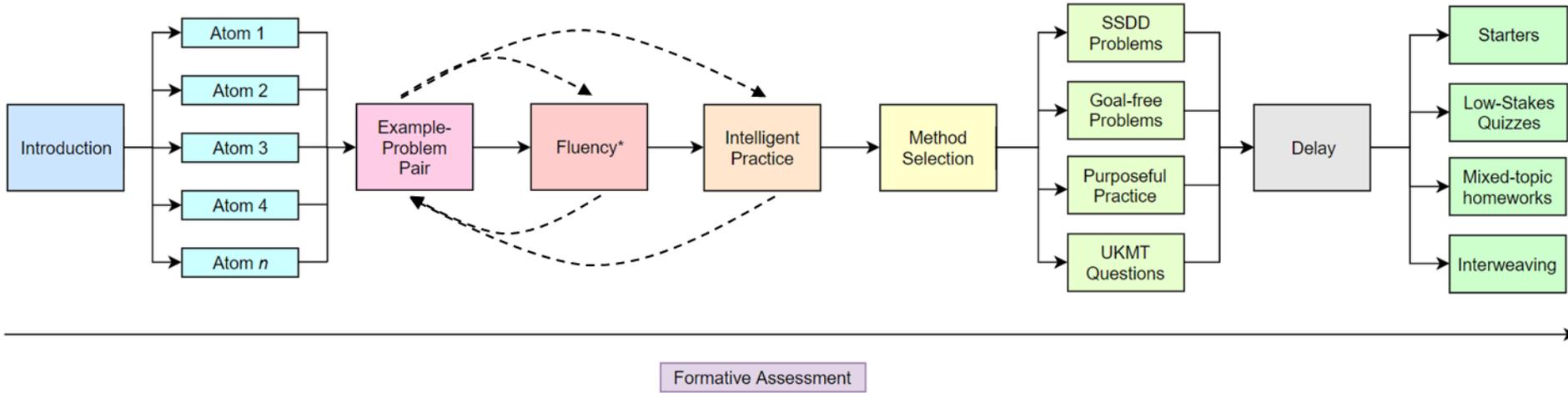
A Diagnostic Question has:

One correct answer

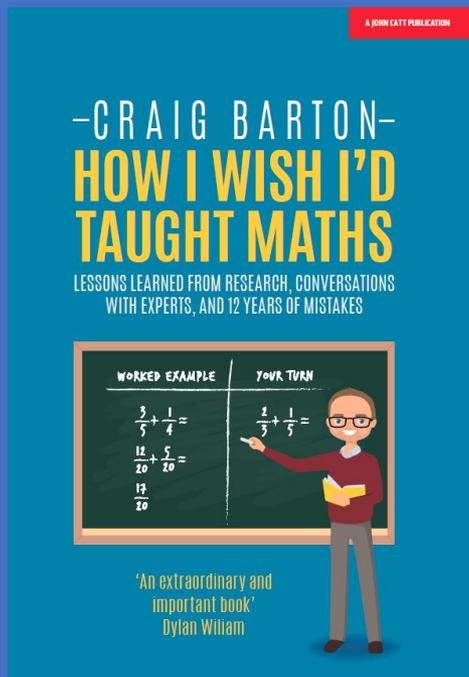
Three incorrect answers

Each incorrect answer reveals a specific mistake or misconception

www.diagnosticquestions.com



Asking diagnostic questions in class...



Craig Barton
@mrbartonmaths





The following questions and prompts can be used with students who are answering the diagnostic questions:

Support

- Are there any answers you can rule out?
- Which answer looks the most sensible?
- What topic in the curriculum is this?

Extension

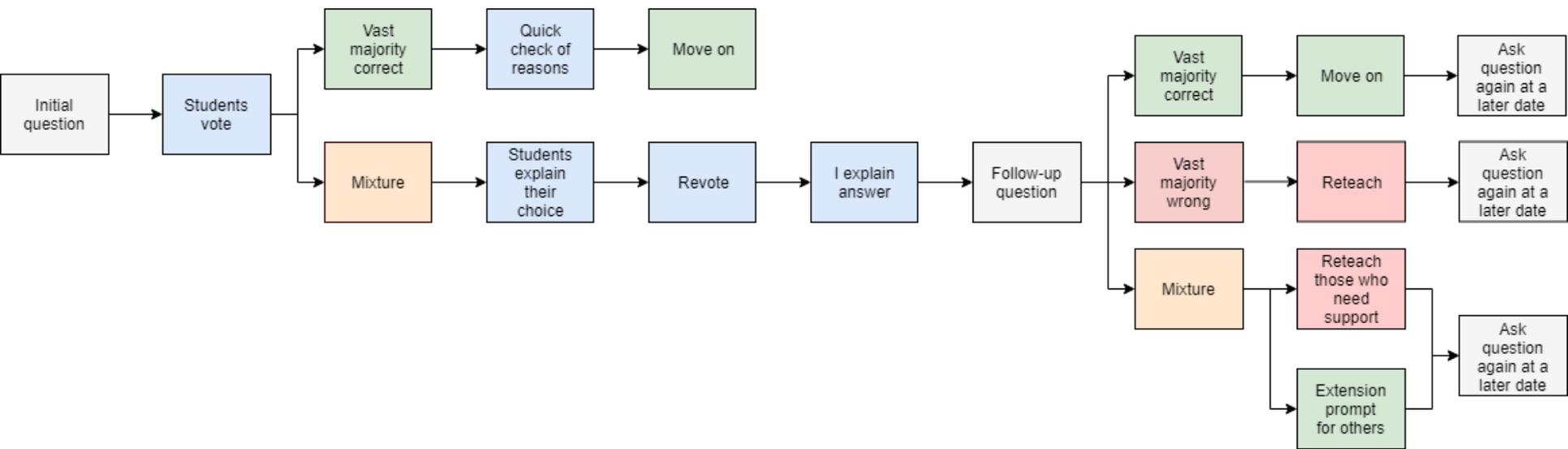
- Write the best explanation you possibly can for the correct answer
- Convince me why each of the alternative answers is wrong
- Can you explain what misconception someone has who chooses each of the incorrect answers?
- What other alternative incorrect answers would you have included, and why?
- Can you write some questions that would make each of the wrong answers correct?
- Create your own diagnostic question on this topic, explaining your reasoning behind each of your three incorrect answers

Write your Question here:

Choose 4 answers to go here. Think very carefully about the wrong answers. Wrong answers should be designed to tease out specific misconceptions.

A:	B:	C:	D:
----	----	----	----

Now for each wrong answer explain why you chose it. What specific mistake has a student made if they choose each wrong answer?





SCHEMES OF WORK

COLLECTIONS

QUIZZES

QUESTIONS

CREATE A QUESTION

0 question(s) selected

CREATE QUIZ

ORDER BY: Newest

Questions

MY QUESTIONS

Search Subjects

Search by Author

Maths 40165

Science 4773

Languages 1055

More Subjects 6147

Computing 9223

Random Question on Anything

4.12 X 1000

- A 412000
- B 4.12000
- C 412
- D 4120

0

ADD TO QUIZ

0.42 X 100

- A 0.4200
- B 4.2
- C 42
- D 420

0

ADD TO QUIZ

9.7 X 10 = ?

- A 970

Medals won by Germany



Medals won by the Russian Federation



We now have 40,000+ maths questions, all free, and covering all 4 key stages...

SCHEMES OF WORK COLLECTIONS QUIZZES QUESTIONS

 Eedi GCSE Topic Quizzes	 2019 SATs and GCSE Maths Revision	 White Rose Maths (2017) Collection	 AET Maths Collection
Eedi GCSE Topic Quizzes	2019 SATs and GCSE Maths Revision	White Rose Maths (2017-18) Collection	AET
This collection features quizzes for every topic unit for GCSE Foundation and GCSE Higher exams.	Quizzes to prepare for the 2019 Key Stage 2 SATs and GCSE Maths Exams.	Maths quizzes for the White Rose Years 1 to 8 mastery schemes of work.	Maths quizzes for the AET Years 1 to 8 mastery schemes of work.
 Computing Collection	 UKMT Maths Collection	 AQA GCSE Maths (2017) Collection	 OCR GCSE Maths (2017) Collection
Computing Collection	United Kingdom Mathematics Trust	AQA GCSE Maths (2017-18) Collection	OCR GCSE Maths (2017-18) Collection
Project Quantum is an ambitious project to crowd source a bank of high quality multiple choice questions for assessing computing in schools, developed jointly by Computing At	A collection of problems adapted from the UKMT Mathematical Challenges. Challenge students of all ages to think mathematically!	Maths quizzes for the AQA Years 9 to 11 schemes of work.	Maths quizzes for the OCR Years 9 to 11 schemes of work.

www.diagnosticquestions.com

For Years 1 to 8*...

The image shows a digital cover for a collection of White Rose Maths resources. The top half is a solid blue rectangle with the 'White Rose Maths' logo in white, which consists of the words 'White', 'Rose', and 'Maths' separated by a vertical line, with a small rose icon above the 'o' in 'Rose'. Below the logo, the text 'White Rose Maths (2017) Collection' is written in white. The bottom half of the cover is a light grey rectangle. It features the text 'White Rose Maths (2017-18) Collection' in blue, followed by a thin horizontal line and the description 'Maths quizzes for the White Rose Years 1 to 8 mastery schemes of work.' in grey.

White Rose Maths

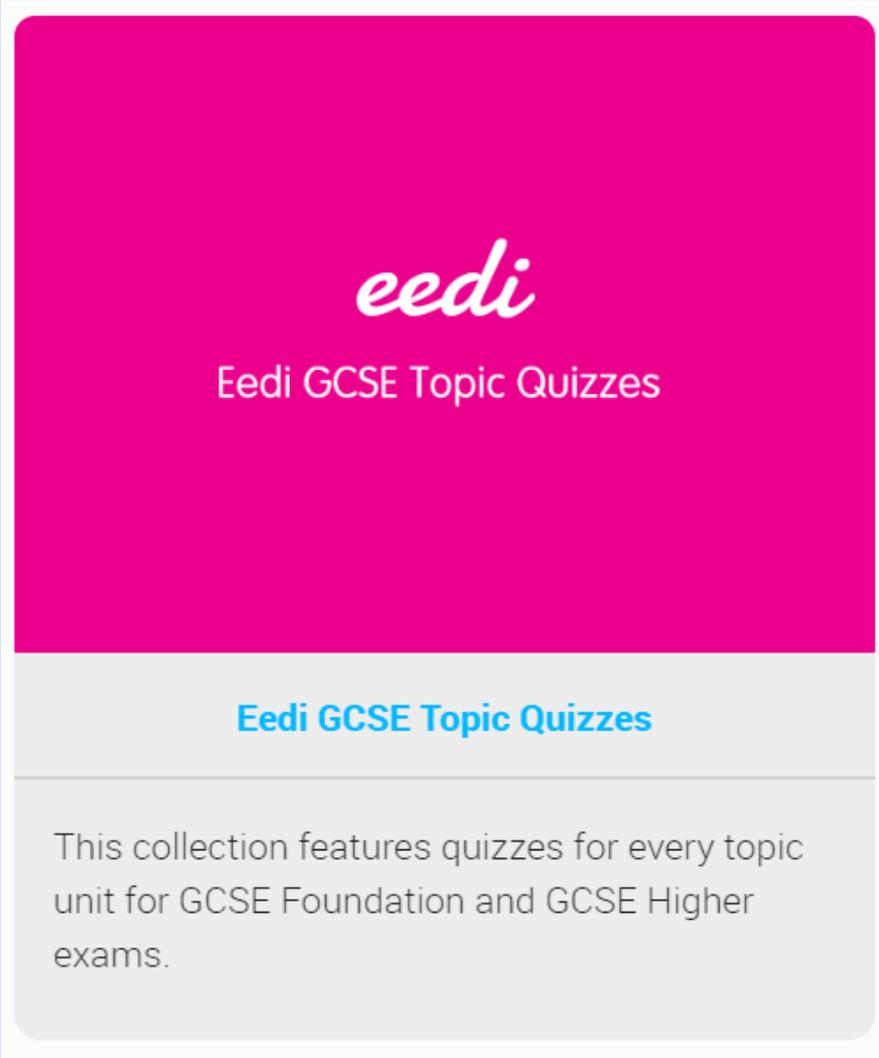
White Rose Maths
(2017) Collection

White Rose Maths (2017-18) Collection

Maths quizzes for the White Rose Years 1 to 8 mastery schemes of work.

www.diagnosticquestions.com

For Years 8 to 11...



The image shows a promotional card for 'Eedi GCSE Topic Quizzes'. The top half of the card has a bright pink background with the word 'eedi' in a white, cursive font. Below the logo, the text 'Eedi GCSE Topic Quizzes' is written in a white, sans-serif font. The bottom half of the card has a light grey background. It features the title 'Eedi GCSE Topic Quizzes' in a blue, sans-serif font, followed by a horizontal line and a paragraph of text: 'This collection features quizzes for every topic unit for GCSE Foundation and GCSE Higher exams.'

www.diagnosticquestions.com

My 5 Golden Rules for Diagnostic Questions

1) They should be clear and unambiguous



2) They should test a single skill or concept



3) Students should be able to answer in less than 30 seconds



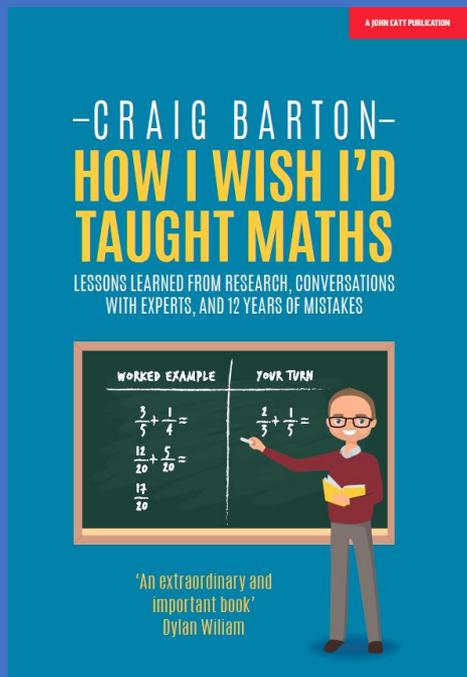
4) You should learn something from each incorrect response without the student needing to explain



5) It is not possible to answer the question correctly whilst still holding a key misconception



Plan for error



Craig Barton
@mrbartonmaths



Planning for error with your colleagues



- **Step 1:** Pick a topic...

EDEXCEL GCSE Mathematics (9-1) Route Map – Foundation Tier (Start September 2015)

Year 10

Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10
1. Symmetry, Shapes and Angles	2. Multiples, Factors and Primes	3. Expressions and Equations	4. Accuracy and using calculator	5. Negative numbers	6. Fractions	7. Real life graphs	8. Decimals and rounding	Holiday	9. Metric and imperial units 10. Area
10. Area REVISION	November Examinations	11. 3D solids	12. Formulae	13. Powers and Roots (zero and negative indices)	14. Straight line graphs	15. Scatter Graphs	Holiday	Holiday	16. FDP 17. Probability (sets and venn diagrams)
18. Percentages (Reverse percentages)	19. Collecting and Interpreting data. Averages.	20. Graphical representations (Time series)		Holiday	21. Ratio and proportion	REVISION		March Examinations	22. Algebraic Manipulation (Factorising quadratics, DOTS)
Holiday	Holiday	23. Navigation and Travel	24. Sequences	25. Constructions	26. Transformations	27. Angles (Triangles, parallel lines, polygons) (Congruency)	28. Fractions	29. Circles and related shapes (PI) (Arcs / sectors)	Holiday
REVISION	June Examinations	30. Probability (Tree diagrams)	31. Transformations (Enlargements fractional scale factors)						

- **Step 1:** Pick a topic
- **Step 2:** One person finds a quiz on that topic...



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White Rose Maths (2017) Collection

[White Rose Maths \(2017-18\) Collection](#)

Maths quizzes for the White Rose Years 1 to 8 mastery schemes of work.

mAthEmATics
Exciting · Relevant · Easy

AET Maths Collection

[AET](#)

Maths quizzes for the AET Years 1 to 8 mastery schemes of work.

PROJECT -
- QUANTUM

Computing Collection

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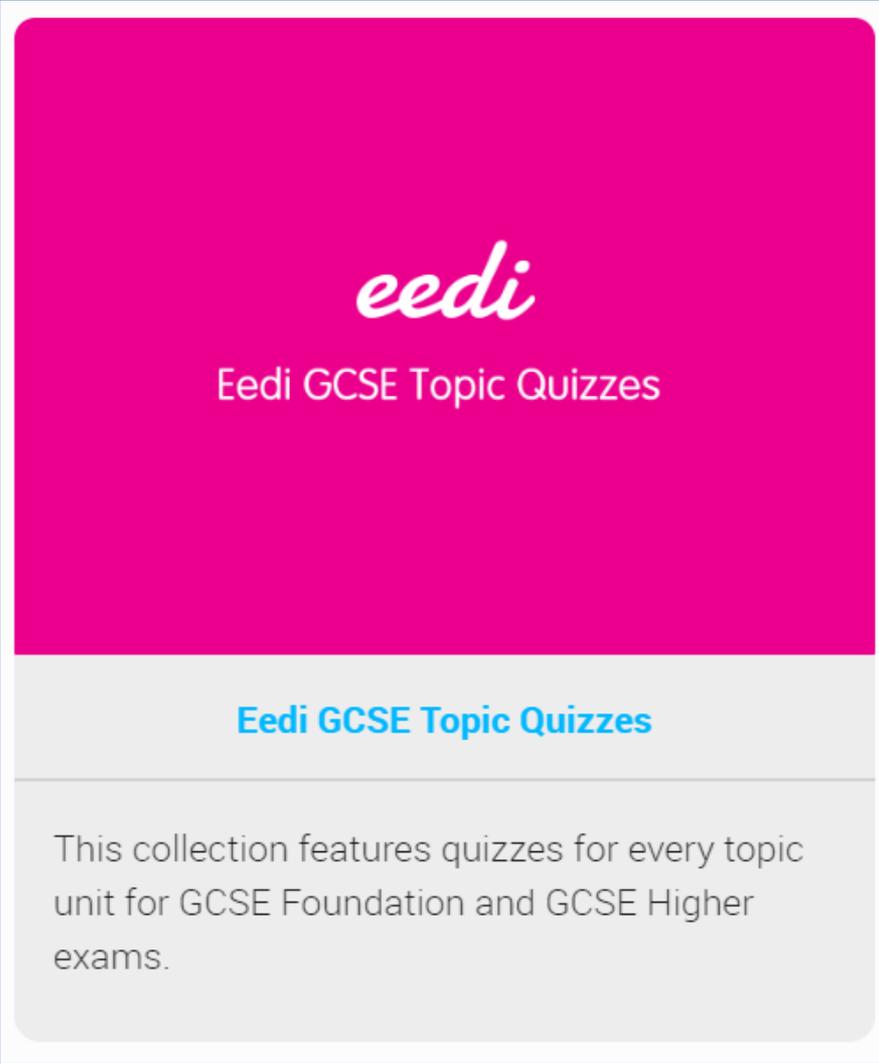
OCR

OCR GCSE Maths (2017) Collection

[OCR GCSE Maths \(2017-18\) Collection](#)

Maths quizzes for the OCR Years 9 to 11 schemes of work.

For Years 8 to 11...



The advertisement features a prominent pink rectangular area at the top. Inside this area, the word "eedi" is written in a white, lowercase, cursive font. Below the logo, the text "Eedi GCSE Topic Quizzes" is displayed in a white, sans-serif font. A horizontal line separates this pink section from a light grey section below. In the grey section, the text "Eedi GCSE Topic Quizzes" is repeated in a blue, sans-serif font. Below this, a paragraph of text in a grey, sans-serif font describes the collection: "This collection features quizzes for every topic unit for GCSE Foundation and GCSE Higher exams."

eedi

Eedi GCSE Topic Quizzes

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www.diagnosticquestions.com

EEDI FOUNDATION

EEDI HIGHER

FACTORS, MULTIPLES,
PRIMES

1 2

POWERS AND ROOTS

1 2

NEGATIVE NUMBERS

1 2

FRACTION, DECIMAL
AND PERCENTAGE
EQUIVALENCE

1 2

ORDERING INTEGERS
AND DECIMALS

1 2

ORDERING FRACTIONS

1 2

- **Step 1:** Pick a topic
- **Step 2:** One person finds a quiz on that topic
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1 2

ORDERING INTEGERS
AND DECIMALS

1 2

ORDERING FRACTIONS

1 2

Negative (directed) numbers

by mrbartonmaths

Create a new attempt (not counted towards assignments)

New



START

INSIGHTS

ASSIGN TO CLASS

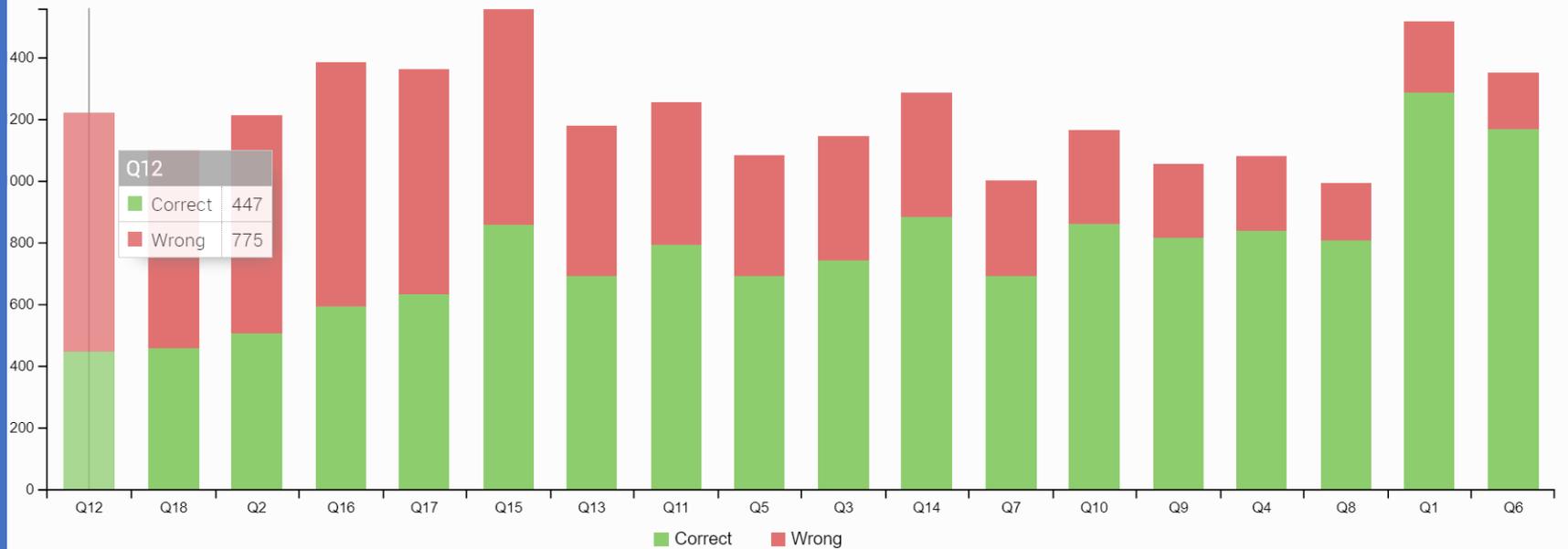


Insights

Quiz | Negative (directed) numbers

COMPARE

63 %



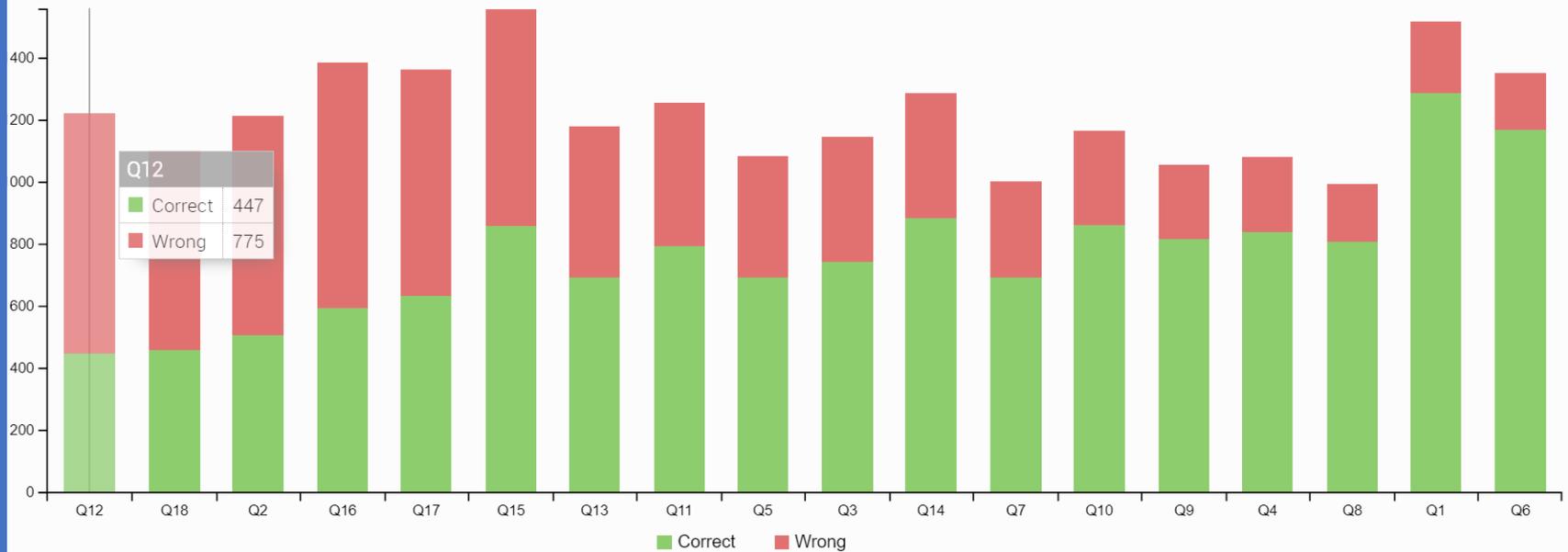
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- **Step 4:** Find the worst 3 answered questions...

Insights

Quiz | Negative (directed) numbers

COMPARE

63 %



Q12

I= Eedi

Which number is 3 greater than -0.6 ?

A

-3.6

B

2.6

C

2.4

D

3.6

© Eedi 2018

A

B

C

D

232

262

447

281

EXPLANATIONS

ADD TO FEEDBACK

Q18

I= Eedi

What is the mean minimum temperature for the week shown below?

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Min. temp	2°C	-9°C	-11°C	-4°C	-8°C	0°C	-12°C

A

-6

B

-42

C

-7

D

-8

© Eedi 2018

A

B

C

D

459

226

223

194

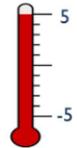
EXPLANATIONS

ADD TO FEEDBACK

Q2

I= Eedi

What is the difference between the two temperatures?



A

-4°

B

1°

C

9°

D

10°

© Eedi 2018

A

B

C

D

98

164

507

444

EXPLANATIONS

ADD TO FEEDBACK

- **Step 1:** Pick a topic
- **Step 2:** One person finds a quiz on that topic
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D

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© Eedi 2018

A

B

C

D

459

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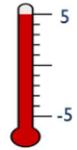
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C

9°

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10°

© Eedi 2018

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B

C

D

98

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444

EXPLANATIONS

ADD TO FEEDBACK

Answers

A ▾

Explanation

Longest Reason ▾

DATE ANSWERED	ANSWER	EXPLANATION	LIKES	
8 months ago		i think A because you can takeaway the - so it will just be 0.6 and make it 3 greater than 0.6 so it will be 3.6 and just add the - back in to make it -3.6	0	Like Report
9 months ago		First of all I noticed that -0.6 is a negative number so the answer will be negative too. A is the only negative number but it is also three more than 0.6	0	Like Report
9 months ago		I chose the answer A because the number that is 3 greater than -0.6 is -3.6	0	Like Report
8 months ago		i am not sure on this one but i think that 3 plus is going to be -3.6	0	Like Report
9 months ago		Count 3 up from -0.6: -1.6,-2.6,-3.6 the answer is -3.6!	0	Like Report

- **Step 1:** Pick a topic
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- **Step 5:** Find the most popular misconceptions and read explanations written by students...
- **Step 6:** Save the images on a PowerPoint in a different order...

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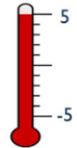
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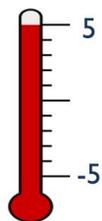
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EXPLANATIONS

ADD TO FEEDBACK



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B

 -42

C

 -7

D

 -8

Negative Numbers!

- **Step 1:** Pick a topic
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- **Step 5:** Find the most popular misconceptions and read explanations written by students
- **Step 6:** Save the images on a PowerPoint in a different order
- **Step 7:** Ask 3 questions:
 - Where do students go wrong?
 - Why do they go wrong?
 - ***What are we going to do about it?***

