



THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions
and curriculum resources

Rapid Reasoning

Year 5 | Week 2

As this is still towards the start of the introduction of Year 5 *Rapid Reasoning*, children should be continuing to focus on increasing their reasoning confidence each day.

The Year 5 objectives introduced this week continue to focus on **place value**. As with all weeks of *Rapid Reasoning*, there continues to be content covered from across the maths curriculum.

Year 5 objectives introduced in a reasoning context for the first time this week include:

- rounding any number to up 1,000,000 to any degree of accuracy
- counting forward and backwards (using their place value skills) in steps of multiples of 10, up to and including 1,000,000.

The following Year 5 objectives continue to be a focus from week 1:

- reading, writing, ordering and comparing numbers up to 1,000,000
- recognising the place value of each digit in a number up to 1,000,000.

Objectives from *Fluent in Five* that are also tested in a reasoning context this week include:

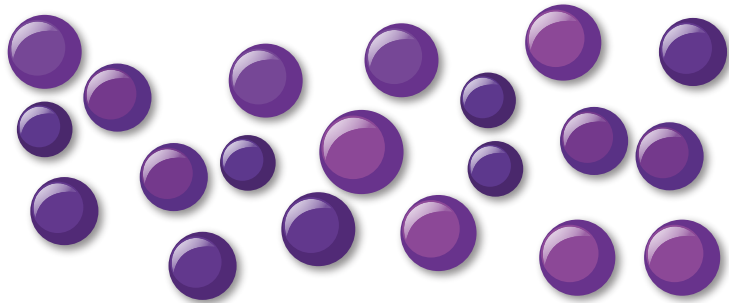
- finding fractions of number
- recalling multiplication and division facts up to 12×12 .

Please note that some questions are worth two marks, and by their very nature, answers to these questions are never clear-cut. For a full breakdown of how marks would be awarded for these questions, please refer to the mark schemes provided.

Q1

Anika has 20 grapes.
She gives $\frac{1}{5}$ of the grapes to her sister.

Draw a ring around the number of grapes she has left.



1 mark

Q2

This table shows how numbers change when they are rounded in different ways.

Complete the missing numbers.

| Number | Rounded to the nearest 1,000 | Rounded to the nearest 100,000 |
|---------|------------------------------|--------------------------------|
| 175,461 | | 200,000 |
| 119,397 | 119,000 | |
| 655,603 | | |

2 marks

Q3

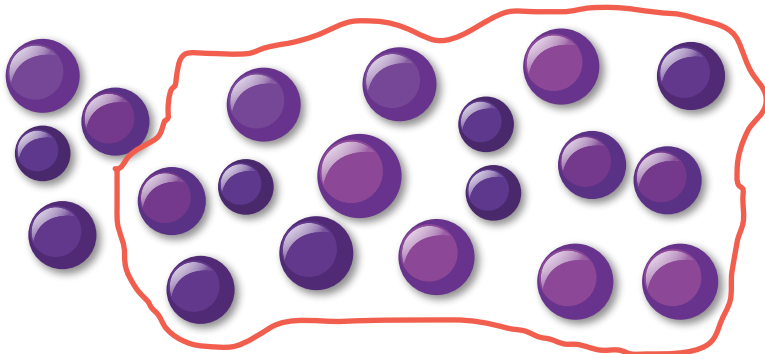
Chelsea thinks of a number.
She subtracts 546 from it.
The answer is 258.

What was the number Chelsea first thought of?

1 mark

Q1 Anika has 20 grapes.
She gives $\frac{1}{5}$ of the grapes to her sister.

Draw a ring around the number of grapes she has left.



1 mark

Q2 This table shows how numbers change when they are rounded in different ways.

Complete the missing numbers.

| Number | Rounded to the nearest 1,000 | Rounded to the nearest 100,000 |
|---------|------------------------------|--------------------------------|
| 175,461 | 175,000 | 200,000 |
| 119,397 | 119,000 | 100,000 |
| 655,603 | 656,000 | 700,000 |

2 marks

Q3 Chelsea thinks of a number.
She subtracts 546 from it.
The answer is 258.

What was the number Chelsea first thought of?

804

1 mark

| | Requirement | Mark | Additional guidance | | | | | | | | | | | | |
|---------|--|--------------------------------|------------------------------|--------------------------------|---------|----------------|---------|---------|---------|----------------|---------|----------------|----------------|---|--|
| Q1 | Ring should be drawn around any sixteen grapes. | 1 | | | | | | | | | | | | | |
| Q2 | <table border="1"> <thead> <tr> <th>Number</th> <th>Rounded to the nearest 1,000</th> <th>Rounded to the nearest 100,000</th> </tr> </thead> <tbody> <tr> <td>175,461</td> <td>175,000</td> <td>200,000</td> </tr> <tr> <td>119,397</td> <td>119,000</td> <td>100,000</td> </tr> <tr> <td>655,603</td> <td>656,000</td> <td>700,000</td> </tr> </tbody> </table> <p>ONE mark for two or three correct answers. TWO marks for all four correct answers.</p> | Number | Rounded to the nearest 1,000 | Rounded to the nearest 100,000 | 175,461 | 175,000 | 200,000 | 119,397 | 119,000 | 100,000 | 655,603 | 656,000 | 700,000 | 2 | |
| Number | Rounded to the nearest 1,000 | Rounded to the nearest 100,000 | | | | | | | | | | | | | |
| 175,461 | 175,000 | 200,000 | | | | | | | | | | | | | |
| 119,397 | 119,000 | 100,000 | | | | | | | | | | | | | |
| 655,603 | 656,000 | 700,000 | | | | | | | | | | | | | |
| Q3 | 804 | 1 | | | | | | | | | | | | | |

What are examiners looking for?

Q3

Chelsea thinks of a number.
She subtracts 546 from it.
The answer is 258.

What was the number Chelsea first thought of?

804

1 mark

Why are we asking this question?

This question has been written to test children's knowledge of the addition and subtraction of three-digit numbers. In particular, it has been designed to assess whether children can apply this knowledge inversely to solve missing number problems.

What common errors do we expect to see?

Some children may not comprehend what the question is asking, may see the word 'subtract' and may think that they are being asked to subtract 258 from 546. Any answer less than 546 may suggest that they have made this error, however an answer of 288 will mean that the subtraction was carried out successfully!

Some children may recognise that they need to add 546 and 258 to find the starting number, but may not regroup when adding the ones digits, (or forget to include the ten that they have regrouped). Children who make this mistake will give an answer of 794. $\frac{3}{4}$

How to encourage children to solve this question

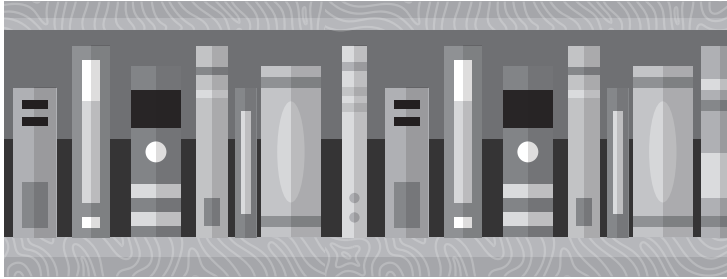
In order to visualise what the problem is asking, encourage children to begin by sketching a bar model. This should show an unknown starting number followed by an equivalent bar split into two: the number being subtracted and the answer that remains. Encourage children to then consider how they might find the unknown value. It should be clear from the bar model that they need to add 546 and 258.

| | |
|-----|-----|
| ? | |
| 546 | 258 |

If unsure which strategy to use to add the two numbers, encourage children to apply the formal written method of addition, which ensures that they consider the ones, tens and hundreds digits separately. The ones digits will result in an answer greater than 9 (which will then mean that the tens total will also result in an answer greater than 9). Children will need to apply their knowledge of regrouping to do this accurately and also ensure that they do not forget any tens or hundreds that they have regrouped.

When children have arrived at an answer, encourage them to plug this back into the original scenario in order to check that it is correct.

Q1 There are 14 books on a bookshelf.



Leah has read two of the books already.

What fraction of the books has Leah read?

| |
|--|
| |
| |

1 mark

Q2

- A $\times 8 = 96$
- B $36 \div 6 =$
- C $66 \div 6 =$
- D $\div 9 = 2$

Which of these calculations has a missing number that is not a multiple of 6?

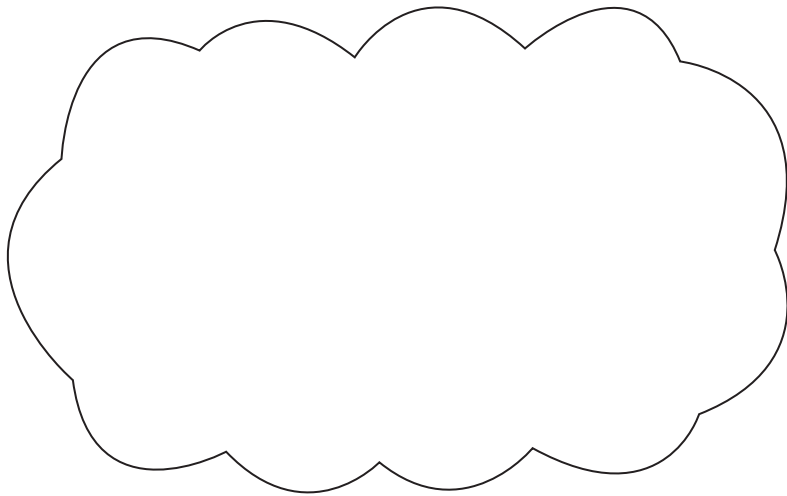
1 mark

Q3

Ria says, “If you want to round a number to the nearest 100,000, you just need to know the digit in the 100,000 place.”

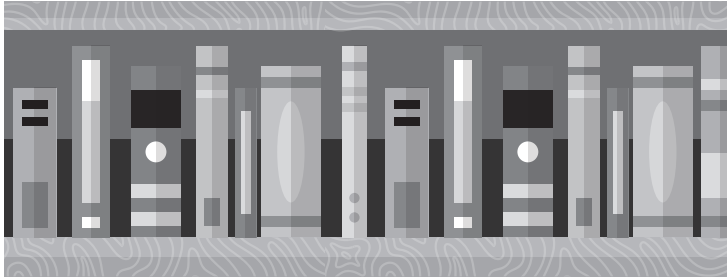
Is Ria correct? Circle yes or no and explain your answer.

Yes / No



1 mark

Q1 There are 14 books on a bookshelf.



Leah has read two of the books already.

What fraction of the books has Leah read?

1

7

1 mark

Q2

A $\times 8 = 96$

B $36 \div 6 =$

C $66 \div 6 =$

D $\div 9 = 2$

Which of these calculations has a missing number that is not a multiple of 6?

C

1 mark

Q3

Ria says, “If you want to round a number to the nearest 100,000, you just need to know the digit in the 100,000 place.”

Is Ria correct? Circle yes or no and explain your answer.

Yes / **No**

*See mark scheme
for examples*

1 mark

| | Requirement | Mark | Additional guidance |
|----|---|------|---------------------------------------|
| Q1 | $\frac{1}{7}$ (or $\frac{2}{14}$) | 1 | Accept any other equivalent fraction. |
| Q2 | C | 1 | |
| Q3 | No. Ria is not correct because the ten thousands digit is also needed to know whether to round the hundred thousands digit up or down. | 1 | |

Q1 Iona starts with the number 735,471.
She counts forwards in jumps of 1,000.

a How many jumps will Iona make before the digit in the ten-thousands place changes?

1 mark

b What is Iona's new number?

1 mark

Q2 One of these amounts is less than all the others. Which is it?

A $\frac{1}{2}$ of a packet of 30 sweets

B $\frac{1}{6}$ of a packet of 60 sweets

C $\frac{2}{5}$ of a packet of 20 sweets

D $\frac{2}{3}$ of a packet of 15 sweets

1 mark

Q3 The answer to an addition question is 728.
Both numbers being added have three digits.
All of the digits in the two numbers are different.

What could the question be?

1 mark

Q1 Iona starts with the number 735,471.
She counts forwards in jumps of 1,000.

a How many jumps will Iona make before the digit in the ten-thousands place changes?

5 jumps

1 mark

b What is Iona's new number?

740,471

1 mark

Q2 One of these amounts is less than all the others. Which is it?

A $\frac{1}{2}$ of a packet of 30 sweets

B $\frac{1}{6}$ of a packet of 60 sweets

C $\frac{2}{5}$ of a packet of 20 sweets

D $\frac{2}{3}$ of a packet of 15 sweets

1 mark

Q3 The answer to an addition question is 728.
Both numbers being added have three digits.

All of the digits in the two numbers are different.

What could the question be?

105 + 623

1 mark

| | Requirement | Mark | Additional guidance |
|-----|--|------|---|
| Q1a | 5 jumps | 1 | |
| Q1b | 740,471 | 1 | |
| Q2 | C | 1 | The amounts are: A $\frac{1}{2}$ of a packet of 30 sweets = 15 B $\frac{1}{6}$ of a packet of 60 sweets = 10 C $\frac{2}{5}$ of a packet of 20 sweets = 8 D $\frac{2}{3}$ of a packet of 15 sweets = 10 |
| Q3 | Accept any HTO + HTO calculation with a total of 728, where both numbers contain different digits, for example: 105 + 623 | 1 | |

Q1

Complete this multiplication table.

| | | |
|---|----|----|
| × | 6 | |
| 7 | 42 | 56 |
| | 30 | |
| | 72 | |

2 marks

Q2

A number becomes 790,000 when rounded to the nearest 10,000.

a

What is the largest number that it could be?

1 mark

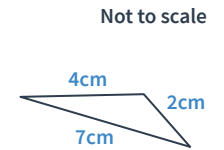
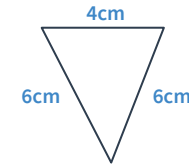
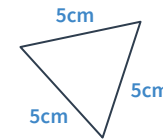
b

What is the smallest number that it could be?

1 mark

Q3

Match up each triangle with its correct name and property.



scalene triangle

equilateral triangle

isosceles triangle

all sides the same length

no sides the same length

two sides the same length

1 mark

Q1 Complete this multiplication table.

| | | |
|----|----|----|
| × | 6 | 8 |
| 7 | 42 | 56 |
| 5 | 30 | 40 |
| 12 | 72 | 96 |

2 marks

Q2 A number becomes 790,000 when rounded to the nearest 10,000.

a What is the largest number that it could be?

794,999

1 mark

b What is the smallest number that it could be?

785,000

1 mark

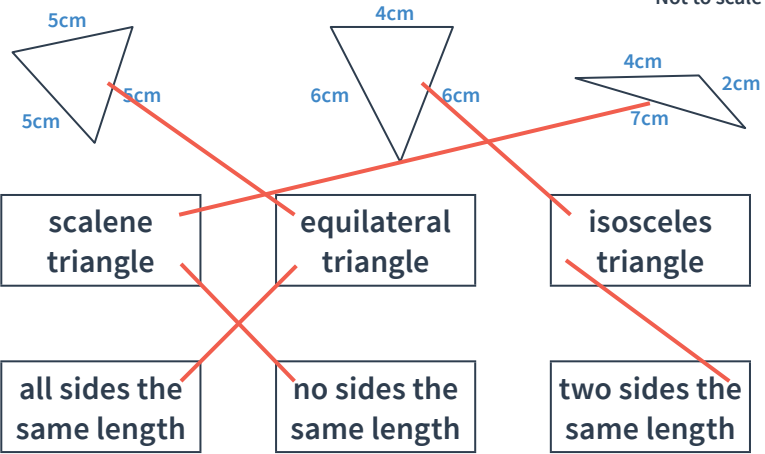
Q3 Match up each triangle with its correct name and property.

Not to scale

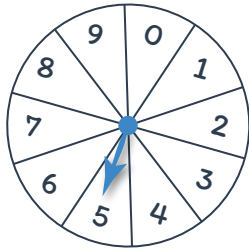
scalene triangle equilateral triangle isosceles triangle
 all sides the same length no sides the same length two sides the same length

The diagram shows three triangles and three boxes. Red lines connect the triangles to the boxes: the scalene triangle connects to 'no sides the same length', the equilateral triangle connects to 'all sides the same length', and the isosceles triangle connects to 'two sides the same length'.

1 mark

| | Requirement | Mark | Additional guidance | | | | | | | | | | | | |
|-----------|---|-----------|--|----------|---|----|----|----------|----|-----------|-----------|----|-----------|---|--|
| Q1 | <table border="1" data-bbox="219 311 786 678"> <tr> <td>x</td> <td>6</td> <td>8</td> </tr> <tr> <td>7</td> <td>42</td> <td>56</td> </tr> <tr> <td>5</td> <td>30</td> <td>40</td> </tr> <tr> <td>12</td> <td>72</td> <td>96</td> </tr> </table> <p data-bbox="219 710 846 821">ONE mark for three correct answers. TWO marks for all correct answers.</p> | x | 6 | 8 | 7 | 42 | 56 | 5 | 30 | 40 | 12 | 72 | 96 | 2 | |
| x | 6 | 8 | | | | | | | | | | | | | |
| 7 | 42 | 56 | | | | | | | | | | | | | |
| 5 | 30 | 40 | | | | | | | | | | | | | |
| 12 | 72 | 96 | | | | | | | | | | | | | |
| Q2a | 794,999 | 1 | | | | | | | | | | | | | |
| Q2b | 785,000 | 1 | | | | | | | | | | | | | |
| Q3 | <p data-bbox="869 997 981 1021">Not to scale</p>  | 1 | All shapes and properties matched correctly to achieve the mark. | | | | | | | | | | | | |

Q1



a Declan spins the spinner twice and multiplies his two digits together. He gets the answer 0.

Which digit must one of his digits have been?

1 mark

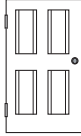


b Katie spins the spinner twice and multiplies her two digits together. She doesn't land on a 0 either time. Her answer is the same as one of her digits.

Which digit must one of the digits have been?

1 mark

Q2

Circle the best estimate for each measurement.

| Measurement | Estimate | | |
|---|----------|----------|---------|
|  the height of a door | 3 metres | 2 metres | 1 metre |
|  the mass of an apple | 500g | 100g | 1,000g |
|  the capacity of a can of lemonade | 30ml | 3,000ml | 300ml |

1 mark

Q3

Complete these sentences with the words **always**, **sometimes** or **never**.

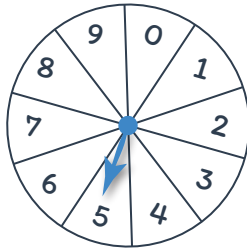
Multiples of 7 are _____ even.

Multiples of 12 are _____ odd.

Multiples of 12 are _____ multiples of 3.

2 marks

Q1



- a Declan spins the spinner twice and multiplies his two digits together. He gets the answer 0.

Which digit must one of his digits have been?

0

- b Katie spins the spinner twice and multiplies her two digits together. She doesn't land on a 0 either time. Her answer is the same as one of her digits.

Which digit must one of the digits have been?

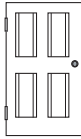


1

1 mark

1 mark

Q2

Circle the best estimate for each measurement.

| Measurement | Estimate | | |
|---|----------|----------|---------|
|  the height of a door | 3 metres | 2 metres | 1 metre |
|  the mass of an apple | 500g | 100g | 1,000g |
|  the capacity of a can of lemonade | 30ml | 3,000ml | 300ml |

1 mark

Q3

Complete these sentences with the words **always**, **sometimes** or **never**.

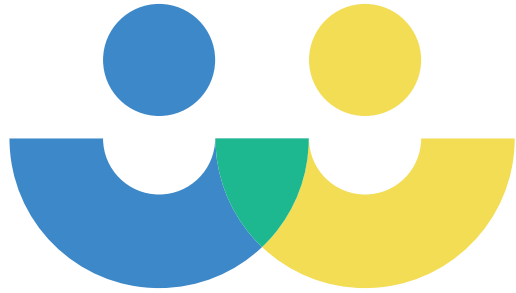
Multiples of 7 are sometimes even.

Multiples of 12 are never odd.

Multiples of 12 are always multiples of 3.

2 marks

| | Requirement | Mark | Additional guidance |
|-----|---|------|---------------------|
| Q1a | One of his digits is 0. | 1 | |
| Q1b | One of her digits is 1. | 1 | |
| Q2 | 2 metres 100g 300ml | 1 | |
| Q3 | sometimes, never, always Award TWO marks for all three correctly completed. Award ONE mark for two correctly completed. | 2 | |



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Rapid Reasoning


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