



THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions
and curriculum resources

Rapid Reasoning

Year 5 | Weeks 25–36



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Rapid Reasoning

Year 5 | Week 35

This week, the questions within *Rapid Reasoning* continue to focus on measures, with questions focusing on volume and capacity.

The new Year 5 objective which is a particular focus this week is:

- estimating volume [for example, using 1cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water].

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

Q1 Year 6 is having a sunflower growing competition.

This table shows their results so far:

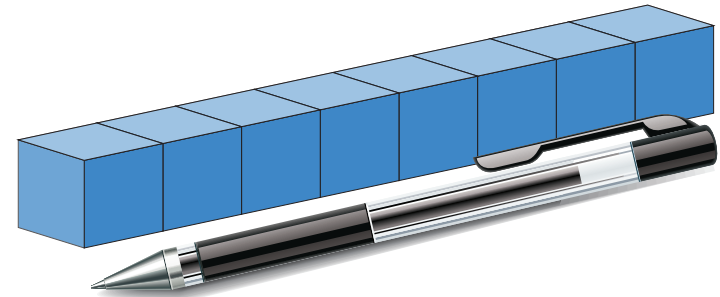
Name	Height of sunflower (m)	Place
Amirah	$\frac{22}{24}$	1st
Harry	$\frac{3}{4}$	
Ben	$\frac{3}{8}$	
Ellie	$\frac{10}{12}$	
Michael	$\frac{4}{8}$	

Amirah is in first place because her sunflower is tallest.

Complete the table to show which position the rest of the children are in.

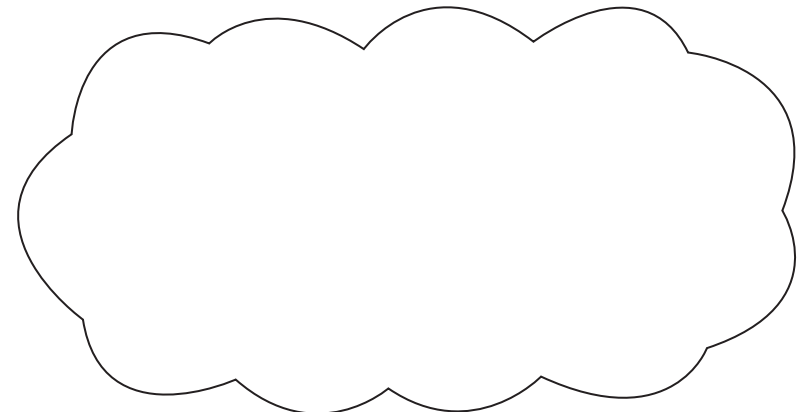
1 mark

Q2 Joe makes a shape out of centimetre cubes to help estimate the volume of his pen.



He says that the volume of his pen is 8 centimetre cubes.

Is Joe's estimate accurate? **YES / NO**
Explain your answer.



1 mark

Q3

Use your knowledge of the division fact for $32 \div 8$ to complete these calculations.

$$320 \div 8 = \boxed{}$$

$$320 \div 80 = \boxed{}$$

$$3,200 \div 800 = \boxed{}$$

2 marks

Q1 Year 6 is having a sunflower growing competition.

This table shows their results so far:

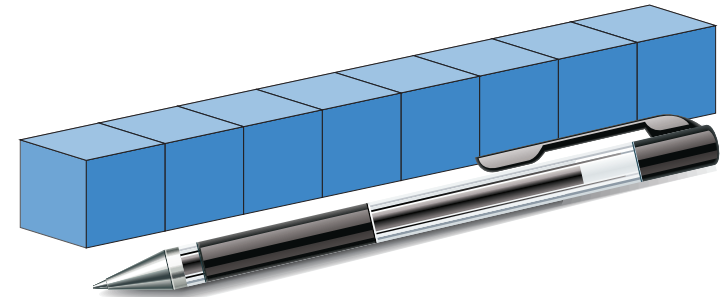
Name	Height of sunflower (m)	Place
Amirah	$\frac{22}{24}$	1 st
Harry	$\frac{3}{4}$	3 rd
Ben	$\frac{3}{8}$	5 th
Ellie	$\frac{10}{12}$	2 nd
Michael	$\frac{4}{8}$	4 th

Amirah is in first place because her sunflower is tallest.

Complete the table to show which position the rest of the children are in.

1 mark

Q2 Joe makes a shape out of centimetre cubes to help estimate the volume of his pen.



He says that the volume of his pen is 8 centimetre cubes.

Is Joe's estimate accurate? YES / NO
Explain your answer.

See mark scheme for example

1 mark

Q3

Use your knowledge of the division fact for $32 \div 8$ to complete these calculations.

$320 \div 8 =$

40

$320 \div 80 =$

4

$3,200 \div 800 =$

4

2 marks

	Requirement	Mark	Additional guidance
Q1	Harry: 3 rd Ben: 5 th Ellie: 2 nd Michael: 4 th Award TWO marks for all children ordered correctly. Award ONE mark for any three children ordered correctly.	1	
Q2	No Joe's estimate is not accurate because the cubes are taller than the pen and so they have more volume. Award ONE mark for an appropriate explanation as well as indicating that Joe's estimate is not accurate.	1	
Q3	40 4 4 Award TWO marks for all three correct answers. Award ONE mark for any two correct answers.	2	

Q1

Match each task with the operation needed to work it out.

- A) Convert the capacity of a bottle of water (in ml) into litres. $\times 10$
- B) Take the mass of a parcel in kg and change it into g. $\times 100$
- C) Change the length of a stamp from mm into cm. $\div 1,000$
- D) Convert the length of a classroom (in m) into cm. $\div 10$
- E) Measure the width of a book in cm and express it in millimetres. $\times 1,000$

2 marks

Q2

Tick whether each statement is **TRUE** or **FALSE**.

	TRUE	FALSE
There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.		
1 is a prime number.		
All prime numbers are odd.		

2 marks

Q3











Number A is 0.268 larger than Number B.
Number A is 8.3.

What is Number B?

1 mark

Q1

Match each task with the operation needed to work it out.

- | | | | |
|---|---|---|----------------|
| A) Convert the capacity of a bottle of water (in ml) into litres. |  |  | $\times 10$ |
| B) Take the mass of a parcel in kg and change it into g. |  |  | $\times 100$ |
| C) Change the length of a stamp from mm into cm. |  |  | $\div 1,000$ |
| D) Convert the length of a classroom (in m) into cm. |  |  | $\div 10$ |
| E) Measure the width of a book in cm and express it in millimetres. |  |  | $\times 1,000$ |

2 marks

Q2

Tick whether each statement is **TRUE** or **FALSE**.

	TRUE	FALSE
There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.	✓	
1 is a prime number.		✓
All prime numbers are odd.		✓

2 marks

Q3

Number A is 0.268 larger than Number B.
Number A is 8.3.

What is Number B?

8.032

1 mark

	Requirement	Mark	Additional guidance												
Q1	<p>A → ÷ 1,000</p> <p>B → × 1,000</p> <p>C → ÷ 10</p> <p>D → × 100</p> <p>E → × 10</p> <p>Award TWO marks for all five statements correctly matched with an operation.</p> <p>Award ONE mark for any three or four statements correctly matched with an operation.</p>	2													
Q2	<table border="1"> <thead> <tr> <th></th> <th>TRUE</th> <th>FALSE</th> </tr> </thead> <tbody> <tr> <td>There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>1 is a prime number.</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>All prime numbers are odd.</td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p>Award TWO marks for all three correct answers.</p> <p>Award ONE mark for any two correct answers.</p>		TRUE	FALSE	There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.	✓		1 is a prime number.		✓	All prime numbers are odd.		✓	2	
	TRUE	FALSE													
There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.	✓														
1 is a prime number.		✓													
All prime numbers are odd.		✓													
Q3	8.032	1													

What are examiners looking for?

Q2

Tick whether each statement is **TRUE** or **FALSE**.

	TRUE	FALSE
There are the same number of prime numbers between 1 and 10 as there are between 10 and 20.	✓	
1 is a prime number.		✓
All prime numbers are odd.		✓

 2 marks
Why are we asking this question?

This question is designed to assess children's ability to understand the concept of prime numbers and recall prime numbers up to 19.

What common errors do we expect to see?

Some children may think that all prime numbers are odd because the vast majority are (only the number 2 is an even prime number).


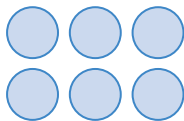
Another common error is that children think that the number 1 is a prime number as it can be divided by 1 and itself (although 1 is itself!). This will affect their answers to the first and second parts of the question.

Some children may not recall the definition of a prime number and may therefore find it difficult to identify those prime numbers that are between 1 and 10 and between 10 and 20.


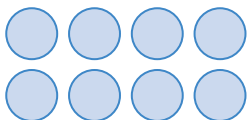
How to encourage children to solve this question

Encourage children to search for prime by using counters or sketching arrays. A prime number can be defined as a number with only two different factors (where one of them is the number 1 and the other is the number itself). Children can then explore whether they can make more than one array from their counters. For example:

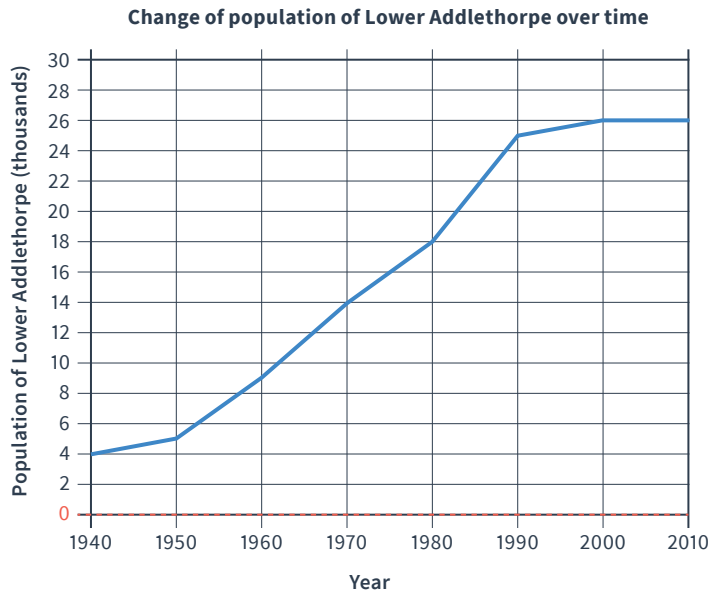
 5 = prime

  6 = not prime

 7 = prime

  8 = not prime

Q1 This line graph shows how the population of the town of Lower Addlethorpe has changed over 70 years.



a How many more people lived in Lower Addlethorpe in 2000 than in 1970?

1 mark

b Estimate the year that the population became 16,000 people.

1 mark

Q2 The number of people who live in the town of Hambury is 482,415. There are 318,960 adults and the rest are children. Out of all the children, 89,645 are girls.

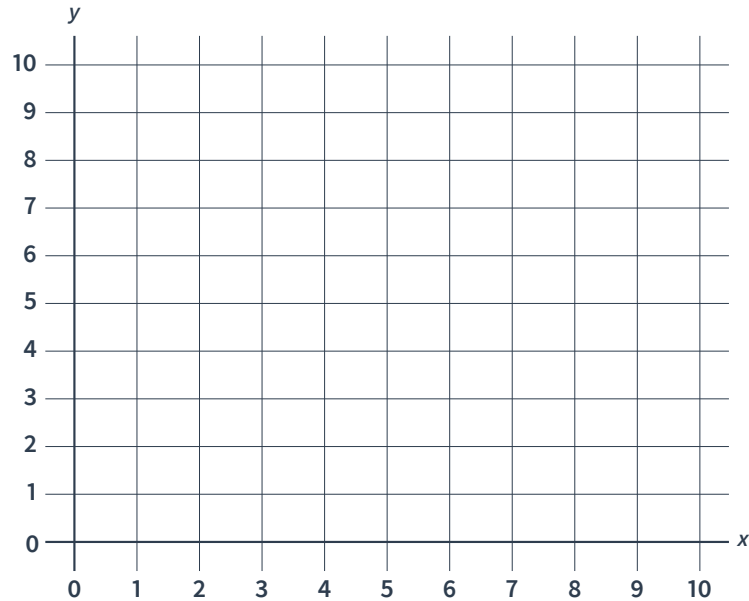
How many boys live in Hambury?

boys

2 marks

Q3

The coordinates of two vertices of a right-angled triangle are (3,3) and (3,7).



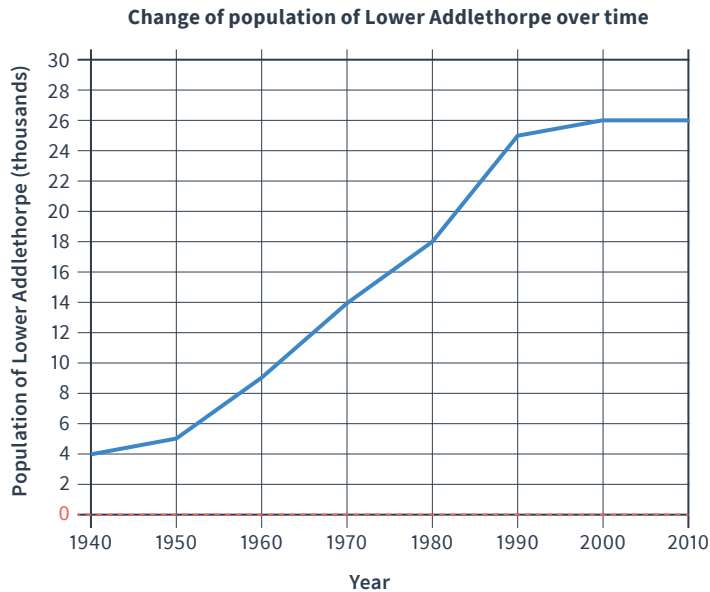
What could the coordinate of the remaining vertex be?

Give TWO possible answers.

(,) or (,)

1 mark

Q1 This line graph shows how the population of the town of Lower Addlethorpe has changed over 70 years.



a How many more people lived in Lower Addlethorpe in 2000 than in 1970?

12,000 people

1 mark

b Estimate the year that the population became 16,000 people.

1975

1 mark

Q2 The number of people who live in the town of Hambury is 482,415. There are 318,960 adults and the rest are children. Out of all the children, 89,645 are girls.

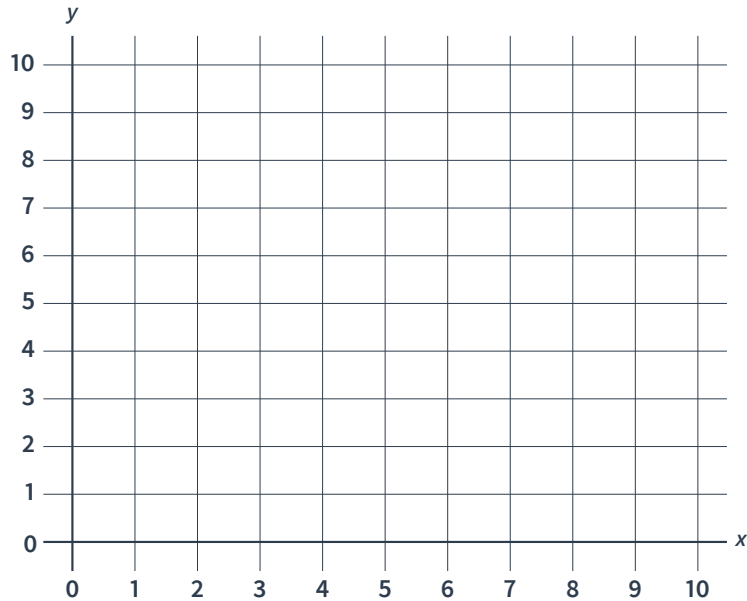
How many boys live in Hambury?

73,810 boys

2 marks

Q3

The coordinates of two vertices of a right-angled triangle are (3,3) and (3,7).



What could the coordinate of the remaining vertex be?

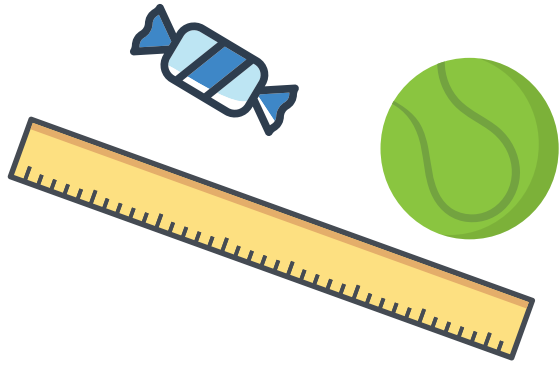
Give TWO possible answers.

(,) or (,)

1 mark

	Requirement	Mark	Additional guidance
Q1a	12,000 people	1	Do NOT accept the answer '12' as this is incorrect (each number on the y-axis represent a number of thousands and is labelled as such).
Q1b	1975	1	Accept the answers 1974 and 1976 also to allow for estimation.
Q2	73,810 boys Award TWO marks for a correct answer. Award ONE mark for a correct method with only one arithmetic error.	2	
Q3	Accept any pairs of coordinates with either a y value of 3 or 7, and an x value that is not 3. For example: (1,3) or (8,7)	1	

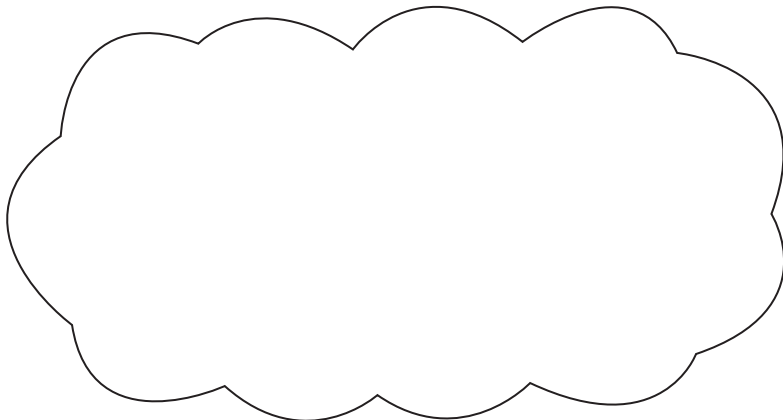
Q1



Aled is estimating the volume of a tennis ball, a ruler and a boiled sweet.

He says, "I think that the ruler has the largest volume because it is longer than the other objects."

Explain why Aled is not correct.



1 mark

Q2

Mr Johnson's car uses 25p worth of fuel for every mile that he drives. Yesterday, he travelled 56 miles.

What was the cost of the fuel Mr Johnson used yesterday?

A large rectangular area with a dotted border for writing the answer. At the bottom right of this area is a small rectangular box containing the pound symbol (£).

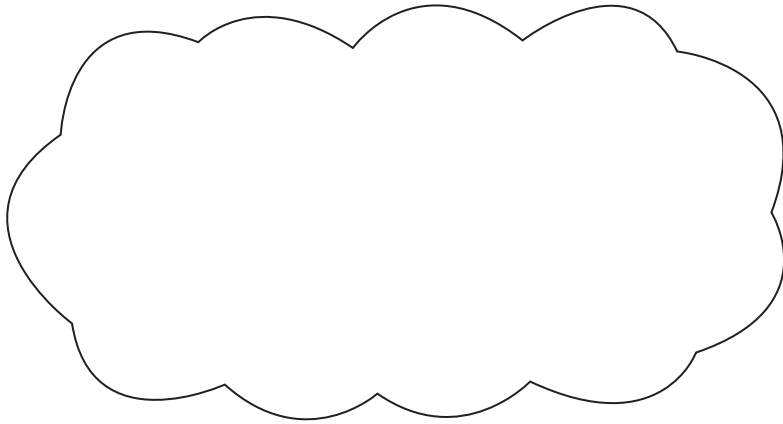
2 marks

Q3

a

Is the number 27 prime?

Explain your answer.



1 mark

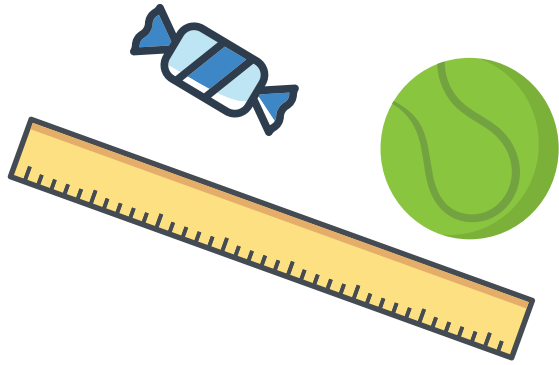
b

Write the number 56 as a product of its prime factors.

$$\square \times \square \times \square \times \square$$

1 mark

Q1



Aled is estimating the volume of a tennis ball, a ruler and a boiled sweet.

He says, "I think that the ruler has the largest volume because it is longer than the other objects."

Explain why Aled is not correct.

*See mark scheme
for example*

1 mark

Q2

Mr Johnson's car uses 25p worth of fuel for every mile that he drives. Yesterday, he travelled 56 miles.

What was the cost of the fuel Mr Johnson used yesterday?

£ **14.00**

2 marks

Q3

a

Is the number 27 prime?

Explain your answer.



1 mark

b

Write the number 56 as a product of its prime factors.

$$\boxed{2} \times \boxed{2} \times \boxed{7} \times \boxed{2}$$

1 mark

	Requirement	Mark	Additional guidance
Q1	<p>Award ONE mark for any appropriate answer that explains that just because an object is long, this does not mean that it has a large volume.</p> <p>For example: the ruler is longer, but it also does not have very much height, so the volume is not as great as Aled thinks.</p> <p>Aled has just looked at the ruler's length, rather than thinking about how wide and tall the object is too.</p>	1	
Q2	<p>£14.00 (also accept 1400p)</p> <p>Award TWO marks for a correct answer.</p> <p>Award ONE mark for a correct method with only one arithmetic error.</p>	2	
Q3a	<p>No — the number 27 has factors of 3 and 9 as well as 1 and itself, so it is not prime.</p>	1	
Q3b	$2 \times 2 \times 7 \times 2$	1	The digits may appear in the calculation in any order.

Q1

Theo Soress — an author, has a large pile of books to sign.

Yesterday, he signed $\frac{4}{9}$ of the books.

Today, he has signed $\frac{3}{18}$ of the books.

What fraction of the books does Theo still have left to sign?

—
 of the books

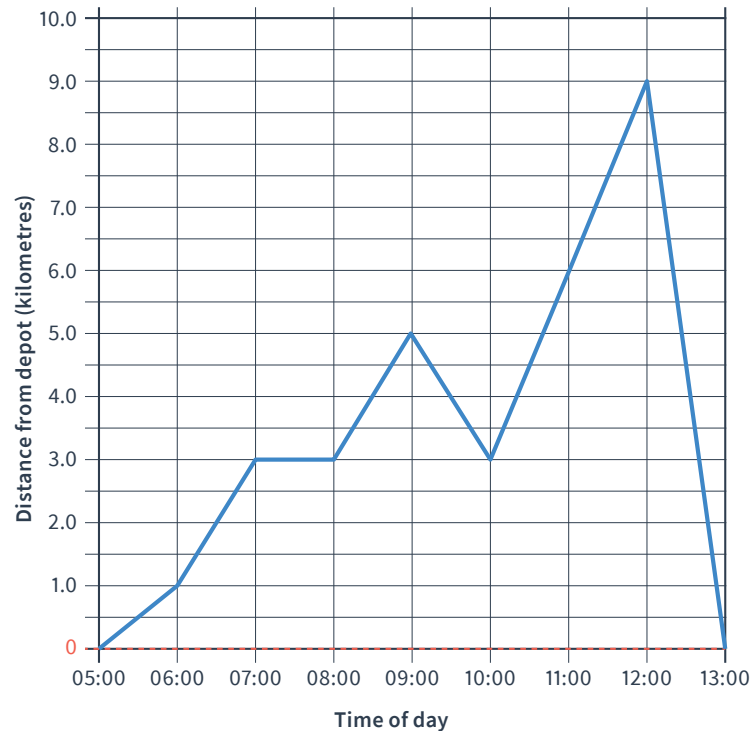
2 marks

Q2

This line graph shows the distance travelled by a mail van.

It shows how far away from the mail depot the van is during a seven-hour shift.

Distance travelled by a mail van



a

How much further was the van away from the depot at midday than at 9 o'clock?

 km

1 mark

b

About how far away from the depot was the van at half past eleven?

 km

1 mark

Q3

$$857 - 490$$

Isla is working out the answer to this subtraction mentally.

She says, "First, I am going to subtract 400.

Then I am going to partition 90. First, I will subtract 50 out of the 90 to take me to the next hundred.

Finally, I am going to subtract the final 30 to get the answer."

Isla's method is almost correct. What one mistake has she made?

1 mark

Q1

Theo Soress — an author, has a large pile of books to sign.

Yesterday, he signed $\frac{4}{9}$ of the books.

Today, he has signed $\frac{3}{18}$ of the books.

What fraction of the books does Theo still have left to sign?

$$\frac{7}{18} \text{ of the books}$$

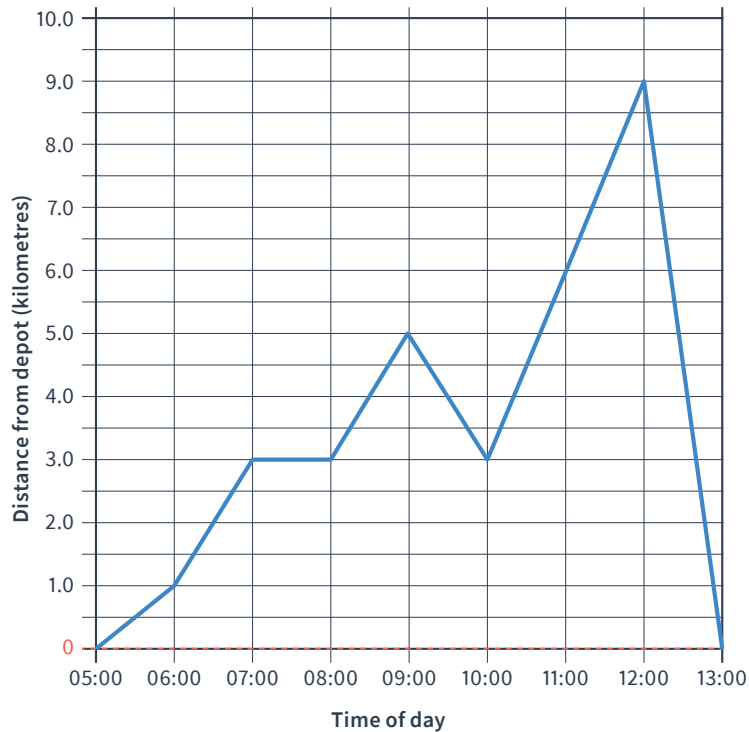
2 marks

Q2

This line graph shows the distance travelled by a mail van.

It shows how far away from the mail depot the van is during a seven-hour shift.

Distance travelled by a mail van



a

How much further was the van away from the depot at midday than at 9 o'clock?

4 km

1 mark

b

About how far away from the depot was the van at half past eleven?

7.5 km

1 mark

Q3

$$857 - 490$$

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She says, "First, I am going to subtract 400.

Then I am going to partition 90. First, I will subtract 50 out of the 90 to take me to the next hundred.

Finally, I am going to subtract the final 30 to get the answer."

Isla's method is almost correct. What one mistake has she made?

See mark scheme

for example

1 mark

	Requirement	Mark	Additional guidance
Q1	$\frac{7}{18}$ of the books Award TWO marks for the correct answer. Award ONE mark for a correct method with only one arithmetic error.	2	
Q2a	4km	1	
Q2b	7.5 (or $7\frac{1}{2}$)km	1	
Q3	Accept any appropriate explanations. For example: Isla has partitioned 90 into 50 and 30 instead of 50 and 40. Isla's final subtraction should be to subtract 40 and not 30.	1	



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