THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions and curriculum resources

Rapid Reasoning

Year 4 | Weeks 19-24

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Rapid Reasoning

Year 4 | 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 for the first time in Year 4.

The following Year 4 objectives continue to be a focus from weeks 17 and 18:

- recognise and show, using diagrams, families of common equivalent fractions
- solve problems involving increasingly harder fractions to calculate and divide quantities, including non-unit fractions where the answer is a whole number.

As with previous weeks, other content from Year 4 that the children have met in previous weeks of *Rapid Reasoning*, along with Year 3 objectives, will also feature this week.

Q1 Complete these boxes to make this calculation correct:

$$\frac{4}{\square} + \frac{\square}{12} = \frac{9}{12}$$

1 mark

Q2 Fill in the missing digits in this calculation.

$$\begin{array}{r} 9\ 0\ \square\ 9 \\ -\ 4\ \square\ 6\ 7 \\ \hline \square\ 4\ 4\ 2 \end{array}$$

2 marks

Q3 Esther has a chocolate bar which has 20 squares.

She eats 7 squares.

What fraction has Esther eaten?

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

1 mark

Q1 Complete these boxes to make this calculation correct:

$$\frac{4}{\boxed{12}} + \frac{\boxed{5}}{12} = \frac{9}{12}$$

1 mark

Q2 Fill in the missing digits in this calculation.

$$\begin{array}{rcccc} & 9 & 0 & \boxed{0} & 9 \\ - & 4 & \boxed{5} & 6 & 7 \\ \hline & \boxed{4} & 4 & 4 & 2 \end{array}$$

2 marks

Q3 Esther has a chocolate bar which has 20 squares.

She eats 7 squares.

What fraction has Esther eaten?

$$\frac{\boxed{7}}{\boxed{20}}$$

1 mark

	Requirement	Mark	Additional guidance
Q1	$\frac{4}{\boxed{12}} + \frac{\boxed{5}}{12} = \frac{9}{12}$	1	
Q2	Award TWO marks for all three digits completed correctly. $9\ 0\ \boxed{0}\ 9$ $-\ 4\ \boxed{5}\ 6\ 7$ $\boxed{4}\ 4\ 4\ 2$ Award ONE mark for two digits added correctly.	2	
Q3	$\frac{7}{20}$	1	

Q1 Write **all** the numbers between 50 and 100 that are factors of 180.

2 marks

Q2 Place these numbers in order, starting with the largest.

88,732 934 8,999 9,893 88,943

Largest

1 mark

Q3 Charlie, Evie and Gracie are each thinking of a number.

The **sum** of their numbers is 8,900

Charlie's number is 4,478.

Evie's number is 2,182 less than Charlie's.

What is Gracie's number?

2 marks

Q1 Write **all** the numbers between 50 and 100 that are factors of 180.

60 and 90

2 marks

Q2 Place these numbers in order, starting with the largest.

88,732 934 8,999 9,893 88,943

Largest 88,943

88,732

9,893

8,999

934

1 mark

Q3 Charlie, Evie and Gracie are each thinking of a number.

The **sum** of their numbers is 8,900

Charlie's number is 4,478.

Evie's number is 2,182 less than Charlie's.

What is Gracie's number?

2,126

2 marks

	Requirement	Mark	Additional guidance
Q1	Award **TWO** marks for the correct answer of 60 **AND** 90. Award **ONE** mark for: both numbers correct with one or more additional factors of 180 **OR** both numbers correct with one number which is not a factor of 180 **OR** one number correct and none incorrect.	2	
Q2	88,943 88,732 9,893 8,999 934	1	
Q3	Award **TWO** marks for the correct answer of 2,126. Award **ONE** mark for evidence of an appropriate method with no more than one arithmetic error, for example: 4,478 − 2,182 = 2,296 4,478 + 2,296 = 6,774 8,900 − 6,774 = wrong answer.	2	

Q1 Draw lines between the pairs of **equivalent** fractions.

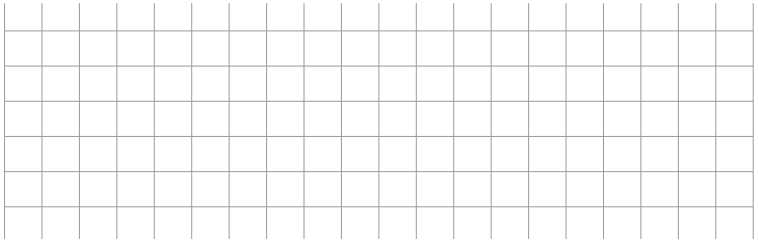
$\frac{1}{5}$ $\frac{2}{16}$ $\frac{2}{5}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{8}$ $\frac{3}{9}$ $\frac{2}{10}$ $\frac{4}{10}$ $\frac{4}{16}$

2 marks

Q2 Mia has completed this calculation.

$$\begin{array}{r} 8,743 \\ -\ 2,948 \\ \hline 5,795 \\ \hline \end{array}$$

Write **BOTH** subtraction calculations Mia could use to check her answer.



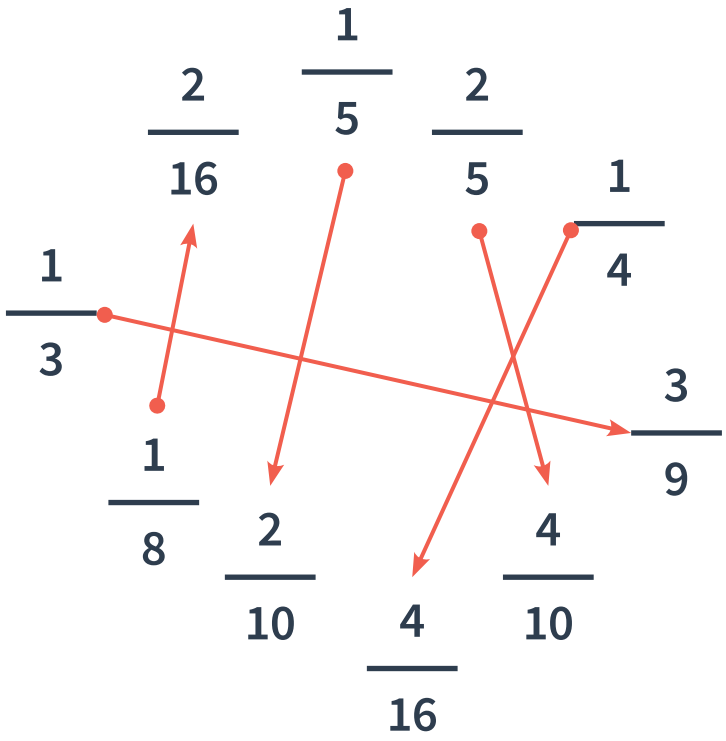
1 mark

Q3 Write in the missing digits.

$\square\ 4\ \square + 1\ \square\ 9 = 644$

1 mark

Q1 Draw lines between the pairs of **equivalent** fractions.



2 marks

Q2 Mia has completed this calculation.

$$\begin{array}{r} 8,743 \\ -\ 2,948 \\ \hline 5,795 \\ \hline \end{array}$$

Write **BOTH** subtraction calculations Mia could use to check her answer.

$$\begin{array}{r} 12,587 \\ -\ 8,743 \\ \hline 3,844 \\ \hline \end{array} \qquad \begin{array}{r} 12,587 \\ -\ 3,844 \\ \hline 8,743 \\ \hline \end{array}$$

1 mark

Q3 Write in the missing digits.

8	4	3	+ 1	9	9 = 644

1 mark

	Requirement	Mark	Additional guidance
Q1	Award **TWO** marks for all pairs correctly matched. $\frac{1}{3} \rightarrow \frac{3}{9}$ $\frac{1}{4} \rightarrow \frac{4}{16}$ $\frac{1}{5} \rightarrow \frac{2}{10}$ $\frac{2}{5} \rightarrow \frac{4}{10}$ $\frac{1}{8} \rightarrow \frac{2}{16}$ Award **ONE** mark for three or more pairs correctly matched.	2	
Q2	12,587 − 8,743 = 3,844 **AND** 12,587 − 3,844 = 8,743	1	Both required for the award of **ONE** mark. Also accept 12,587 − 8,743 and 12,587 − 3,844.
Q3	**843** − 199 = 644	1	All digits need to be completed correctly for the award of the mark.

Q1 The temperature in the freezer is −13°C.

The temperature in the fridge is 4°C.

What is the difference between the temperatures in the fridge and freezer?

°C

1 mark

Q2 Kirsty makes a bird feeder.

She uses 65g of oats in each bird feeder.

She makes 9 bird feeders.

How many grams of oats does Kirsty use?

g

1 mark

Q3 Complete this statement so it is correct.

□ × 9 = 126

1 mark

Q1 The temperature in the freezer is −13°C.

The temperature in the fridge is 4°C.

What is the difference between the temperatures in the fridge and freezer?

17 °C

1 mark

Q2 Kirsty makes a bird feeder.

She uses 65g of oats in each bird feeder.

She makes 9 bird feeders.

How many grams of oats does Kirsty use?

585 g

1 mark

Q3 Complete this statement so it is correct.

14 × 9 = 126

1 mark

	Requirement	Mark	Additional guidance
Q1	17°C	1	
Q2	585g	1	
Q3	14	1	

What are examiners looking for?

Q1 The temperature in the freezer is −13°C.

The temperature in the fridge is 4°C.

What is the difference between the temperatures in the fridge and freezer?

17 °C

1 mark

Why are we asking this question?

This question is designed to assess children's ability to count through zero to include negative numbers.

What common errors do we expect to see?

Some children treating may not understand the meaning of the — symbol before the number 13 (or may not notice it). These children will end up finding the difference between 13 and 4 and give an incorrect answer of 9°C.

How to encourage children to solve this question

Children should sketch their own number line with the two temperatures labelled on it. In effect, they are sketching the scale on the thermometer. It is important that children label where zero is on their line.

Children can mark the jumps they make to get from one temperature to the other and should use their number line to help visualise that the difference between −13 and 4 is the sum of 13 and 4. In other words, the difference between the negative temperature and zero (13) and the difference between zero and the positive temperature (4).

Less confident children may benefit from marking every single number and counting along the number line. When doing this, encourage them to start by marking zero and count the numbers in both directions. This will ensure that the negative numbers in particular are labelled correctly (if they start with −13 on the left, some children have a tendency to count as they would with positive numbers: −14, −15, −16 as they move to the right).

Q1 A petrol station sells packets of small mints.

Each large packet contains 55 mints.

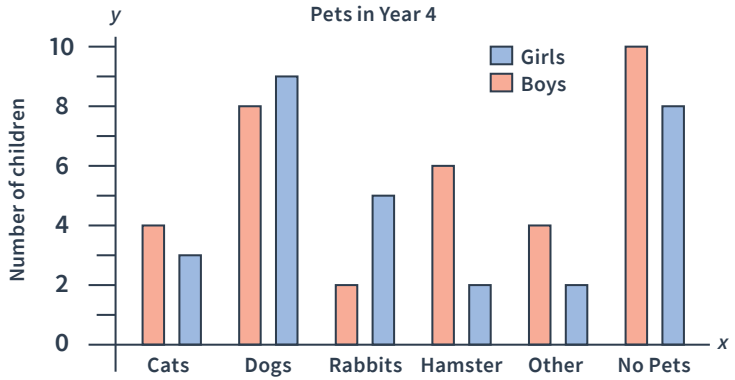
They buy mints in boxes of 8.

How many individual mints are in a box?

mints

1 mark

Q2 Look at this graph.



a How many more girls than boys have a rabbit as a pet?

1 mark

b How many more children have a dog than a cat?

1 mark

Q3 Amy is thinking of a 3D shape.

She says, “It has 5 faces. Two opposite faces are triangles. The other faces are rectangles.”

What is the name of Amy’s 3D shape?

1 mark

Q1 A petrol station sells packets of small mints.

Each large packet contains 55 mints.

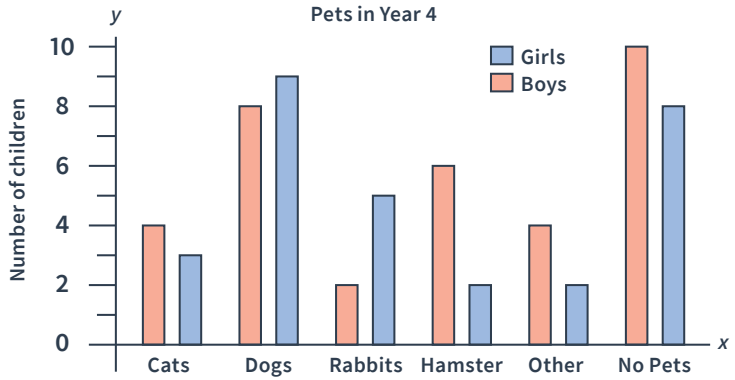
They buy mints in boxes of 8.

How many individual mints are in a box?

440 mints

1 mark

Q2 Look at this graph.



a How many more girls than boys have a rabbit as a pet?

3

1 mark

b How many more children have a dog than a cat?

10

1 mark

Q3 Amy is thinking of a 3D shape.

She says, “It has 5 faces. Two opposite faces are triangles. The other faces are rectangles.”

What is the name of Amy’s 3D shape?

Triangular prism

1 mark

	Requirement	Mark	Additional guidance
Q1	440 mints	1	
Q2a	3	1	
Q2b	10	1	
Q3	Triangular prism	1	Accept phonetically plausible spellings.

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