



THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions
and curriculum resources

Rapid Reasoning

Year 5 | Weeks 19-24



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Rapid Reasoning

Year 5 | Week 23

As with the previous two weeks, the questions this week within *Rapid Reasoning* continue to focus on fractions and proportionality, with a focus on percentages and decimals.

As with previous weeks, other content from Year 5 that the children have met in previous weeks of *Rapid Reasoning*, will also feature this week.

The following Year 5 objectives, which were first introduced in weeks 21 and 22, will also continue to be the focus of questions:

- round decimals with two decimal places to the nearest whole number or one decimal place
- read, write, order and compare numbers with up to three decimal places
- recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$, and those fractions with a denominator of a multiple of 10 or 25.

Q1 This table shows the average speeds of four different cars.

Car	Model	Average speed (km/h)
A	Azurri	62.7
B	Bronco	62.8
C	Cerida	62.08
D	Danache	62.78

Write the letters A to D in order from slowest to fastest average speed.

Slowest

1 mark

Q2 Sam says, “When I want to round a number with two decimal places to the nearest whole number, I just cross out the digits after the decimal point.”

Will Sam’s method **always, sometimes or never** work? Explain your answer.

1 mark

Q3

Complete the missing fractions in these calculations.

$$\frac{\boxed{}}{\boxed{}} + \frac{2}{6} = \frac{11}{12}$$

$$\frac{2}{5} - \frac{1}{10} = \frac{10}{20} - \frac{\boxed{}}{\boxed{}}$$

2 marks

Q1 This table shows the average speeds of four different cars.

Car	Model	Average speed (km/h)
A	Azurri	62.7
B	Bronco	62.8
C	Cerida	62.08
D	Danache	62.78

Write the letters A to D in order from slowest to fastest average speed.

C**A****D****B**

Slowest

1 mark

Q2 Sam says, “When I want to round a number with two decimal places to the nearest whole number, I just cross out the digits after the decimal point.”

Will Sam’s method **always, sometimes or never** work? Explain your answer.

*See mark scheme
for example*

1 mark

Q3

Complete the missing fractions in these calculations.

$$\frac{\boxed{7}}{\boxed{12}} + \frac{2}{6} = \frac{11}{12}$$
$$\frac{2}{5} - \frac{1}{10} = \frac{10}{20} - \frac{\boxed{2}}{\boxed{10}}$$

2 marks

	Requirement	Mark	Additional guidance
Q1	C A D B	1	
Q2	Sam's method will sometimes work. Where the digit in the tenths place is 0, 1, 2, 3 or 4, the number will be rounded down and so the decimal part can simply be crossed out.	1	
Q3	$\frac{7}{12}$, $\frac{2}{10}$ (OR $\frac{1}{5}$) Award ONE mark for each correct answer.	2	

Q1

Complete the missing numbers so that these statements make sense.

$$562 + 215 = \boxed{} - 111$$

$$\boxed{} + 453 = 274 + 454$$

2 marks

Q2

A piece of wire is $\frac{15}{16}$ of a metre long.

An electrician wants to use $\frac{1}{2}$ of a metre of the wire.

What fraction of a metre will be left?

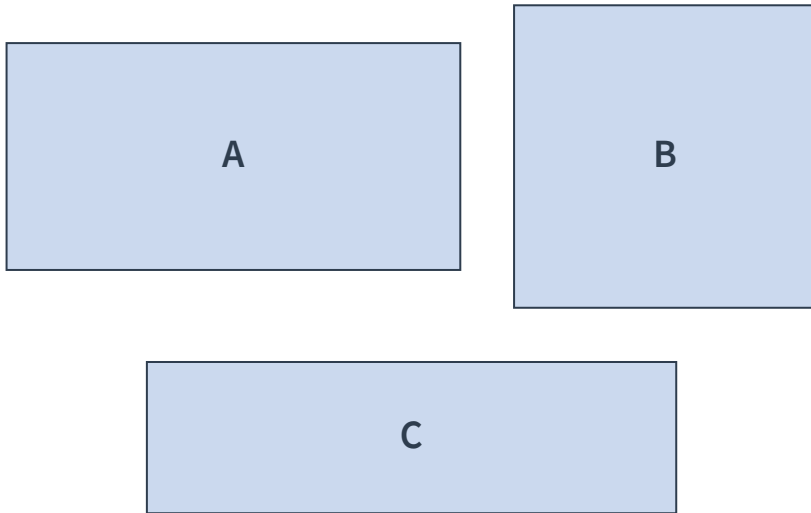
$$\frac{\boxed{}}{\boxed{}} \text{ m}$$

1 mark

Q3

Each of these diagrams represents a running track.

1cm on the diagram represents 5 metres in real life.



Bethany loves running and wants to run around the track with the longest perimeter.

Which running track should Bethany choose? Measure each perimeter to find the answer.

1 mark

Q1

Complete the missing numbers so that these statements make sense.

$$562 + 215 = \boxed{888} - 111$$

$$\boxed{275} + 453 = 274 + 454$$

2 marks

Q2

A piece of wire is $\frac{15}{16}$ of a metre long.

An electrician wants to use $\frac{1}{2}$ of a metre of the wire.

What fraction of a metre will be left?

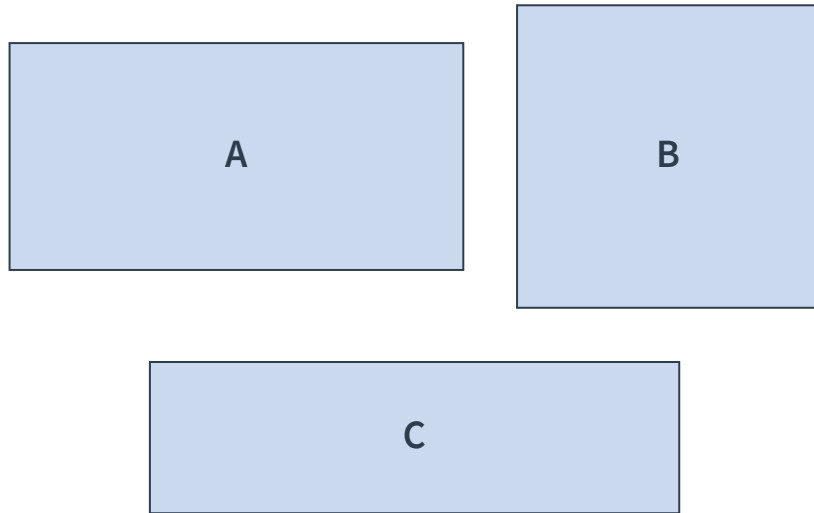
$$\frac{\boxed{7}}{\boxed{16}} \text{ m}$$

1 mark

Q3

Each of these diagrams represents a running track.

1cm on the diagram represents 5 metres in real life.



Bethany loves running and wants to run around the track with the longest perimeter.

Which running track should Bethany choose? Measure each perimeter to find the answer.

Track B

1 mark

	Requirement	Mark	Additional guidance
Q1	888, 275 Award ONE mark for each correct answer.	2	
Q2	$\frac{7}{16}$ m	1	
Q3	Track B	1	

What are examiners looking for?

Q2

A piece of wire is $\frac{15}{16}$ of a metre long.

An electrician wants to use $\frac{1}{2}$ of a metre of the wire.

What fraction of a metre will be left?

$$\frac{7}{16} \text{ m}$$

1 mark

Why are we asking this question?

This question is designed to assess children's ability to subtract fractions with denominators that are multiples of the same number (in this case, they are both multiples of 2).

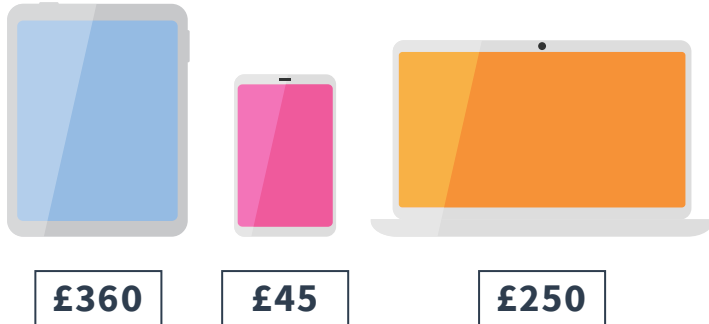
What common errors do we expect to see?

Some children may think that they need to subtract the numerators and denominators to find the answer. If children do this with the fractions as they are written, they will give an incorrect answer of $\frac{14}{14}$. If they recognise that they need to convert the second fraction, but still subtract the numerator and denominator, they will give an incorrect answer of $\frac{7}{0}$.

How to encourage children to solve this question

Encourage children to represent the problem visually. They can draw a bar model and divide into sixteenths quickly by finding half, halving again (quarters), halving again (eighths) and then a final time (sixteenths). Ask: "Where is $\frac{1}{2}$ on the bar model? How many sixteenths is this?" Encourage children to mark the length of the original wire and then the length that is used to visually spot the difference between the two. In order to embed the maths behind the problem, check that children can write their subtraction using fractional notation. This will help them to see that they simply needed to convert into the same denominator and then subtract the numerators.

Q1 An electrical store is having a sale. Here are the original prices of some items.



a The phone is now $\frac{4}{5}$ of the price. What price is it now?

1 mark

b The laptop has had 20% of the price knocked off. How much has been **taken off** the price of the laptop?

1 mark

Q2 Use the digits 9, 4, 3, 0 and 7 to make the following numbers:

A) a number that rounds to 37.9 when rounded to 1 decimal place

 .

B) a number that rounds to the same number when rounded to either the nearest whole number or to 1 decimal place.

 .

2 marks

Q3

Circle the best estimate for each measurement.

Measurement	Estimate		
the capacity of a saucepan	150ml	1,500ml	15,000ml
the length of a bicycle	$3\frac{3}{4}$ m	$2\frac{3}{4}$ m	$1\frac{3}{4}$ m
the mass of a tin of baked beans	50g	500g	5,000g

2 marks

Q1 An electrical store is having a sale. Here are the original prices of some items.



a The phone is now $\frac{4}{5}$ of the price. What price is it now?

£36

1 mark

b The laptop has had 20% of the price knocked off. How much has been **taken off** the price of the laptop?

£50

1 mark

Q2 Use the digits 9, 4, 3, 0 and 7 to make the following numbers:

A) a number that rounds to 37.9 when rounded to 1 decimal place

3 7 . 9 0

B) a number that rounds to the same number when rounded to either the nearest whole number or to 1 decimal place.

7 9 . 0 3

2 marks

Q3

Circle the best estimate for each measurement.

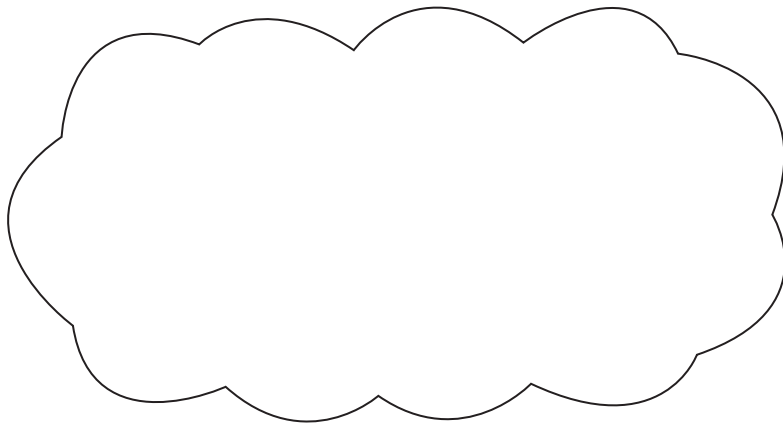
Measurement	Estimate		
the capacity of a saucepan	150ml	1,500ml	15,000ml
the length of a bicycle	$3\frac{3}{4}$ m	$2\frac{3}{4}$ m	$1\frac{3}{4}$ m
the mass of a tin of baked beans	50g	500g	5,000g

2 marks

	Requirement	Mark	Additional guidance
Q1a	£36	1	
Q1b	£50	1	
Q2	A) 37.90 OR 37.94 B) Accept any decimal ending in .03, .04 OR .97. Award ONE mark for each correct answer.	2	
Q3	1,500 ml $1\frac{3}{4}$ m 500g Award TWO marks for all correct estimates. Award ONE mark for any two correct estimates.	2	

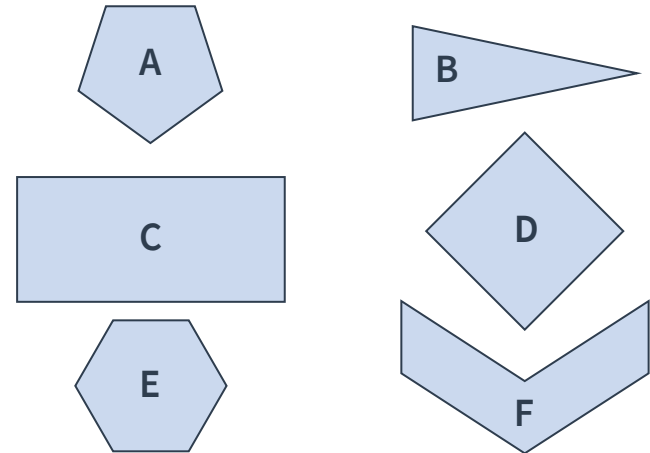
Q1 Kimberley is calculating the answer to $\frac{9}{10} - \frac{2}{5}$.
 She says,
 “9 minus 2 equals 7.
 10 minus 5 equals 5.
 The answer is $\frac{7}{5}$!”

Is Kimberley correct? **YES / NO**
 Explain your answer.



1 mark

Q2 Write the letters of each shape into the correct section of this table.



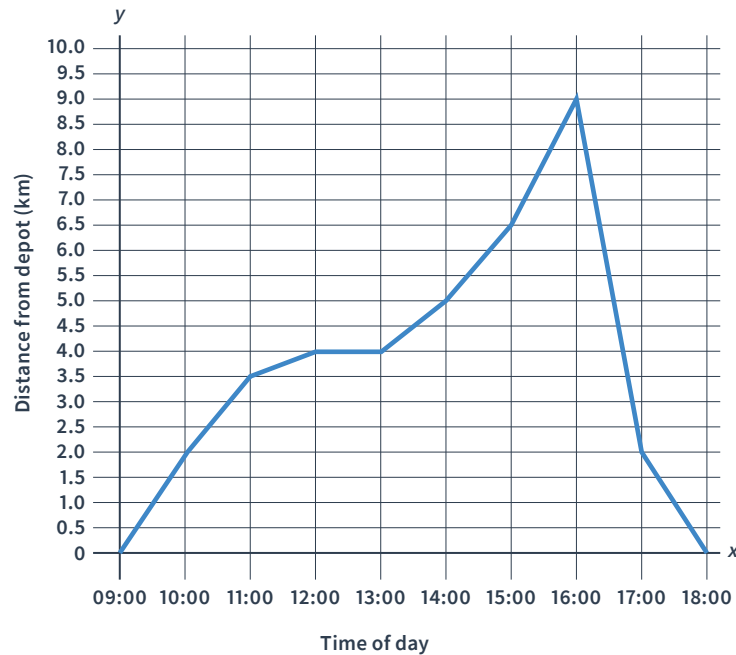
	Quadrilateral	Not a quadrilateral
Regular		
Irregular		

2 marks

Q3

This line graph shows a day in the life of a parcel delivery driver.

It shows how far away from the depot the van is at different times of the day.



a

At which times of day is the delivery van 2km away from its depot?

1 mark

b

What do you think is happening between 12.00 and 13.00? Explain your answer.

1 mark

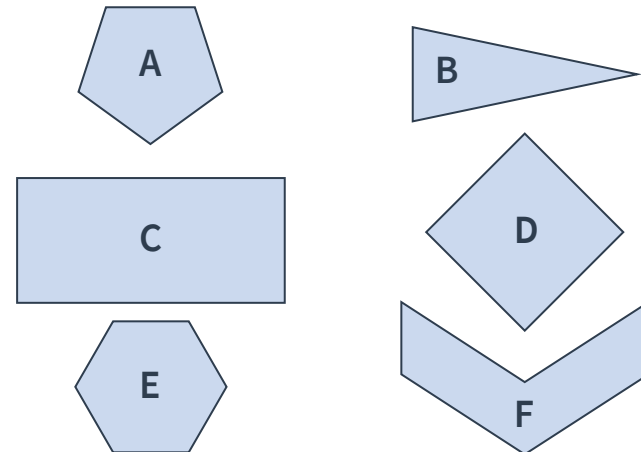
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 “9 minus 2 equals 7.
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 The answer is $\frac{7}{5}$!”

Is Kimberley correct? **YES/NO**
 Explain your answer.

See mark scheme for example

1 mark

Q2 Write the letters of each shape into the correct section of this table.



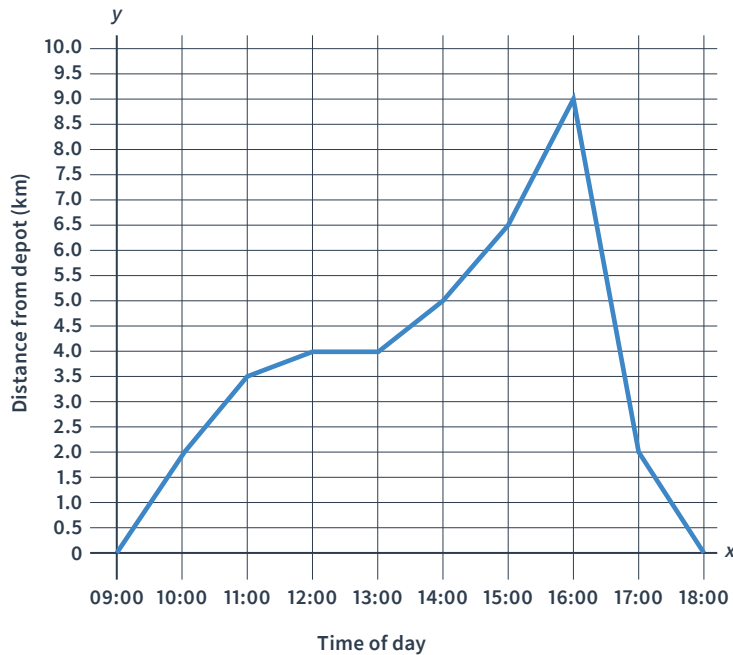
	Quadrilateral	Not a quadrilateral
Regular	D	A E
Irregular	C	B F

2 marks

Q3

This line graph shows a day in the life of a parcel delivery driver.

It shows how far away from the depot the van is at different times of the day.



a

At which times of day is the delivery van 2km away from its depot?

At 10.00 and 17.00

1 mark

b

What do you think is happening between 12.00 and 13.00? Explain your answer.

**See mark scheme
for example**

1 mark

	Requirement	Mark	Additional guidance									
Q1	NO – Kimberley is not correct. She has subtracted the denominators instead of converting so that both fractions have the same denominator and then only subtracting the numerators.	1										
Q2	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>Quadrilateral</th> <th>Not a quadrilateral</th> </tr> </thead> <tbody> <tr> <th>Regular</th> <td>D</td> <td>A E</td> </tr> <tr> <th>Irregular</th> <td>C</td> <td>B F</td> </tr> </tbody> </table> <p>Award TWO marks for all six letters correctly placed. Award ONE mark for four or five letters correctly placed.</p>		Quadrilateral	Not a quadrilateral	Regular	D	A E	Irregular	C	B F	2	
	Quadrilateral	Not a quadrilateral										
Regular	D	A E										
Irregular	C	B F										
Q3a	At 10.00 and 17.00	1										
Q3b	The delivery driver may be having lunch as the van stays the same distance away from the depot for an hour before moving again.	1										

Q1 Chloe is adding together two five-digit numbers using the vertical addition method. She has made a mistake.

$$\begin{array}{r}
 63617 \\
 + 21941 \\
 \hline
 84558 \\
 \hline
 \end{array}$$

Explain Chloe's mistake and write the correct answer.

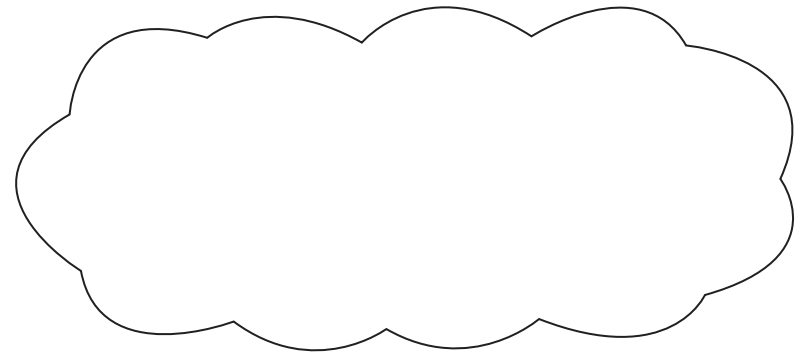
Chloe's mistake is _____

The correct answer should be

2 marks

Q2 A TV show offers a contestant a prize of either $\frac{2}{5}$ of £600 or 60% of £500.

Which prize should they choose? Explain your answer.



1 mark

Q3 A sweet shop is selling different lengths of strawberry laces.

- A) 23cm 4mm
- B) 236mm
- C) $23\frac{1}{2}$ cm
- D) 0.233m

Write the letters A to D in order, from shortest to longest.

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Shortest

1 mark

Q1 Chloe is adding together two five-digit numbers using the vertical addition method. She has made a mistake.

$$\begin{array}{r}
 63617 \\
 + 21941 \\
 \hline
 84558 \\
 \hline
 \end{array}$$

Explain Chloe's mistake and write the correct answer.

Chloe's mistake is _____

See mark scheme

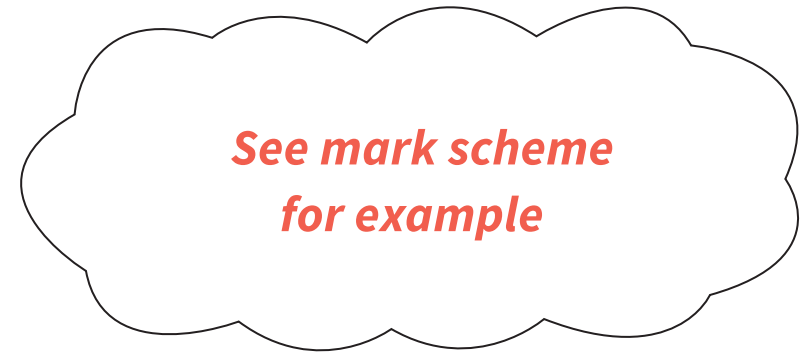
for example

The correct answer should be **85,558**

2 marks

Q2 A TV show offers a contestant a prize of either $\frac{2}{5}$ of £600 or 60% of £500.

Which prize should they choose? Explain your answer.



1 mark

Q3 A sweet shop is selling different lengths of strawberry laces.

- A) 23cm 4mm C) $23\frac{1}{2}$ cm
- B) 236mm D) 0.233m

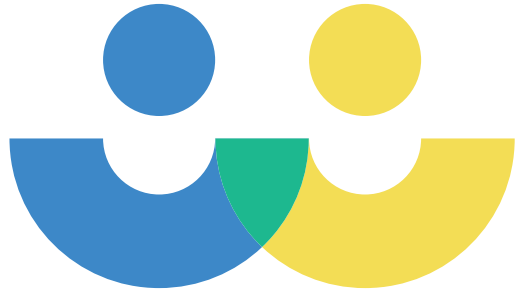
Write the letters A to D in order, from shortest to longest.

D	A	C	B
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Shortest

1 mark

	Requirement	Mark	Additional guidance
Q1	Answers should recognise that Chloe has not exchanged after adding the hundreds digits. The 10,000 digit should be 1 more. Correct answer: 85,558 Award ONE mark for appropriate identification of error and ONE mark for a correct answer.	2	
Q2	They should choose 60% of £500. $\frac{2}{5}$ of £600 is equal to £240 and 60% of £500 is equal to £300.	1	
Q3	D A C B	1	



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Rapid Reasoning


Do you have a group of pupils who need a boost in maths this term?

Each pupil could receive a personalised lesson every week from our specialist 1-to-1 maths tutors.

- Raise attainment
 - Plug any gaps or misconceptions
 - Boost confidence
-

Speak to us:

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