



# THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions  
and curriculum resources

**Rapid Reasoning**

**Year 6 | Weeks 25–36**



# **THIRD SPACE** LEARNING

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**Rapid Reasoning**

**Year 6 | Week 27**

This week, the questions within *Rapid Reasoning* focus on statistics.

The following Year 6 objectives are a particular focus this week:

- interpreting and constructing pie charts and line graphs and use these to solve problems
- reading, writing, ordering and comparing numbers with up to three decimal places.

The following Year 5 objectives are also a focus this week:

- solving comparison, sum and difference problems using information presented in a line graph
- completing, reading and interpreting information in tables, including timetables.

As with previous weeks, other content from throughout Key Stage 2, which the children have met in previous weeks of *Rapid Reasoning*, will also feature this week.

Q1

$$a - b = 7$$

$a$  and  $b$  are both greater than 23 and less than 35.

Write down all the possible values for  $a$  and  $b$ .

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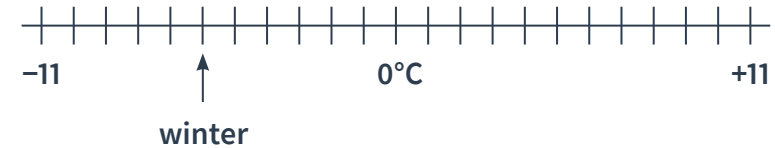
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2 marks

Q2

This temperature scale shows the average temperature in a city.



a

Look at the arrow. What is the average temperature in winter?

 °C

---

1 mark

b

The average temperature in summer is 21°C **higher** than winter.

What is the average temperature in summer?

 °C

---

1 mark

**Q3**

Five children measured their heights.

Children	Height (cm)
Mia	142
Helen	136
Grace	148
Tom	143
Josh	144

What is the mean height of the children?

cm

2 marks

**Q1**

$$a - b = 7$$

$a$  and  $b$  are both greater than 23 and less than 35.

Write down all the possible values for  $a$  and  $b$ .

$$a = 34, b = 27$$

$$a = 33, b = 26$$

$$a = 32, b = 25$$

2 marks

**Q2**

This temperature scale shows the average temperature in a city.


**a**

Look at the arrow. What is the average temperature in winter?

**-6** °C

1 mark

**b**

The average temperature in summer is 21°C higher than winter.

What is the average temperature in summer?

**15** °C

1 mark

Q3

Five children measured their heights.

Children	Height (cm)
Mia	142
Helen	136
Grace	148
Tom	143
Josh	144

What is the mean height of the children?

142.6 cm

2 marks

	Requirement	Mark	Additional guidance
Q1	<p>Award <b>TWO</b> mark for all three correct answers.</p> <p><math>a = 34, b = 27</math></p> <p><math>a = 33, b = 26</math></p> <p><math>a = 32, b = 25</math></p> <p>Award <b>ONE</b> mark for two correct answers with no more than one incorrect answer.</p>	2	
Q2a	$-6^{\circ}\text{C}$	1	Do <b>NOT</b> accept $6^{\circ}\text{C}$
Q2b	$15^{\circ}\text{C}$	1	Do <b>NOT</b> accept $-15^{\circ}\text{C}$
Q3	<p>Award <b>TWO</b> marks for the correct answer of 142.6cm</p> <p>Award <b>ONE</b> mark for evidence of a correct method, but with up to one arithmetic error.</p> <p><math>142 + 136 + 148 + 143 + 144 = 713</math></p> <p><math>713 \div 5 = \text{wrong answer}</math></p>	2	



**Q1**

Lilly likes to make a homemade lemonade juice by mixing lemon juice with water.

She mixes 4 parts of water for every 1 part of lemon juice.

If Lily wants to make 1.5l of lemonade, how many millilitres of each lemon juice should she use?

 ml

1 mark

**Q2**

Complete this number sentence by writing the missing number in the box.

$\times 11 = 1,111$

1 mark

**Q3**

Millie chooses a prime number.

She multiplies it by 5 and then rounds it to the nearest hundred.

Her answer is 200.

Write all the possible prime numbers Millie could have chosen.

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1 mark

**Q1**

Lilly likes to make a homemade lemonade juice by mixing lemon juice with water.

She mixes 4 parts of water for every 1 part of lemon juice.

If Lily wants to make 1.5l of lemonade, how many millilitres of each lemon juice should she use?

**300** ml

1 mark

**Q2**

Complete this number sentence by writing the missing number in the box.

**101**  $\times 11 = 1,111$ 

1 mark

**Q3**

Millie chooses a prime number.

She multiplies it by 5 and then rounds it to the nearest hundred.

Her answer is 200.

Write all the possible prime numbers Millie could have chosen.

**37, 41, 43**

1 mark

	Requirement	Mark	Additional guidance
Q1	300ml	1	
Q2	101	1	
Q3	37, 41, 43	1	

**Q1**

Draw a quadrilateral which has one angle of  $120^\circ$ , one of  $30^\circ$ , one of  $150^\circ$  and one of  $60^\circ$ .

1 mark

**Q2**

Complete the missing digits in this addition.

$$\begin{array}{r}
 58\boxed{\phantom{00}}6 \\
 + 347\boxed{\phantom{00}} \\
 \hline
 \boxed{\phantom{00}}354
 \end{array}$$

2 marks

**Q3**

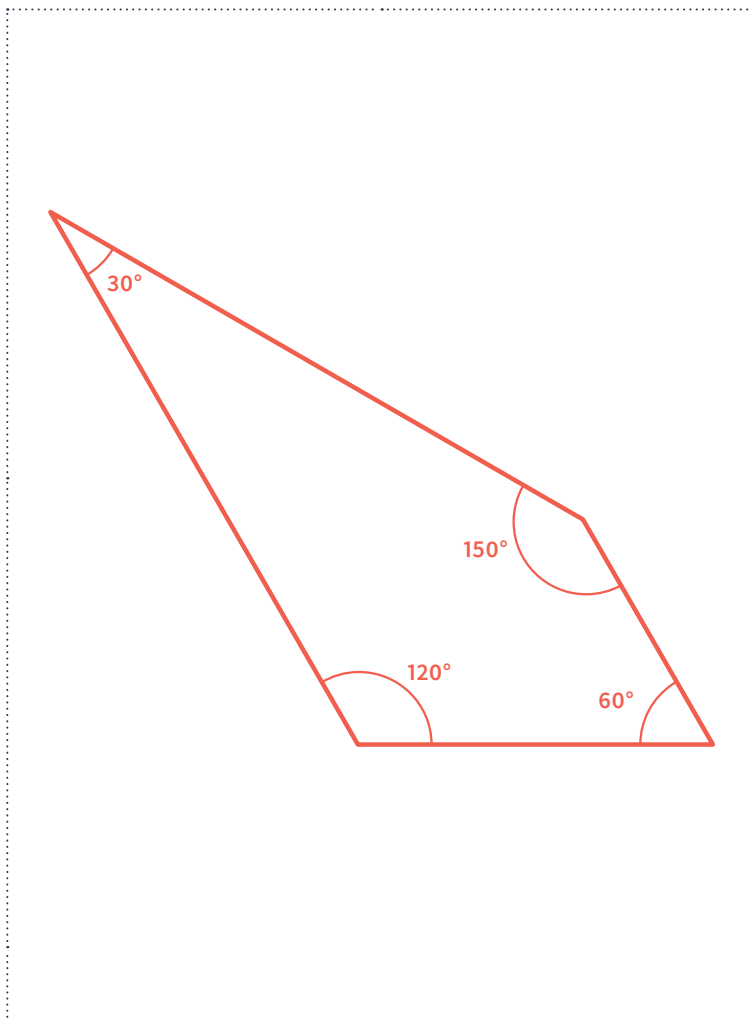
Two of the angles in a triangle are  $60^\circ$  and  $20^\circ$ .

What is the value of the third angle?

1 mark

**Q1**

Draw a quadrilateral which has one angle of  $120^\circ$ , one of  $30^\circ$ , one of  $150^\circ$  and one of  $60^\circ$ .



1 mark

**Q2**

Complete the missing digits in this addition.

$$\begin{array}{r} 58\boxed{7}6 \\ + 347\boxed{8} \\ \hline \boxed{9}354 \end{array}$$

2 marks

**Q3**

Two of the angles in a triangle are  $60^\circ$  and  $20^\circ$ .

What is the value of the third angle?

**100** °

1 mark

	Requirement	Mark	Additional guidance
Q1	Accurately drawn quadrilateral, with angles that are within $2^\circ$ of the angles given in the question.	1	
Q2	<p>Award <b>TWO</b> marks for all three correct digits. Award <b>ONE</b> mark for any two correct digits.</p> $  \begin{array}{r}  5 \quad 8 \quad \boxed{7} \quad 6 \\  + \quad 3 \quad 4 \quad 7 \quad \boxed{8} \\  \hline  \boxed{9} \quad 3 \quad 5 \quad 4  \end{array}  $	2	
Q3	$100^\circ$	1	

**Q1**

Mia wants to convert 4.71l into ml.

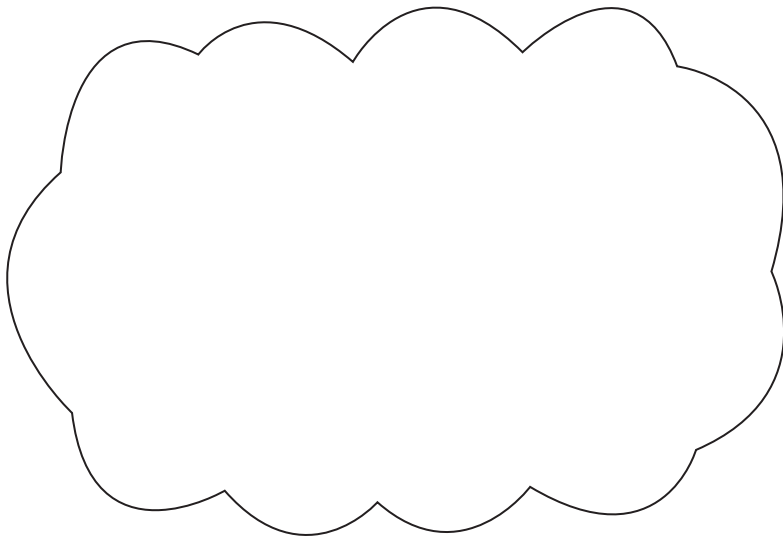
She says, “There are 1,000 millilitres in 1 litre, so I need to multiply 4.71 by 1,000.

I can do this by writing three zeros on the end of the number to show that the digits have shifted three places.

The answer is 4.71000.”

Is Mia correct? **YES / NO**

Explain your answer.



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1 mark**Q2**

Complete the boxes below.

A square based pyramid has:

faces

edges

vertices.

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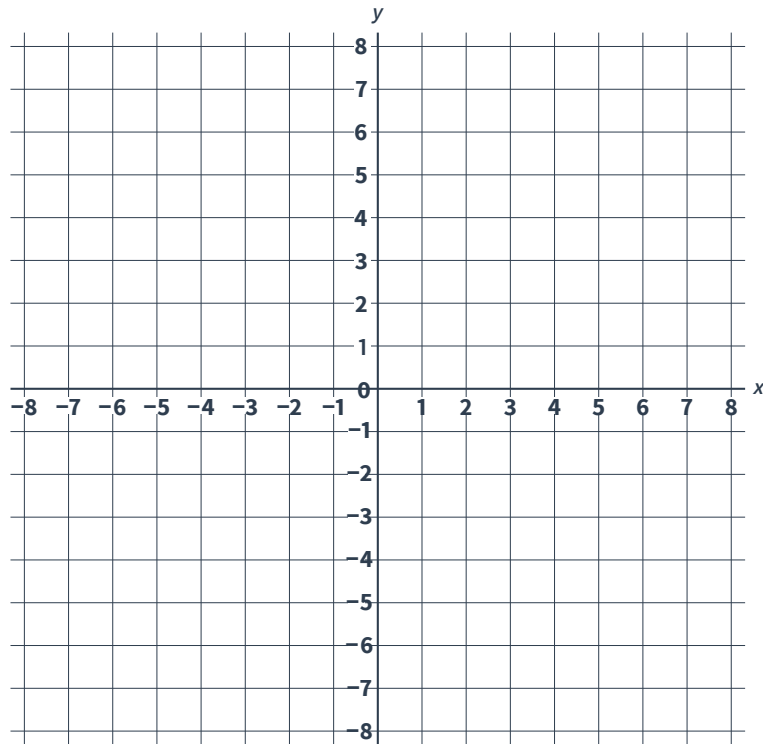
1 mark

**Q3**

Here are two coordinates of a rectangle:

 $(-8, -4)$   $(-4, -6)$ **a**

Plot these coordinates on the coordinate grid below.



1 mark

**b**

Complete the rectangle. Make sure you use a ruler.

1 mark



Q1

Mia wants to convert 4.71l into ml.

She says, “There are 1,000 millilitres in 1 litre, so I need to multiply 4.71 by 1,000.

I can do this by writing three zeros on the end of the number to show that the digits have shifted three places.

The answer is 4.71000.”

Is Mia correct? YES / NO

Explain your answer.

*See mark scheme  
for example*

1 mark

Q2

Complete the boxes below.

A square based pyramid has:

5

faces

8

edges

5

vertices.

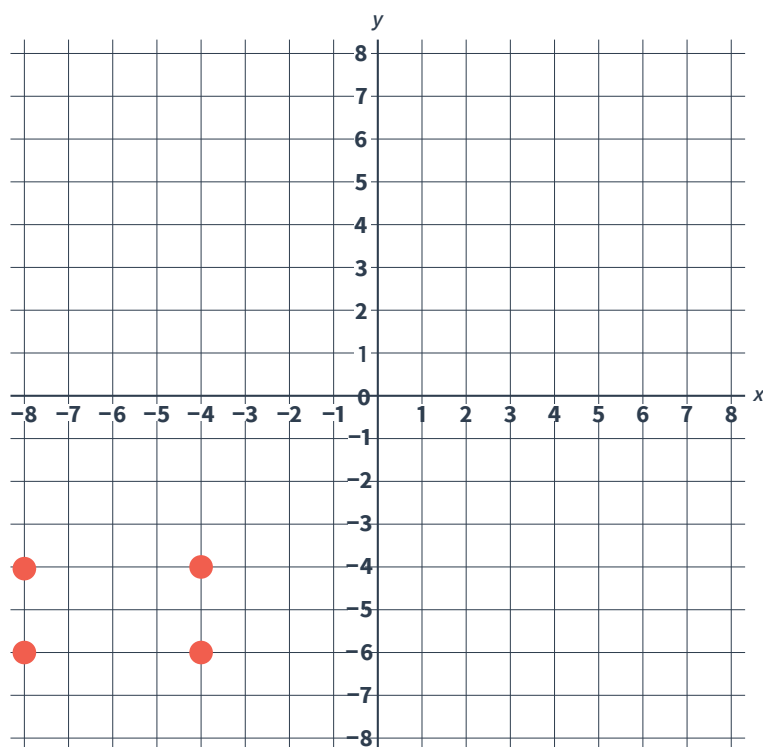
1 mark

**Q3**

Here are two coordinates of a rectangle:

 $(-8, -4)$   $(-4, -6)$ **a**

Plot these coordinates on the coordinate grid below.

**b**

Complete the rectangle. Make sure you use a ruler.

1 mark

1 mark

	Requirement	Mark	Additional guidance
Q1	No, Mia is not correct. Accept any reasonable explanation. For example: writing three zeros only works with whole numbers the correct answer is 3821ml.	1	
Q2	5 faces 8 edges 5 vertices All 3 need to be completed for the award of <b>ONE</b> mark.	1	
Q3a	Coordinates plotted correctly.	1	
Q3b	Missing vertex plotted at $(-8, -6)$ and $(-4, -4)$	1	

## Q1

The rule for a sequence is “add 5, then multiply by 2”. The sequence starts at 1.

**Complete the first 5 steps of the sequence.**

1, , , ,

2 marks

## Q2

**Woodland View primary needs 2,300 plastic cups for their winter fayre.**

Cups are sold in packs of 78.

**They have 13 packs of cups left from last year.**

How many more **packs** of cups does the school need to buy?

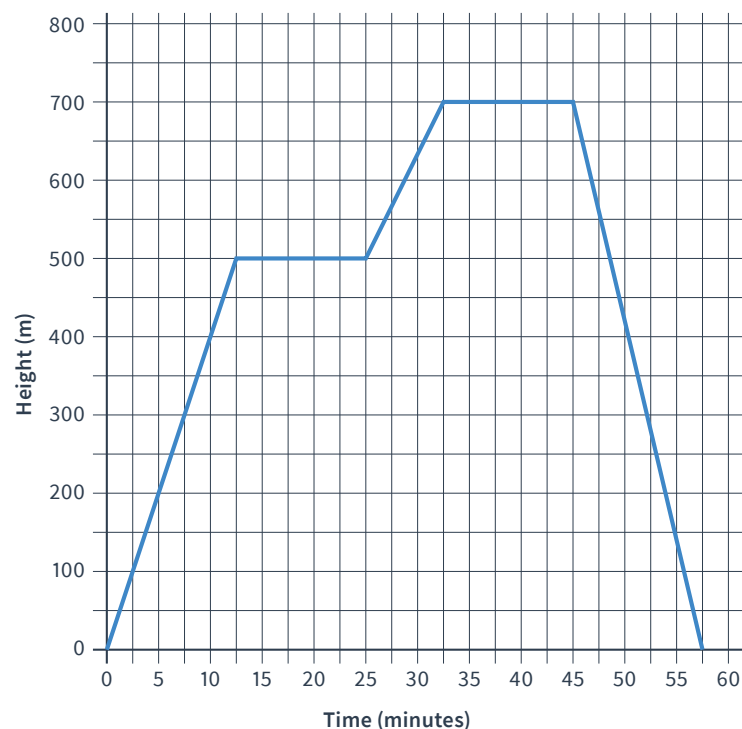
packs

3 marks

**Q3**

For Gill's birthday, she went on a hot air balloon ride.

This graph shows how the height of the balloon changed over the duration of her ride.


**a**

At what time did the balloon **first** reach 400m?

 minutes

1 mark

**b**

At what time did the balloon **begin** to go down?

 minutes

1 mark

**Q1**

The rule for a sequence is “add 5, then multiply by 2”. The sequence starts at 1.

Complete the first 5 steps of the sequence.

1, 12, 34, 78, 166

2 marks

**Q2**

Woodland View primary needs 2,300 plastic cups for their winter fayre.

Cups are sold in packs of 78.

They have 13 packs of cups left from last year.

How many more **packs** of cups does the school need to buy?

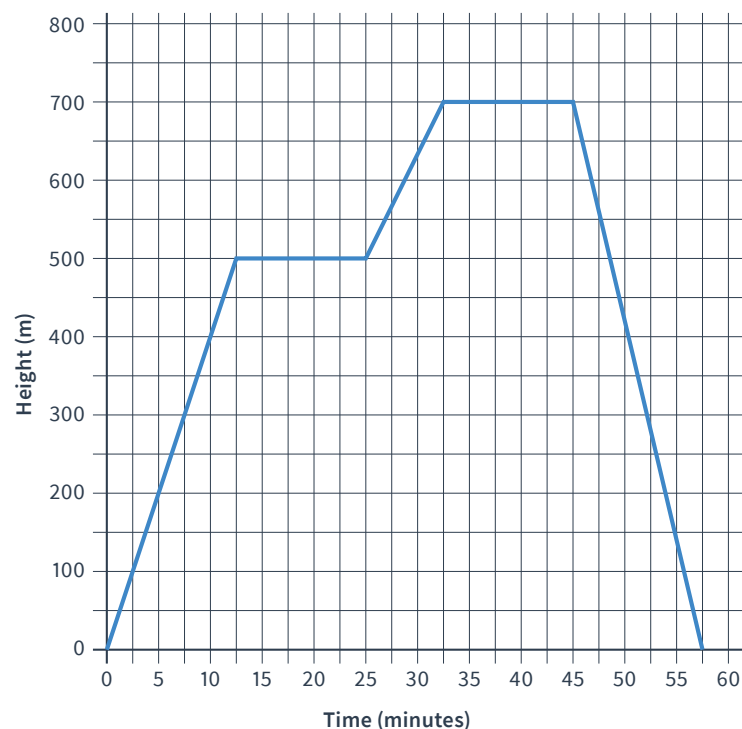
17 packs

3 marks

**Q3**

For Gill's birthday, she went on a hot air balloon ride.

This graph shows how the height of the balloon changed over the duration of her ride.

**a**

At what time did the balloon **first** reach 400m?

**10** minutes

1 mark

**b**

At what time did the balloon **begin** to go down?

**45** minutes

1 mark

	Requirement	Mark	Additional guidance
Q1	<p>1, <span style="border: 1px solid black; padding: 2px;">12</span>, <span style="border: 1px solid black; padding: 2px;">34</span>, <span style="border: 1px solid black; padding: 2px;">78</span>, <span style="border: 1px solid black; padding: 2px;">166</span></p> <p>Award <b>TWO</b> marks for all four numbers completed correctly.</p> <p>Award <b>ONE</b> mark for two or more numbers completed correctly.</p>	2	
Q2	<p>Award <b>THREE</b> marks for the correct answer of 17 packs.</p> <p>Award <b>TWO</b> marks for a correct method with a whole number answer with no more than two arithmetic errors.</p> <p><math>13 \times 78 = 1,014</math></p> <p><math>2,300 - 1,014 = 1,286</math></p> <p><math>1,286 \div 78 = \text{whole number.}</math></p> <p>Award <b>ONE</b> mark for an answer of 16 r 38 packs or 16 packs.</p>	3	
Q3a	10 minutes	1	
Q3b	45 minutes	1	



What are examiners looking for?**Q2**

Woodland View primary needs 2,300 plastic cups for their winter fayre.

Cups are sold in packs of 78.

They have 13 packs of cups left from last year.

How many more **packs** of cups does the school need to buy?

**17** packs

3 marks

Why are we asking this question?

This question is designed to assess children's ability to solve a problem with multiple steps and to interpret a remainder correctly in the context of a problem.

What common errors do we expect to see?

Some children may give a question that involves a remainder.

Some children may not consider how many packs the school already has.

### How to encourage children to solve this question

Children should be encouraged to consider the problem and identify the steps to solving it. They should identify that they need to:

- work out how many cups the school has left from last year
- subtract this figure from the number of cups they need
- divide this answer by 78
- interpret the remainder given the context of the problem.

Children should complete  $13 \times 78$  to calculate the number of cups the school has left over. They could do this using a formal written method but should be encouraged to use a more efficient method with jottings, e.g.  $10 \times 78 = 780$  and  $3 \times 78 = 234$  and  $13 \times 78 = 1,014$ .

Children should then mentally subtract this from 2,300, to give the number of cups the school needs to purchase: 1,286.

They should then divide 1,286 by 78, using the method for long division taught by your school. They should then be encouraged to consider if giving an answer with a remainder makes sense in the context of the question, i.e. could you go and buy 'remainder 38' of a pack of cups? Identify that this would be impossible, and therefore they need to round their answer up so that the school has enough cups, giving the answer of 17.



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