THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions and curriculum resources

Rapid Reasoning

Year 4 | Week 1

This is the first week that children will have met *Rapid Reasoning* in Year 4 and therefore they may find it more challenging to begin with. Depending on your class, you may wish to introduce children to the expectation of completing two questions initially, before extending to all three questions by the end of the week.

As we are at the start of Year 4, the majority of the objectives covered this week involve Year 3 content. The Year 3 objectives that are re-introduced this week focus on **place value.**

Year 4 objectives introduced in a reasoning context for the first time this week include:

- ordering and comparing numbers beyond 1,000
- recognising the place value of each digit in a four-digit number (extending from a three-digit number in Year 3).

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

- adding a three-digit number and ones
- finding unit fractions of a number
- basic written multiplication division addition and subtraction from Year 4.

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.

We hope your class enjoys this first week of *Rapid Reasoning*!

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Q1 Write the value of the digit 3 shown in the numbers below in the box next to each number.

40**3**	
50**3**0	
3021	

2 marks

Q2

669 + 6 = ? 654 + 5 = ?

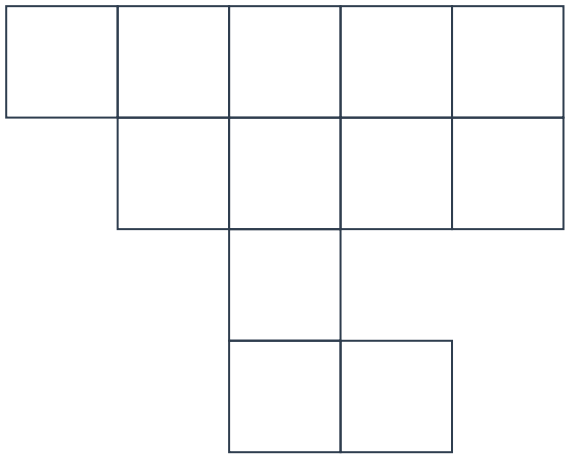
695 − 20 = ?

663 − 5 = ? 654 − 5 = ?

Circle the two number sentences above that have the **same** answer.

1 mark

Q3 Shade $\frac{1}{4}$ of this shape.



1 mark

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Q1 Write the value of the digit 3 shown in the numbers below in the box next to each number.

40**3**	3
50**3**0	30
3021	3000

2 marks

Q2

669 + 6 = ? 654 + 5 = ?

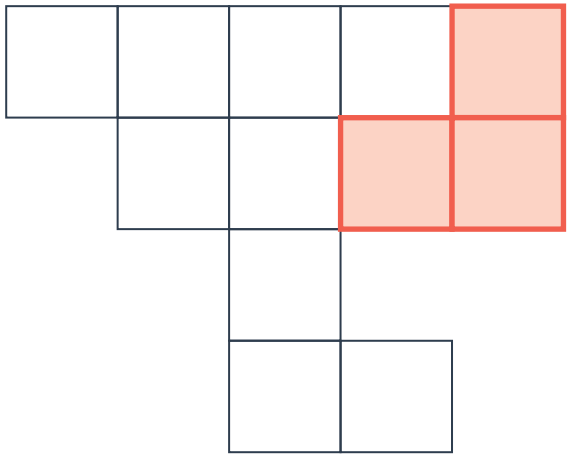
695 − 20 = ?

663 − 5 = ? 654 − 5 = ?

Circle the two number sentences above that have the **same** answer.

1 mark

Q3 Shade $\frac{1}{4}$ of this shape.



1 mark

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	Requirement	Mark	Additional guidance
Q1	Award **TWO** marks for all correct answers. Award **ONE** mark for two correct answers. 40**3** **3** 50**3**0 **30** **3**021 **3000**	2	Also accept the values written in words.
Q2	669 + 6 = ? 695 − 20 = ? Circled	1	**BOTH** must be circled for the award of the mark.
Q3	Any three squares circled.	1	

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What are examiners looking for?

Q1 **Write the value of the digit 3 shown in the numbers below in the box next to each number.**

40<u>3</u>	3
50<u>3</u>0	30
<u>3</u>021	3000

2 marks

Why are we asking this question?

This question is designed to test children's understanding of place value in numbers with up to four digits, and how the value of a digit changes based on its position within the number.

What common errors do we expect to see?

Children identify all values as 3. This indicates that children have a limited understanding of place value and assume that the digit 3 has the value of 3 regardless of its place in a number.

Children incorrectly identify the place value of one or more digits, for example, they may record the answer of 300 for 3021. This indicates that children have become confused with the place value values for different places in the number. This can especially emerge at this time in Year 4, when children are being exposed to numbers with more than 3 digits for the first time.

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How to encourage children to solve this question

When solving place value problems, children should be encouraged to draw their own place value grid, such as the one shown below.

Thousands	Hundreds	Tens	Ones
	1	8	7

They can then add the numbers from the question to their grid.

Thousands	Hundreds	Tens	Ones
	4	0	3
5	0	3	0
3	0	2	1

They can then use this to identify the value of the digit 3 in each number. For example, they can easily see that in 3021, the 3 is worth 3 **thousands**, and therefore 3,000.

Children should be careful if they add the place value labels or names directly to the table provided in the question, as this has been designed to ensure children have a clear understanding of place value, and therefore the top number is aligned so that the hundreds value is over the thousands value of the other numbers.

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Q1 A shop has a 10m roll of fabric.

Mark buys 75cm of fabric from the roll.

Lily buys 2 metres of fabric from the roll.

How much fabric is **left** on the roll?

2 marks

Q2 Balloons come in packets of six.

For her party, Eden needs 36 balloons.

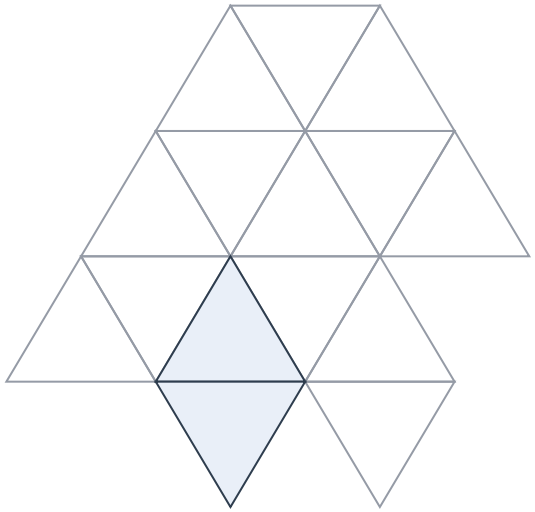
How many packets does she need?

packets

1 mark

Q3 Shade **more** of these shapes so that $\frac{1}{3}$ of each shape is shaded.

a



1 mark

b

1 mark

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Q1 A shop has a 10m roll of fabric.

Mark buys 75cm of fabric from the roll.

Lily buys 2 metres of fabric from the roll.

How much fabric is **left** on the roll?

7.25m

2 marks

Q2 Balloons come in packets of six.

For her party, Eden needs 36 balloons.

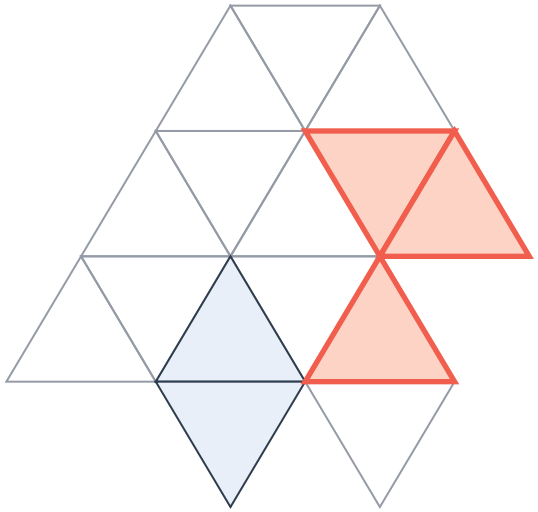
How many packets does she need?

6 packets

1 mark

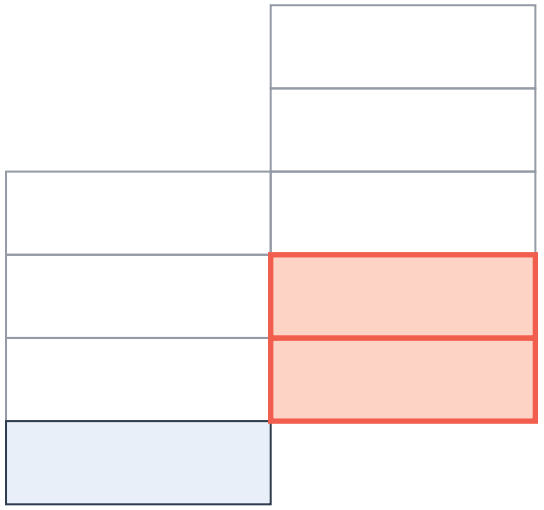
Q3 Shade **more** of these shapes so that $\frac{1}{3}$ of each shape is shaded.

a



1 mark

b



1 mark

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	Requirement	Mark	Additional guidance
Q1	Award **TWO** marks for the correct answer of 7.25m, 7m 25cm OR 725cm. Also accept 7.25 or 7250. Award **ONE** mark for evidence of a full method with up to one arithmetic error. For example, 2 meters = 200cm 200 + 75 = 275 10 meters = 1000cm 1000 − 275 = wrong answer	2	The conversion from m to cm (or vice versa) must have been accurately completed for the award of **ONE** mark.
Q2	6	1	
Q3a	Three more triangles shaded	1	
Q3b	Two more rectangles shaded	1	

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Q1 Place these numbers in order, starting with the smallest.

1,250	550	2,150
1,040	22,005	5,005

smallest

_____

_____

_____

_____

_____

_____

1 mark

Q2 Look at these number sentences.

504 + 200 = ? ☐	865 + 8 = ? ☐
765 − 30 = ? ☐	867 + 384 = ? ☐
760 − 382 = ? ☐	7 + 374 = ? ☐
672 − 284 = ? ☐	600 + 231 = ? ☐

Tick (✓) the number sentences that you **would not** be able to solve **quickly mentally.**

2 marks

Q3 There are 15kg of bricks in each pack.

How many kilograms of bricks are in 5 packs?

_____ kg

1 mark

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Q1 Place these numbers in order, starting with the smallest.

1,250	550	2,150
1,040	22,005	5,005

smallest
550
1,040
1,250
2,150
5,005
22,005

1 mark

Q2 Look at these number sentences.

504 + 200 = ? ☐	865 + 8 = ? ☐
765 − 30 = ? ☐	867 + 384 = ? ☑
760 − 382 = ? ☑	7 + 374 = ? ☐
672 − 284 = ? ☑	600 + 231 = ? ☐

Tick (✓) the number sentences that you **would not** be able to solve **quickly mentally.**

2 marks

Q3 There are 15kg of bricks in each pack.

How many kilograms of bricks are in 5 packs?

75 kg

1 mark

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	Requirement	Mark	Additional guidance
Q1	550 1,040 1,250 2,150 5,005 22,005	1	
Q2	Award **TWO** marks for 760 − 382 = ? 867 + 384 = ? 672 − 284 = ? all ticked. Award **ONE** mark for either: two correctly ticked with none incorrectly ticked. **OR** three correctly ticked with up to one incorrectly ticked.	2	Number sentences do not need to be evaluated for the award of the marks.
Q3	75kg	1	

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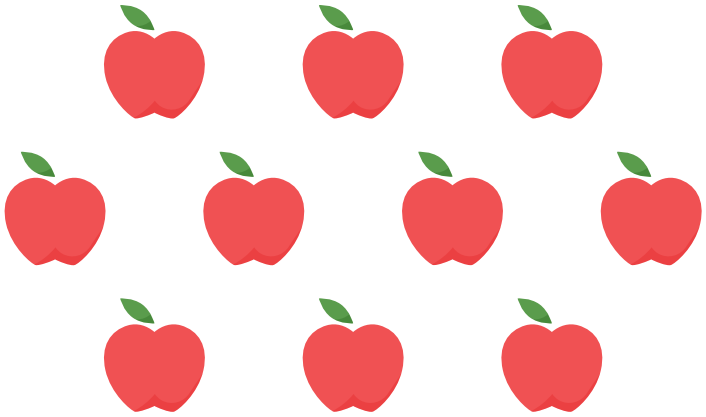
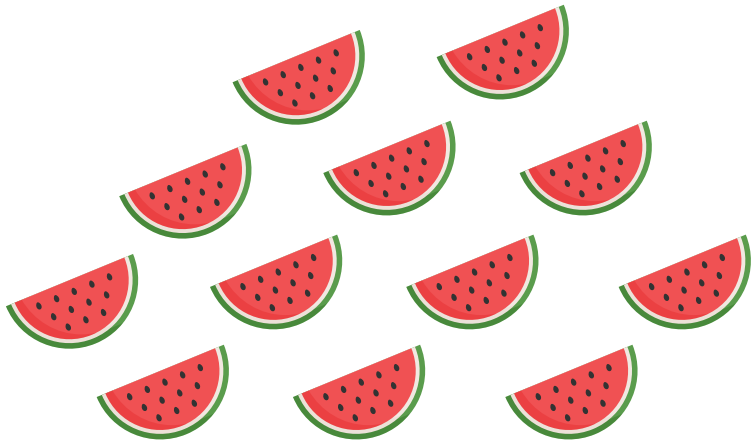
Q1

a Circle $\frac{3}{5}$ of the apples.



1 mark

b Circle $\frac{5}{6}$ of the watermelons.



1 mark

Q2

Evie and Gracie have both got this number sentence to solve.

$$871 + 20 = ?$$

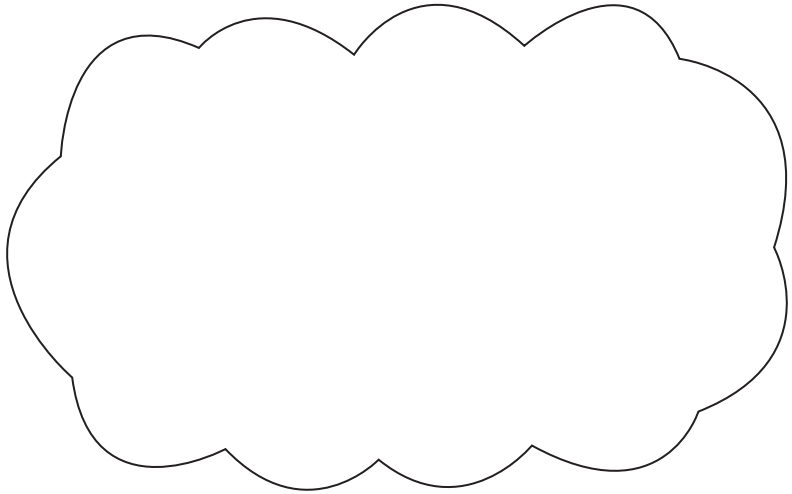
Evie says she can solve this mentally.

Gracie says she thinks that you have to use a written method.

Who is correct?

Evie ☐ Gracie ☐

How do you know?



1 mark

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Q3 In each pair of numbers, circle the number where the digit 5 is worth the most.

4503	3052
5043	9502
9850	3512

2 marks

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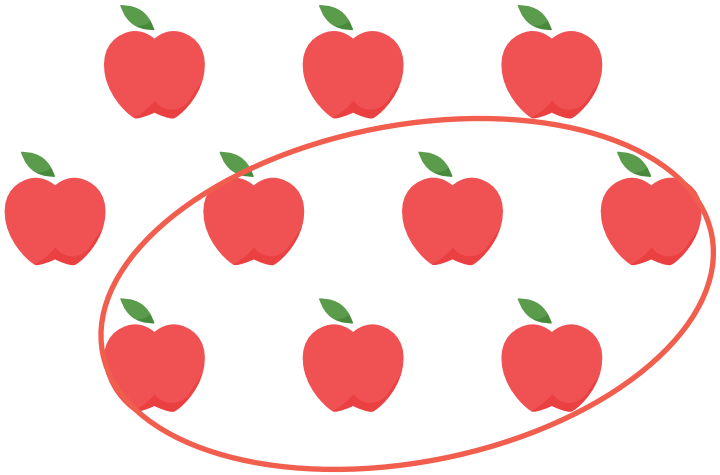
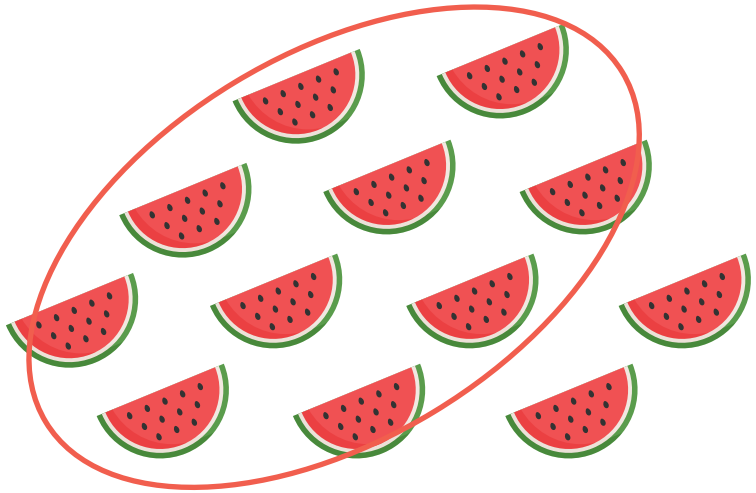
Q1

a Circle $\frac{3}{5}$ of the apples.



1 mark

b Circle $\frac{5}{6}$ of the watermelons.



1 mark

Q2

Evie and Gracie have both got this number sentence to solve.

$$871 + 20 = ?$$

Evie says she can solve this mentally.

Gracie says she thinks that you have to use a written method.

Who is correct?

Evie ☑ Gracie ☐

How do you know?

See mark scheme for examples

1 mark

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Q3 In each pair of numbers, circle the number where the digit 5 is worth the most.

4503	3052
5043	9502
9850	3512

2 marks

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	Requirement	Mark	Additional guidance
Q1a	Any six apples circled.	1	
Q1b	Any 10 watermelons slices circled.	1	
Q2	Award **ONE** mark for the correct identification of Evie **AND** an explanation that explains that either as you are adding 'tens' only the tens digit will change in the number. For example: Evie is correct as you are adding 20 which is two tens. This means only the tens digit in 871 will change, so you can do that in your head. Only the tens digit will change.	1	Do **NOT** accept vague explanations for example: You can do it in your head easily. It's just adding tens.
Q3	Award **TWO** marks for all three numbers correctly circled. Award **ONE** mark for two numbers correctly circled. **4503** 3052 **5043** 9502 9850 **3512**	2	

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Q1 The numbers in this sequence increase by 7 each time.

53 60 ☐ ☐ 81 88 ☐

Write in the missing numbers.

2 marks

Q2 There are **6** pencils in each pack.

There are **33** children in Toucan class.

The teacher needs to buy **two** pencils for each child.

How many packs of pencils does the teacher need to buy?

packs

2 marks

Q3 Mark buys a magazine for £2.10 and a chocolate bar for 85p.

He pays with a £5 note.

How much change does Mark get?

£

1 mark

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Q1 The numbers in this sequence increase by 7 each time.

53 60 **67** **74** 81 88 **95**

Write in the missing numbers.

2 marks

Q2 There are **6** pencils in each pack.

There are **33** children in Toucan class.

The teacher needs to buy **two** pencils for each child.

How many packs of pencils does the teacher need to buy?

11 packs

2 marks

Q3 Mark buys a magazine for £2.10 and a chocolate bar for 85p.

He pays with a £5 note.

How much change does Mark get?

£ **2.05**

1 mark

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	Requirement	Mark	Additional guidance
Q1	Award **TWO** marks for all three numbers correctly completed. 53 60 **67** **74** 81 88 **95** Award **ONE** mark for two numbers correctly completed.	2	
Q2	Award **TWO** marks for the correct answer of 11 packs. Award **ONE** mark for evidence of a complete working, but with one arithmetic error, for example: 33 × 2 = 66 66 ÷ 6 = wrong answer.	2	
Q3	£2.05	1	

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Rapid Reasoning

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