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 22

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

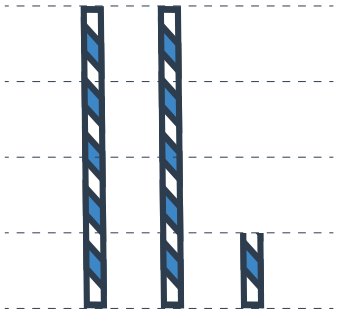
Children will be introduced to rounding decimals with two decimal places to the nearest whole number or one decimal place for the first time in Year 5.

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

- 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.

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.

Q1 Joel models the mixed number $2\frac{1}{4}$ using plastic straws.



What is $2\frac{1}{4}$ multiplied by 5? Write your answer as a mixed number.

1 mark

Q2 Write these numbers in order, starting with the **smallest**.

4.1	0.406	0.078	0.6	0.34

Smallest

1 mark

Q3 Ali uses these digit cards to make a three-digit number greater than 500.

0	4	6

Seren uses these digit cards to make a two-digit number.

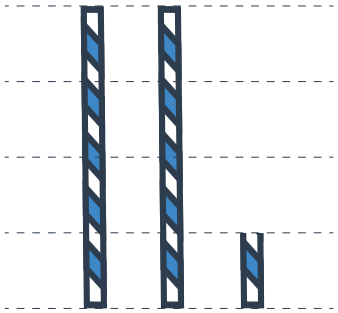
2	3

Ali and Seren multiply their numbers together.

What could their answer be? Give one example.

1 mark

Q1 Joel models the mixed number $2\frac{1}{4}$ using plastic straws.



What is $2\frac{1}{4}$ multiplied by 5? Write your answer as a mixed number.

$11\frac{1}{4}$

1 mark

Q2 Write these numbers in order, starting with the **smallest**.

4.1	0.406	0.078	0.6	0.34
0.078	0.34	0.406	0.6	4.1

Smallest

1 mark

Q3 Ali uses these digit cards to make a three-digit number greater than 500.

0	4	6

Seren uses these digit cards to make a two-digit number.

2	3

Ali and Seren multiply their numbers together.

What could their answer be? Give one example.

20,480

1 mark

	Requirement	Mark	Additional guidance
Q1	$11\frac{1}{4}$	1	
Q2	0.078 0.34 0.406 0.6 4.1	1	
Q3	Accept any of the following calculations and answers: 640 × 32 = 20,480 640 × 23 = 14,720 604 × 32 = 19,328 604 × 23 = 13,892	1	

Q1 Rachel is comparing four decimal numbers.

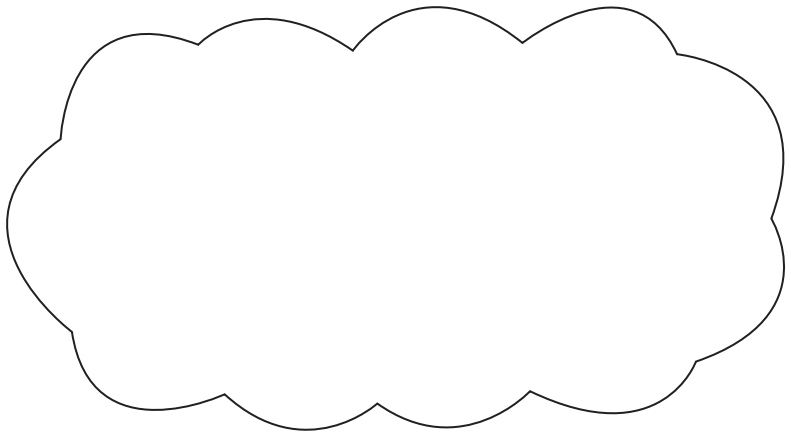
First, she writes them so that they are all aligned.

45.68
0.34
9.002
83.582

Next, she compares them, digit by digit from left to right.

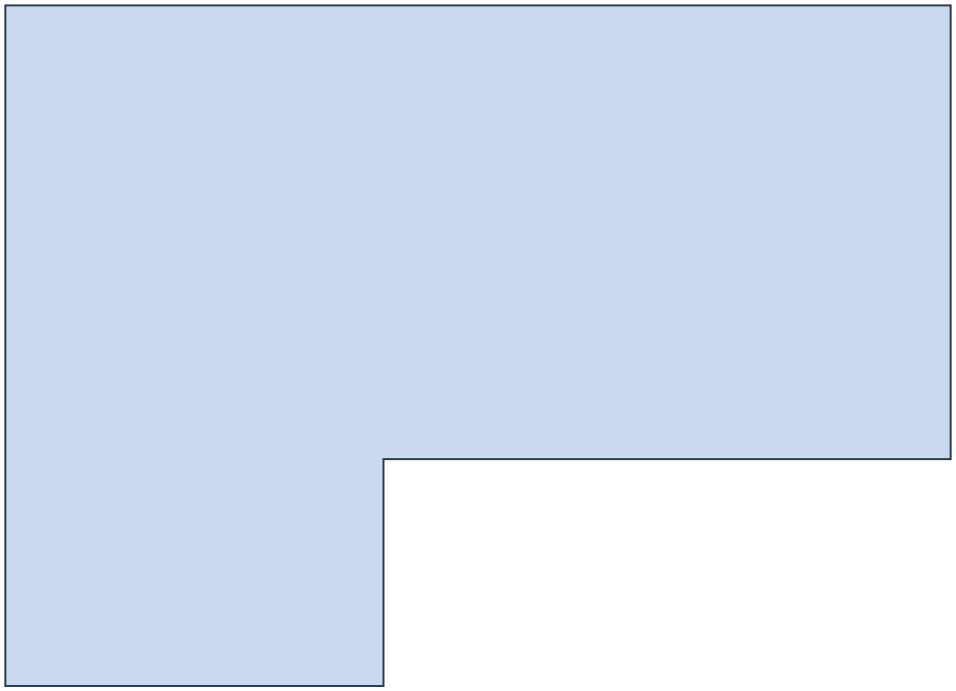
She says, "The order, from smallest to largest, is 0.34, 45.68, 83.582 and 9.002."

Explain the mistake that Rachel has made.



1 mark

Q2 Use a ruler to measure the perimeter of this shape.



cm

1 mark

Q3

Use any of the digits 1, 8, 5, 7 or 2 to make the following numbers:

A) a number that rounds to 79 when rounded to the nearest whole number

B) a number that rounds to 18.8 when rounded to one decimal place

2 marks

Q1 Rachel is comparing four decimal numbers.

First, she writes them so that they are all aligned.

45.68
0.34
9.002
83.582

Next, she compares them, digit by digit from left to right.

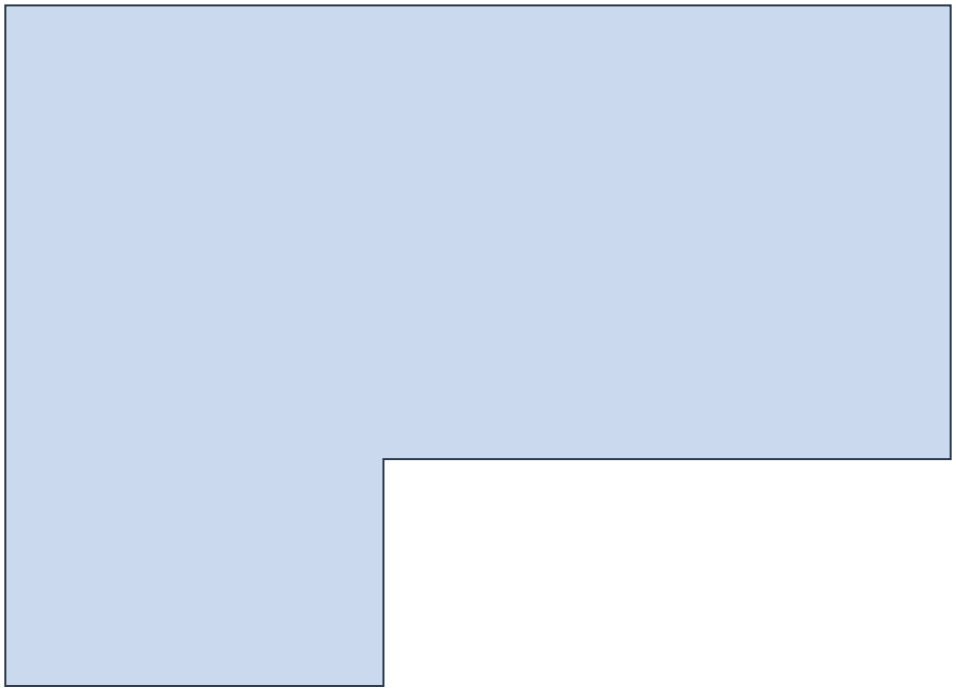
She says, "The order, from smallest to largest, is 0.34, 45.68, 83.582 and 9.002."

Explain the mistake that Rachel has made.

See mark scheme for example

1 mark

Q2 Use a ruler to measure the perimeter of this shape.



43 cm

1 mark

Q3

Use any of the digits 1, 8, 5, 7 or 2 to make the following numbers:

A) a number that rounds to 79 when rounded to the nearest whole number

7 8 . 5 1

B) a number that rounds to 18.8 when rounded to one decimal place

1 8 . 7 5

2 marks

	Requirement	Mark	Additional guidance
Q1	Rachel has aligned the numbers to the left. She should have aligned the decimal points with each other so that the value of each digit is in the correct place.	1	
Q2	43cm	1	
Q3	78.51 **OR** 78.52 18.75 Award **ONE** mark for each answer.	2	

Q1 These glasses are the same size.

Lloyd fills the first glass $\frac{1}{9}$ full with orange squash.

He fills the second glass $\frac{2}{3}$ full with water.

Lloyd tips the water into the first glass to make his drink.

What fraction of the first glass is now full?

$\frac{\square}{\square}$

1 mark

Q2 Blaise wants to find the answer to $2\frac{1}{3}$ multiplied by 8.

She says, "2 times 8 equals 16.

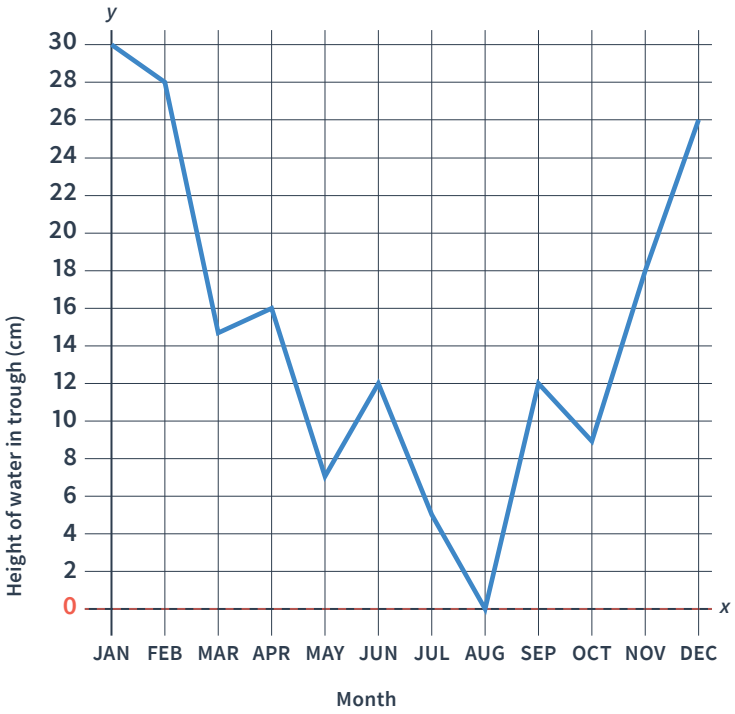
$\frac{1}{3}$ times 8 equals $\frac{8}{3}$.

The answer is $\frac{24}{3}$."

What mistake has Blaise made? Give the correct answer.

2 marks

Q3 This line graph shows the height in cm of a water trough in Mr Edwards' back garden.



a Mr Edwards says, "There was the same amount of water in the trough in December as there was in two of the other months put together."

Which two months could he be talking about?

1 mark

b Which two months of the year was the water level at its lowest? Give a reason why this might be.

1 mark

Q1 These glasses are the same size.

Lloyd fills the first glass $\frac{1}{9}$ full with orange squash.

He fills the second glass $\frac{2}{3}$ full with water.

Lloyd tips the water into the first glass to make his drink.

What fraction of the first glass is now full?

$\frac{7}{9}$

1 mark

Q2 Blaise wants to find the answer to $2\frac{1}{3}$ multiplied by 8.

She says, "2 times 8 equals 16.

$\frac{1}{3}$ times 8 equals $\frac{8}{3}$.

The answer is $\frac{24}{3}$."

What mistake has Blaise made? Give the correct answer.

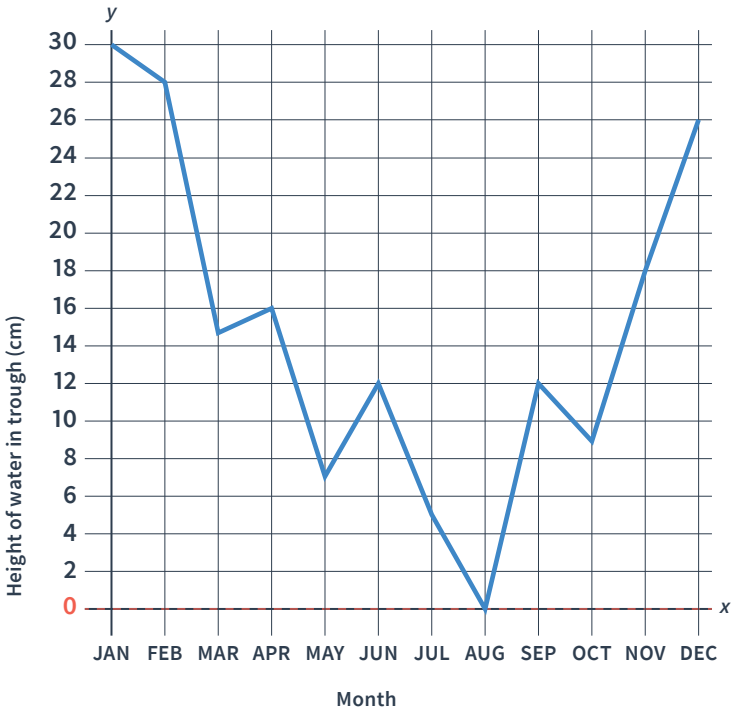
See mark scheme

for example

$18\frac{2}{3}$

2 marks

Q3 This line graph shows the height in cm of a water trough in Mr Edwards' back garden.



a Mr Edwards says, "There was the same amount of water in the trough in December as there was in two of the other months put together."

Which two months could he be talking about?

June

November

1 mark

b Which two months of the year was the water level at its lowest? Give a reason why this might be.

July and August

See mark scheme

for example

1 mark

	Requirement	Mark	Additional guidance
Q1	$\frac{7}{9}$	1	
Q2	Award **ONE** mark for any answer that recognises that 16 has been added to the numerator, rather than treating it as a whole number. Award **ONE** mark for the corrected answer of $18\frac{2}{3}$.	2	
Q3a	Accept either: June and November **OR** September and November (Three-letter abbreviations are acceptable)	1	
Q3b	The water level was at its lowest in July and August. Accept any reasonable explanation for this. For example: This might be because these are summer months and it rains less in the summer. Award the mark for an appropriate explanation as well as the identification of when the water was at its lowest.	1	

Q1 This table shows the masses of four different dogs.

	Dog name	Mass (kg)
A	Alfie	24.09
B	Bruno	24.083
C	Carlos	24.1
D	Dappy	24.058

Write the letters A to D in order of lightest to heaviest dog.

Lightest

1 mark

Q2 Mrs Bragg buys $\frac{5}{6}$ of a whole chocolate cake from her local bakers.

She gives a piece to her neighbour that is equivalent to $\frac{4}{12}$ of the whole cake.

What fraction of the original cake is left for herself?

$\frac{\square}{\square}$

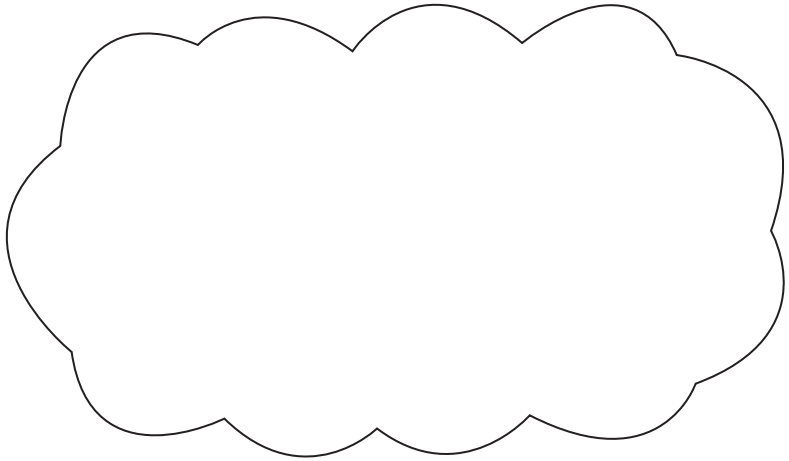
1 mark

Q3 Edward is writing a method to find the answer to 146 × 35.

He writes:

STEP ONE: Multiply 146 by 5
STEP TWO: Multiply 146 by 3
STEP THREE: Add the two numbers together.

Explain the mistake Edward has made.



1 mark

Q1 This table shows the masses of four different dogs.

	Dog name	Mass (kg)
A	Alfie	24.09
B	Bruno	24.083
C	Carlos	24.1
D	Dappy	24.058

Write the letters A to D in order of lightest to heaviest dog.

D	B	A	C

Lightest

1 mark

Q2 Mrs Bragg buys $\frac{5}{6}$ of a whole chocolate cake from her local bakers.

She gives a piece to her neighbour that is equivalent to $\frac{4}{12}$ of the whole cake.

What fraction of the original cake is left for herself?

$\frac{6}{12}$

1 mark

Q3 Edward is writing a method to find the answer to 146 × 35.

He writes:

STEP ONE: Multiply 146 by 5
STEP TWO: Multiply 146 by 3
STEP THREE: Add the two numbers together.

Explain the mistake Edward has made.

See mark scheme for example

1 mark

	Requirement	Mark	Additional guidance
Q1	D B A C	1	
Q2	$\frac{6}{12}$ **OR** $\frac{1}{2}$ Accept any other fractions equivalent to $\frac{1}{2}$.	1	
Q3	Answer should mention that, in Step 2, 146 should be multiplied by 30, not by 3.	1	

What are examiners looking for?

Q1 **This table shows the masses of four different dogs.**

	Dog name	Mass (kg)
A	Alfie	24.09
B	Bruno	24.083
C	Carlos	24.1
D	Dappy	24.058

Write the letters A to D in order of lightest to heaviest dog.

D	B	A	C

Lightest

1 mark

Why are we asking this question?

This question is designed to assess children's ability to read, compare and order numbers with up to three decimal places.

What common errors do we expect to see?

Some children may think that the more digits a number has after the decimal point, the greater the number (so, in this question, 24.1 is the smallest number).

Some children may read the digits after the decimal point as they would a number. For example, they may read 24.09 as 'twenty-four point nine' and 24.083 as 'twenty-four point eighty-three'. By doing this, they would incorrectly think that 24.083 is the larger decimal.

How to encourage children to solve this question

Encourage children to sketch a place-value grid (from tens through to thousandths) and to write each number within the grid. Doing this will ensure that (a) the numbers are correctly aligned before comparing them and (b) children are encouraged to consider the place-value of each digit. Ask which digit has the most value in their numbers — so which digit should they compare first?

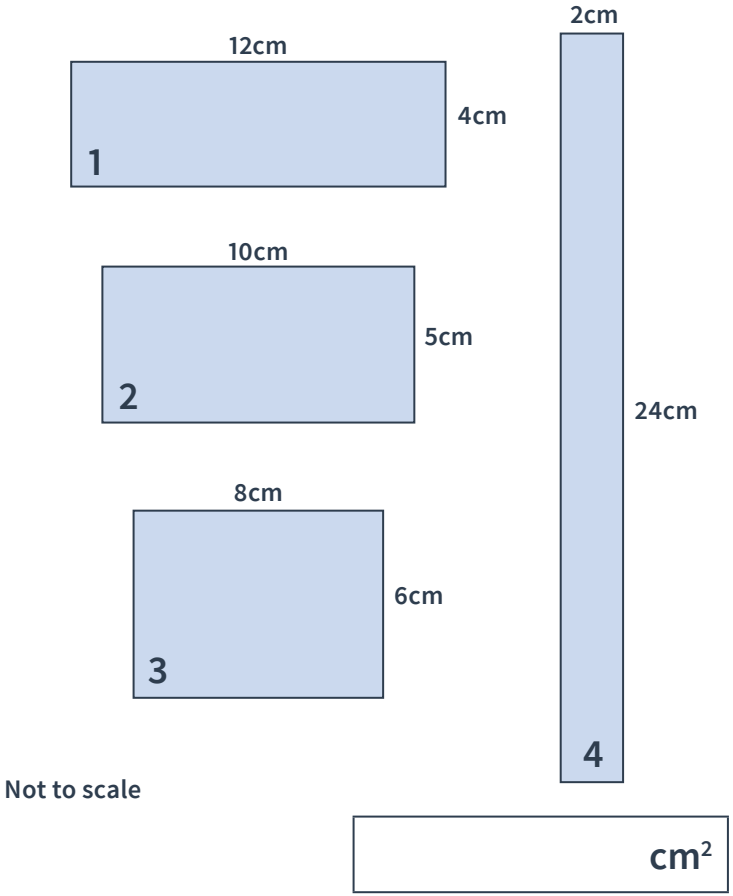
Children may find it beneficial to cover up their numbers with a piece of paper and to move it from left to right, revealing one column at a time. Doing this will enable children to focus on each column in turn, rather than becoming distracted by the length of a number after the decimal point.

Q1 Complete the table to show how different decimals change when they are rounded.

Decimal	Rounded to the nearest whole number	Rounded to one decimal place
14.73	15	14.7
	27	26.7
	85	85
	38	37.8

2 marks

Q2 One of these rectangles has a different area to all the others. What is the area of the odd one out?



Not to scale

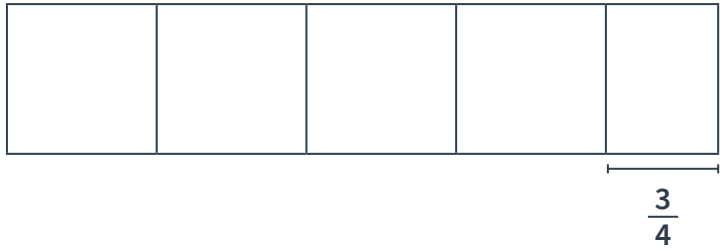
cm^2

1 mark

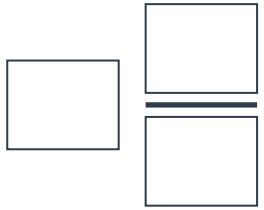
Q3 Mr Greaves is putting tiles on his bathroom wall.

He needs $4\frac{3}{4}$ tiles to complete a row.

There are 5 rows altogether.



How many tiles will Mr Greaves need altogether? Write your answer as a mixed number.

 tiles

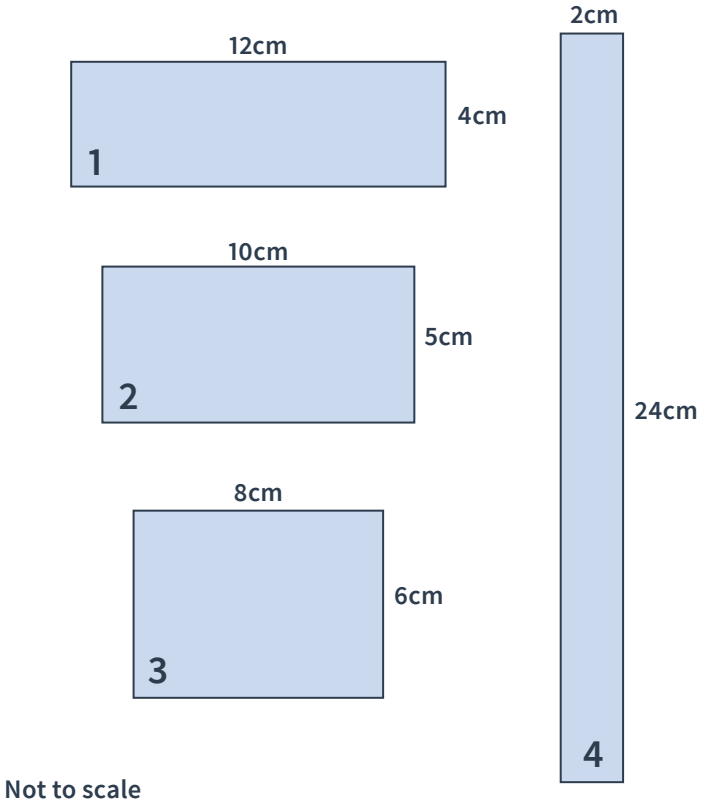
1 mark

Q1 Complete the table to show how different decimals change when they are rounded.

Decimal	Rounded to the nearest whole number	Rounded to one decimal place
14.73	15	14.7
26.65	27	26.7
84.95	85	85
37.75	38	37.8

2 marks

Q2 One of these rectangles has a different area to all the others. What is the area of the odd one out?



50 cm²

1 mark

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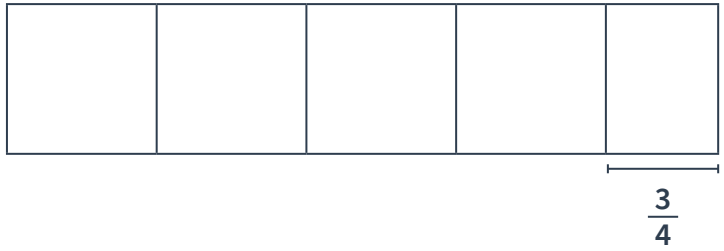

How many tiles will Mr Greaves need altogether? Write your answer as a mixed number.

23 $\frac{3}{4}$ tiles

1 mark

	Requirement	Mark	Additional guidance
Q1	a) accept any decimal from 26.65 to 26.74 b) accept any decimal from 84.95 to 85.04 c) accept any decimal from 37.75 to 37.84 Award **TWO** marks for three correct decimals. Award **ONE** mark for any two correct decimals.	2	
Q2	$50cm^2$	1	
Q3	$23\ \frac{3}{4}$ tiles	1	

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Rapid Reasoning

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

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- Boost confidence

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