



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 19

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

This week, children will be introduced to adding and subtracting fractions with the same denominator and denominators that are multiples of the same number for the first time in Year 5.

As with previous weeks, other content from Year 5 that the children have met in previous weeks of *Rapid Reasoning*, along with Year 4 objectives, will also feature this week.

Q1

Mo is on a journey that is 40km long.
He has $\frac{3}{8}$ of the journey left.

How many kilometres does Mo have left?

km

1 mark

Q2

Every day, Westbury Council's Litter Squad manages to clean up litter along 2,520m of roadside verges.

How many metres of roadside verges will the Council clean in two weeks?

m

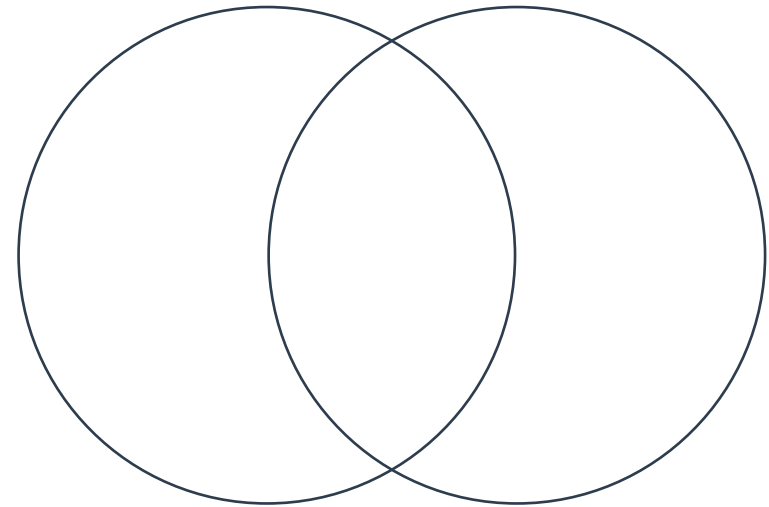
2 marks

Q3

This Venn diagram is a way of showing the factors of 26 and 39.

Factors of 26

Factors of 39



Write all the factors that belong in the centre section.

1 mark

- Q1** Mo is on a journey that is 40km long.
He has $\frac{3}{8}$ of the journey left.

How many kilometres does Mo have left?

15 km

1 mark

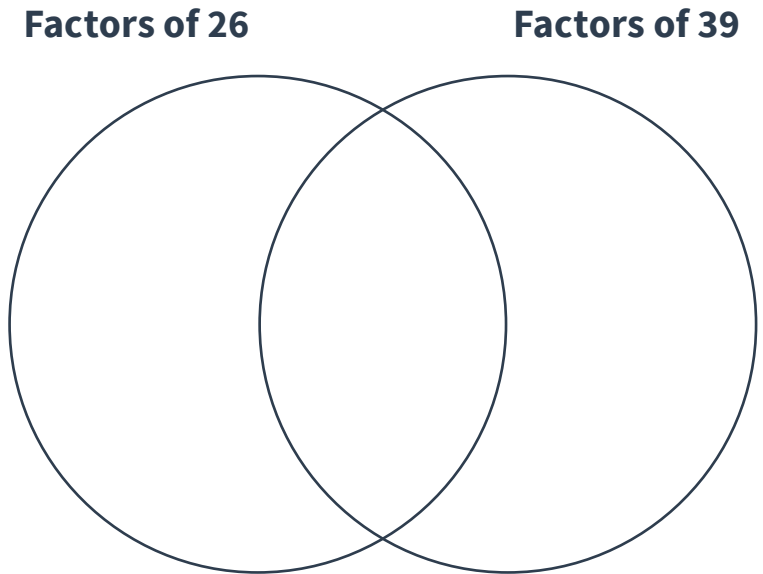
- Q2** Every day, Westbury Council's Litter Squad manages to clean up litter along 2,520m of roadside verges.

How many metres of roadside verges will the Council clean in two weeks?

35,280 m

2 marks

- Q3** This Venn diagram is a way of showing the factors of 26 and 39.



Write all the factors that belong in the centre section.

1, 13

1 mark

	Requirement	Mark	Additional guidance
Q1	15km	1	
Q2	35,280 metres Award TWO marks for a correct answer. Award ONE mark for a correct method with one arithmetic error.	2	An appropriate method could be: $2,520 \times 10 = 25,200$ $\begin{array}{r} 2,520 \\ \times 10 \\ \hline 25,200 \end{array}$ $\begin{array}{r} 25,200 \\ + 10,080 \\ \hline 35,280 \end{array}$
Q3	1, 13	1	

Q1

A bakery produces doughnuts and packages them in bags of six.

In one day, it produces 1,305 doughnuts.

How many full bags has the bakery made by the end of the day?

full bags

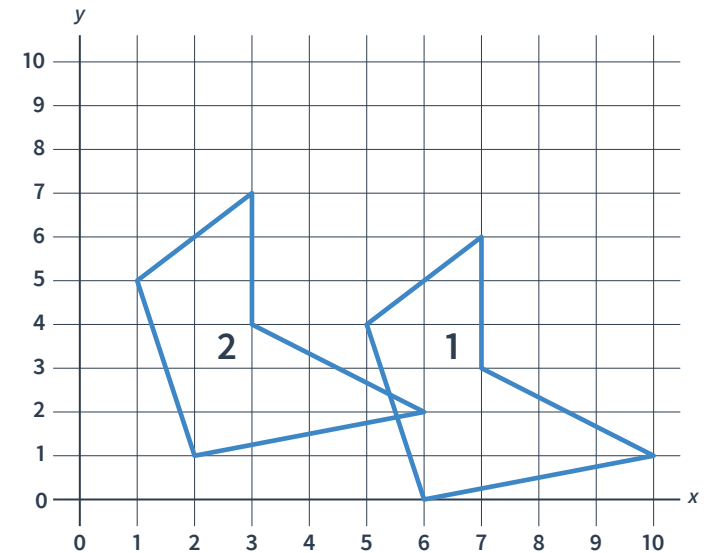
1 mark

Q2

Elliott draws a pentagon on a coordinate grid.

He labels it shape 1.

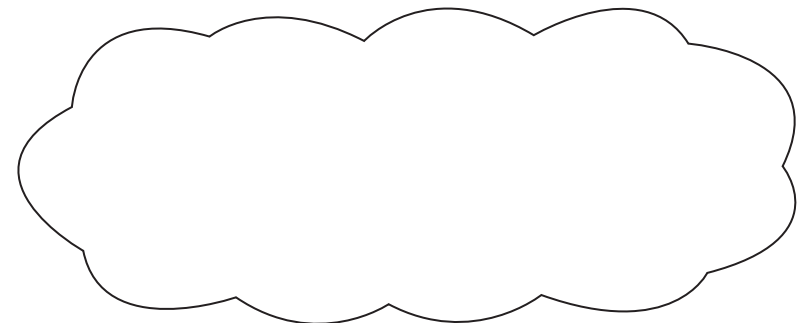
He then moves his shape into a new position and labels it as shape 2.



Elliott says, “My shape has moved four squares to the right and one square up.”

Is Elliott correct? YES / NO

Explain your answer.



2 marks

Q3

Louise is allowed to play on her computer for $\frac{3}{4}$ of an hour before she has to do her homework.

She has already been playing for $\frac{1}{8}$ of an hour.

How long does Louise have left? Write your answer as a fraction of an hour.

	hour

1 mark

Q1

A bakery produces doughnuts and packages them in bags of six.

In one day, it produces 1,305 doughnuts.

How many full bags has the bakery made by the end of the day?

217 full bags

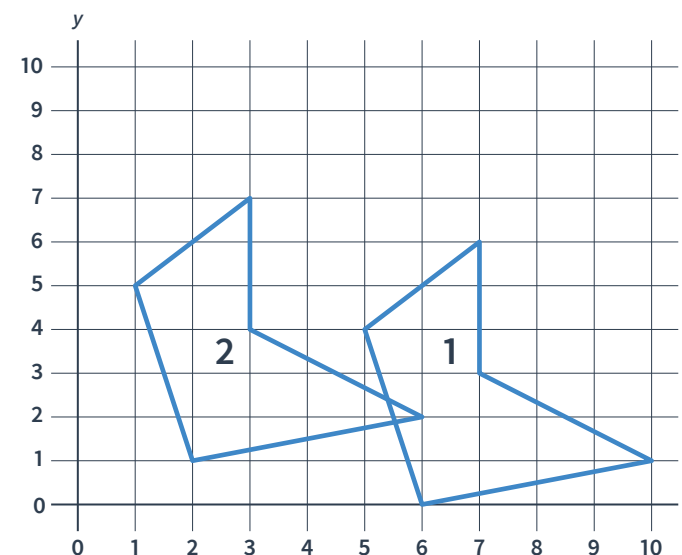
1 mark

Q2

Elliott draws a pentagon on a coordinate grid.

He labels it shape 1.

He then moves his shape into a new position and labels it as shape 2.



Elliott says, “My shape has moved four squares to the right and one square up.”

Is Elliott correct? YES / NO

Explain your answer.

**See mark scheme
for example**

2 marks

Q3

Louise is allowed to play on her computer for $\frac{3}{4}$ of an hour before she has to do her homework.

She has already been playing for $\frac{1}{8}$ of an hour.

How long does Louise have left? Write your answer as a fraction of an hour.

$$\frac{5}{8} \text{ hour}$$

1 mark

	Requirement	Mark	Additional guidance
Q1	217 full bags	1	
Q2	NO — Elliott is not correct. The number of squares is correct, but he has moved his shape 4 squares to the left, not the right.	2	
Q3	$\frac{5}{8}$ hour	1	

What are examiners looking for?**Q1**

A bakery produces doughnuts and packages them in bags of six.

In one day, it produces 1,305 doughnuts.

How many full bags has the bakery made by the end of the day?

217 full bags

1 mark

Why are we asking this question?

This question is designed to assess children's ability to divide numbers up to four digits by a one-digit number. It also tests whether they can then interpret the remainder appropriately for the context (specifically, rounding their answer down to give the number of full bags produced).

What common errors do we expect to see?

Some children may misinterpret the problem and think that they need to multiply 1,305 by 6 to find the answer. These children may give an answer of 7,830.

Some children may deal with the remainder incorrectly — for example including the remainder in the answer (217 r.5) or by thinking that they need to round their answer upwards (218).

How to encourage children to solve this question

Begin by encouraging children to consider which of the four operations they think is required to solve the problem. “What is happening to the doughnuts?” (they are being shared into bags of 6). “So, which operation do you need to use?” (division).

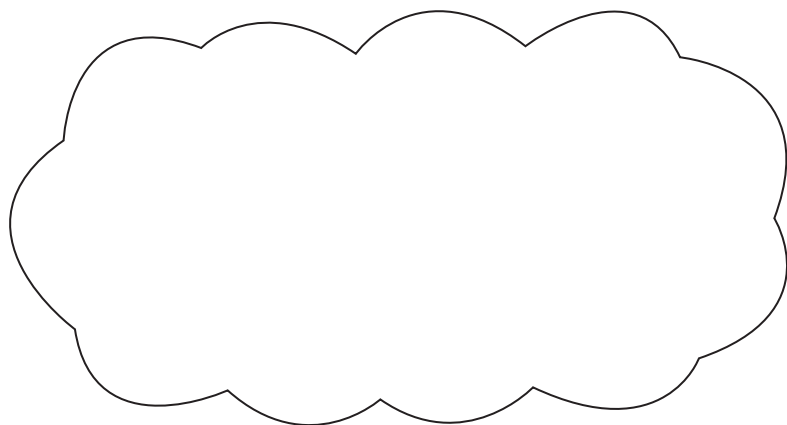
Prior to calculating the answer, encourage children to consider what they might do if they are faced with an answer that has a remainder (which, of course, they will find this question does). “If you were packing doughnuts what would a remainder mean?” Ensure children realise that any remainder will represent some loose doughnuts at the end (i.e. not part of any full bags and can therefore be ignored).

When dividing a four-digit number, children may benefit from modelling the short division method using place-value counters, using exchanging where required.

Q1 Shaun says, “One thousandth is one tenth of one hundredth.”

Is Shaun right? **YES / NO**

Explain your answer.



1 mark

Q2 Laura is calculating the answer to 356×36 using the method below.

	3	5	6	
3	9	15	18	
6	18	30	36	
				3 6
				3 0
				1 8
				1 8
				1 5
				9
				1 2 6

What mistake has Laura made?

1 mark

Q3

Match each of these angles with the correct label.

- A) The angle made by turning to face the opposite direction.
- B) The angle when a clock hand moves from the 12 to the number 5.
- C) The angle at the bottom corner of a door.
- D) The angle between the two lines of a letter V.

acute angle

right angle

obtuse angle

straight-line
angle

2 marks

Q1 Shaun says, “One thousandth is one tenth of one hundredth.”

Is Shaun right? **YES / NO**

Explain your answer.

*See mark scheme
for example*

1 mark

Q2 Laura is calculating the answer to 356×36 using the method below.

	3	5	6		3 6
					3 0
3	9	15	18		1 8
					1 8
6	18	30	36		1 5
					9
				+	
					1 2 6

What mistake has Laura made?

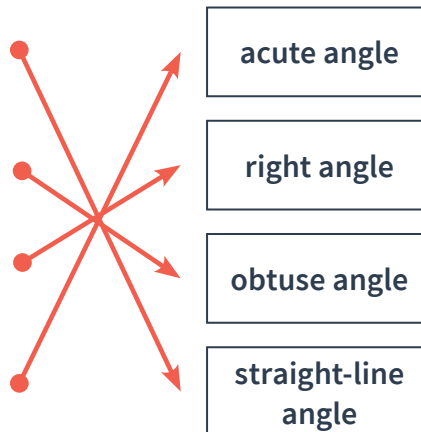
*See mark scheme
for example*

1 mark

Q3

Match each of these angles with the correct label.

- A) The angle made by turning to face the opposite direction.
- B) The angle when a clock hand moves from the 12 to the number 5.
- C) The angle at the bottom corner of a door.
- D) The angle between the two lines of a letter V.



2 marks

	Requirement	Mark	Additional guidance
Q1	YES — Shaun is correct. Accept any explanation that mentions the relationship between hundredths and thousands. For example: There are ten thousandths in one hundredth. If 1 whole is split into 1000 pieces, ten of these would be worth the same as $\frac{1}{100}$.	1	
Q2	Explanation should mention the fact that each the place-value of each digit has not been included (3 is worth 300, 5 is worth 50 and so on).	1	
Q3	A = straight-line angle B = obtuse angle C = right angle D = acute angle Award TWO marks for all correctly matched. Award ONE mark for two or three correctly matched.	2	

Q1

Kian has been told that he has to spend a length of time tidying his room.

He can choose the fraction!

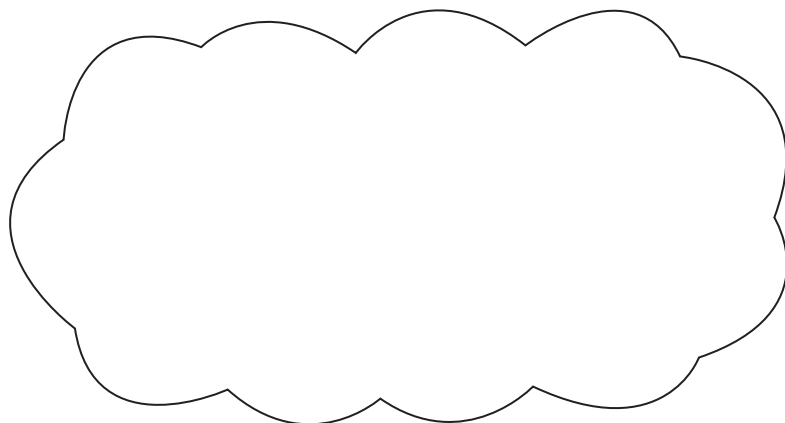
His choices are:

 $\frac{6}{16}$ of an hour

 $\frac{3}{4}$ of an hour

 $\frac{1}{2}$ of an hour

Kian does not like tidying his room. Which fraction should he choose so he spends the shortest amount of time tidying? Explain your answer.



1 mark

Q2

A petrol tanker makes a delivery of $\frac{5}{18}$ of its tank.

It then travels to another fuel station and delivers $\frac{2}{9}$ of its tank.

What fraction of a tank has been delivered in total? Write your answer in two different ways.

and

2 marks

Q3

This timetable shows the different times that different buses run.

	Bus A	Bus B	Bus C	Bus D
Green Lane	09.15	09.40	10.00	10.15
Lyndon Road	09.36	10.01	--	10.36
Leisure Centre	09.52	10.17	--	10.52
Whitley Shops	10.00	10.25	10.35	11.00

a

It is quarter to 10.

Bradley is at Green Lane and wants to catch a bus to the Leisure Centre.

How long does he have to wait?

 minutes

1 mark

b

How long does it take Bus A to get from Lyndon Road to the shops?

 minutes

1 mark

Q1

Kian has been told that he has to spend a length of time tidying his room.

He can choose the fraction!

His choices are:

 $\frac{6}{16}$ of an hour

 $\frac{3}{4}$ of an hour

☐
 $\frac{1}{2}$ of an hour

☐

Kian does not like tidying his room. Which fraction should he choose so he spends the shortest amount of time tidying? Explain your answer.

*See mark scheme
for example*

1 mark

Q2

A petrol tanker makes a delivery of $\frac{5}{18}$ of its tank.

It then travels to another fuel station and delivers $\frac{2}{9}$ of its tank.

What fraction of a tank has been delivered in total? Write your answer in two different ways.

9

18

and

1

2

2 marks

Q3

This timetable shows the different times that different buses run.

	Bus A	Bus B	Bus C	Bus D
Green Lane	09.15	09.40	10.00	10.15
Lyndon Road	09.36	10.01	--	10.36
Leisure Centre	09.52	10.17	--	10.52
Whitley Shops	10.00	10.25	10.35	11.00

a

It is quarter to 10.

Bradley is at Green Lane and wants to catch a bus to the Leisure Centre.

How long does he have to wait?

30 minutes

1 mark

b

How long does it take Bus A to get from Lyndon Road to the shops?

24 minutes

1 mark

	Requirement	Mark	Additional guidance
Q1	$\frac{6}{16}$ of an hour. This is because $\frac{6}{16}$ is less than $\frac{1}{2}$ (which is $\frac{8}{16}$) and less than $\frac{3}{4}$ (which is $\frac{12}{16}$).	1	
Q2	$\frac{9}{18}$ and $\frac{1}{2}$ Accept any other fractions equivalent to $\frac{1}{2}$ and award ONE mark for each.	2	
Q3a	30 minutes	1	
Q3b	24 minutes	1	

Q1

Alisha says,

“I am thinking of a three-digit number.

Its digits add up to 16.

When I divide my number by 5, the answer has a remainder of 3.

When I divide my number by 2, the answer has a remainder of 1.”

Write two possible numbers that Alisha could be thinking of.

2 marks

Q2

Harry has a pack of fraction cards that contains different numbers of fifths, tenths and twentieths.

He has been asked to find two fraction cards with a difference of $\frac{2}{5}$.

He says, “I am looking for two fractions where the numerators have a difference of 2. For example, something like $\frac{6}{10}$ and $\frac{4}{5}$ because $6 - 4 = 2$.”

a

Explain what Harry needs to do to find a correct pair of fraction cards.

1 mark

b

Write a pair of fractions with different denominators that have a difference of $\frac{2}{5}$.

and

1 mark

Q3

A restaurant has four containers of soft drinks.

This table shows the amount of each soft drink that is left.

	Flavour of soft drink	Amount left (litres)
A	Apple	$\frac{4}{5}$ litre
B	Orange	$\frac{10}{20}$ litre
C	Cola	$\frac{5}{10}$ litre
D	Dandelion and Burdock	$\frac{4}{10}$ litre

Complete these sentences using the letters A, B, C or D.

The flavour with the most drink left is flavour .

The flavour with the least drink left is flavour .

Flavours and have the same amount left.

1 mark

Q1

Alisha says,

“I am thinking of a three-digit number.

Its digits add up to 16.

When I divide my number by 5, the answer has a remainder of 3.

When I divide my number by 2, the answer has a remainder of 1.”

Write two possible numbers that Alisha could be thinking of.

493

673

2 marks

Q2

Harry has a pack of fraction cards that contains different numbers of fifths, tenths and twentieths.

He has been asked to find two fraction cards with a difference of $\frac{2}{5}$.

He says, “I am looking for two fractions where the numerators have a difference of 2. For example, something like $\frac{6}{10}$ and $\frac{4}{5}$ because $6 - 4 = 2$.”

a

Explain what Harry needs to do to find a correct pair of fraction cards.

See mark scheme

for example

1 mark

b

Write a pair of fractions with different denominators that have a difference of $\frac{2}{5}$.

16

20

and

4

10

1 mark

Q3

A restaurant has four containers of soft drinks.

This table shows the amount of each soft drink that is left.

	Flavour of soft drink	Amount left (litres)
A	Apple	$\frac{4}{5}$ litre
B	Orange	$\frac{10}{20}$ litre
C	Cola	$\frac{5}{10}$ litre
D	Dandelion and Burdock	$\frac{4}{10}$ litre

Complete these sentences using the letters A, B, C or D.

The flavour with the most drink left is flavour A.

The flavour with the least drink left is flavour D.

Flavours B and C have the same amount left.

1 mark

	Requirement	Mark	Additional guidance
Q1	Accept any two of the following: 493, 583, 673, 763, 853, 943 Award ONE mark for each answer.	2	To find the answer, the method is as follows: A remainder of 3 when dividing by 5 means that the number must end in 3 or 8. A remainder of 1 when dividing by 2 means that the number must be odd. It therefore must end in 3. Children should identify combinations of digits that total 16, where one of those digits is 3.
Q2a	Harry needs to convert the fractions so that they have the same denominator first. Then he can compare them to see whether they have a difference of $\frac{2}{5}$.	1	
Q2b	Accept any pair of fractions with a difference of $\frac{2}{5}$. For example: 16 20 and 4 10	1	
Q3	A D B C	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
-

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