



THIRD SPACE LEARNING

Specialist 1-to-1 maths interventions
and curriculum resources

Rapid Reasoning

Year 5 | Weeks 25–36



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Rapid Reasoning

Year 5 | Week 31

This week, the questions within *Rapid Reasoning* focus on geometry, with a focus on translations and reflections.

Therefore, a new Year 5 objective which is a particular focus this week is:

- identifying, describing and representing the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

Children will also face questions involving linked Year 4 objectives which are not built upon within the Year 5 curriculum, including:

- describing positions on a 2D grid as coordinates in the first quadrant
- plotting specified points and drawing sides to complete a given polygon.

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

Q1 Three of these calculations equal the same amount.

A) $\frac{6}{14} - \frac{1}{7}$

C) $\frac{6}{7} - \frac{8}{14}$

B) $\frac{2}{28} + \frac{2}{14}$

D) $\frac{3}{28} + \frac{5}{28}$

Find the odd calculation out and write the answer.

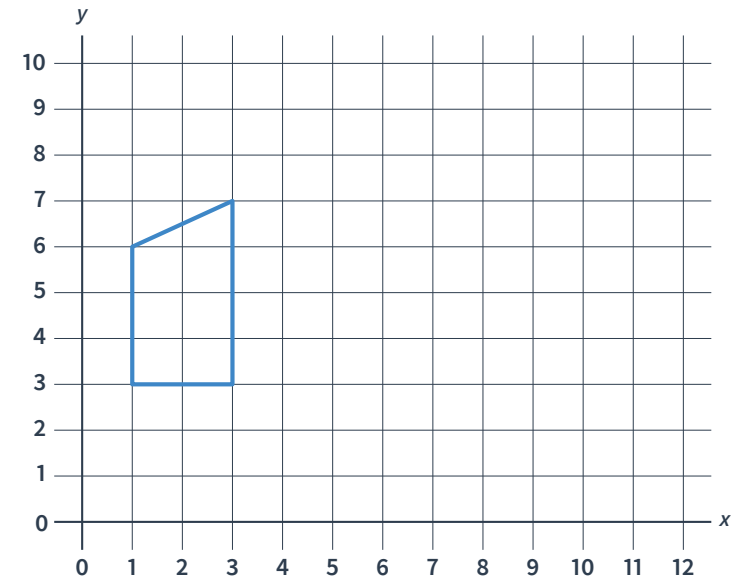
The odd one out is .

The answer is

.

1 mark

Q2 Simon draws this shape on a coordinate grid.



He translates the shape 6 squares to the right and 2 squares upwards.

Draw the shape in its new position.

1 mark

Q3

0.720

0.5

0.130

0.1

0.25

0.370

Three of these decimals add together to make 1.

Which three decimals are they?

, and

1 mark

Q1 Three of these calculations equal the same amount.

A) $\frac{6}{14} - \frac{1}{7}$

C) $\frac{6}{7} - \frac{8}{14}$

B) $\frac{2}{28} + \frac{2}{14}$

D) $\frac{3}{28} + \frac{5}{28}$

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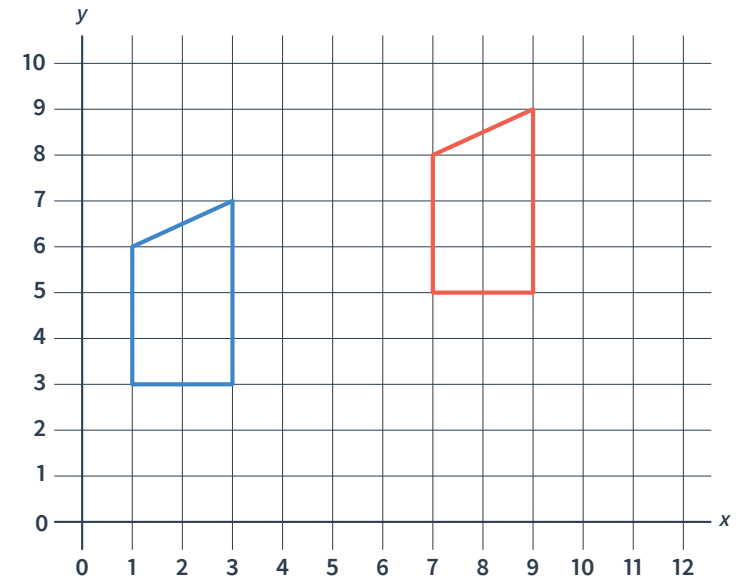
The odd one out is **B**.

The answer is **3**.

14.

1 mark

Q2 Simon draws this shape on a coordinate grid.



He translates the shape 6 squares to the right and 2 squares upwards.

Draw the shape in its new position.

1 mark

Q3

0.720

0.5

0.130

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Three of these decimals add together to make 1.

Which three decimals are they?

0.5

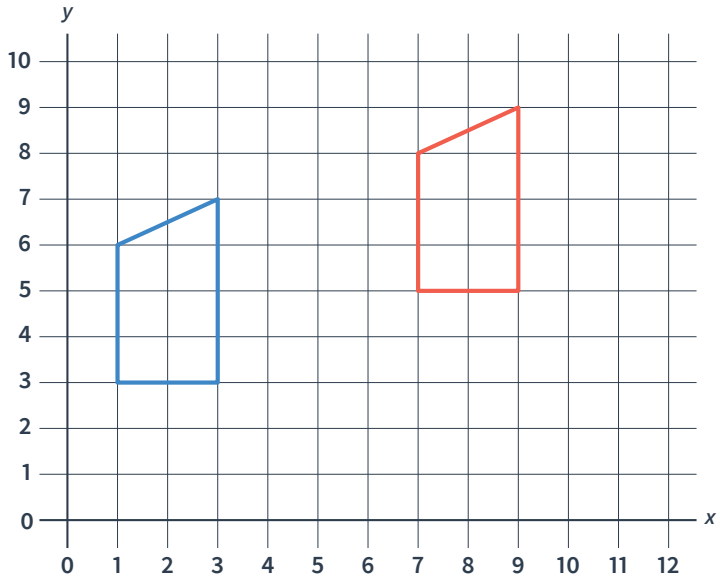
,

0.130

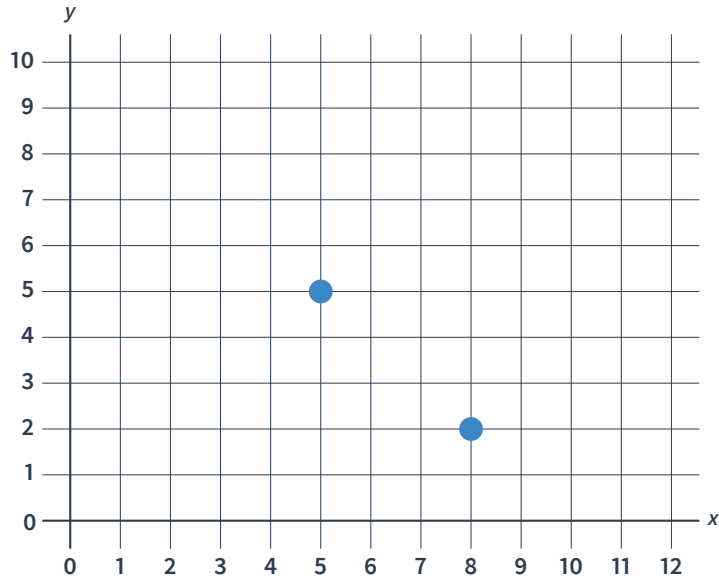
and

0.370

1 mark

	Requirement	Mark	Additional guidance
Q1	B, $\frac{3}{14}$	1	
Q2	<p>Award ONE mark for a correctly drawn shape as follows:</p> 	1	
Q3	0.5, 0.130 and 0.370	1	Decimals may be written in an alternative order.

Q1 These two points mark two vertices of a right-angled triangle.

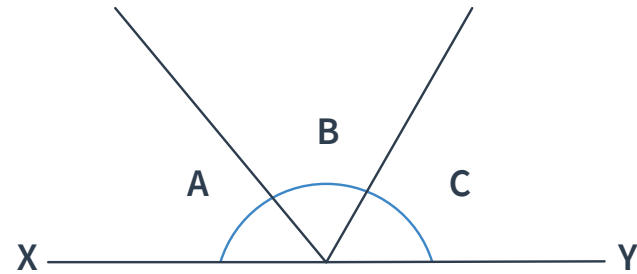


Write two possible coordinates of the remaining vertex.

(,) or (,)

2 marks

Q2 Line XY is a straight line. Angles A, B and C are all equal.



a Circle the correct name for angle C.

OBTUSE RIGHT ACUTE

1 mark

b What is the size of angle A?

Angle A = °

1 mark

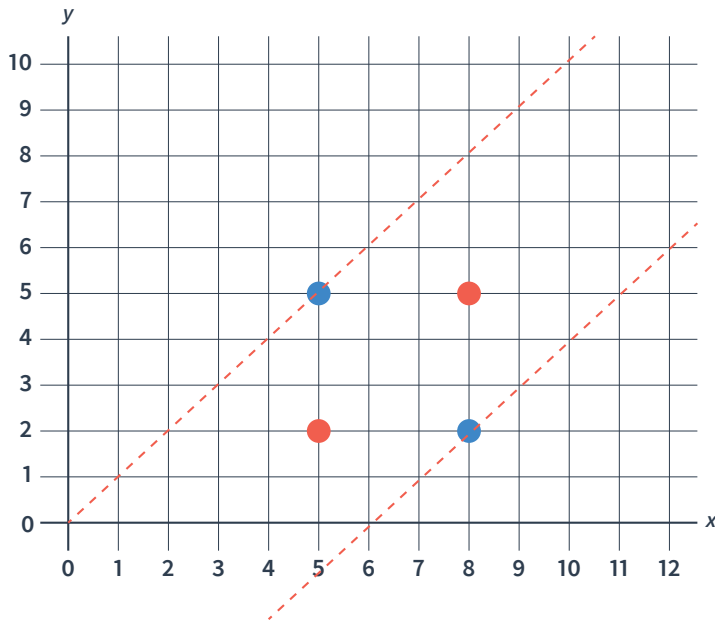
Q3

Complete this table by ticking whether each statement is **always**, **sometimes** or **never** true.

	always	sometimes	never
Square numbers are even.			
A square number of counters can be arranged into a square shape.			
Square numbers have an even number of factors.			

2 marks

Q1 These two points mark two vertices of a right-angled triangle.

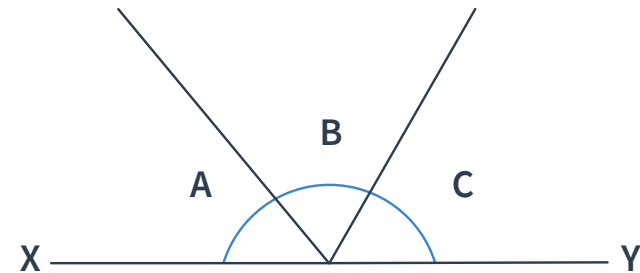


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(,) or (,)

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a Circle the correct name for angle C.

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1 mark

b What is the size of angle A?

Angle A = °

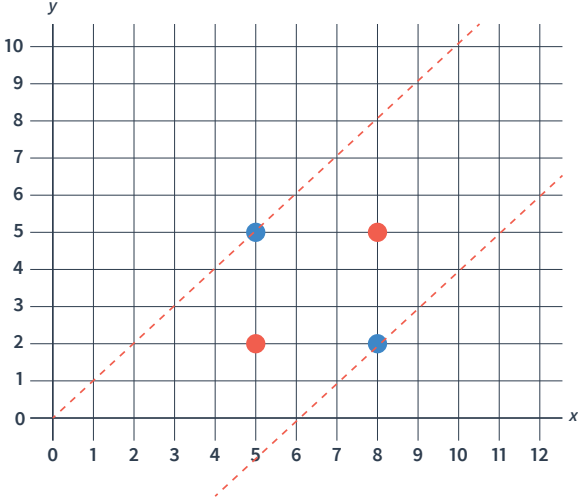
1 mark

Q3

Complete this table by ticking whether each statement is **always**, **sometimes** or **never** true.

	always	sometimes	never
Square numbers are even.		✓	
A square number of counters can be arranged into a square shape.	✓		
Square numbers have an even number of factors.			✓

2 marks

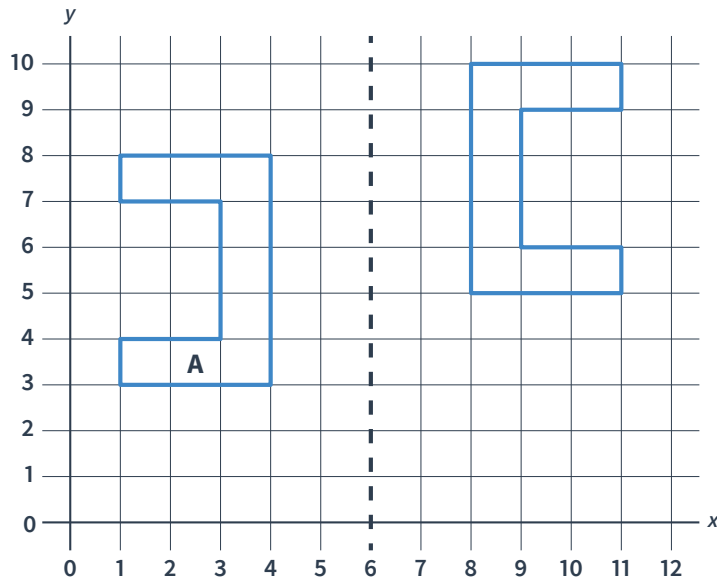
	Requirement	Mark	Additional guidance
Q1	<p>Award ONE mark each for any TWO of the following answers, which are all possibilities:</p> <p>(5,2) (8,5)</p> <p>OR any point that falls on either of the two diagonal dotted lines below:</p> 	2	
Q2a	ACUTE	1	
Q2b	60°	1	
Q3	<p>sometimes, always, never</p> <p>Award TWO marks for all three correct answers.</p> <p>Award ONE mark for any two correct answers.</p>	2	

Q1

Shape A has been moved into a new position by using two steps.

Step 1: It was reflected in the dotted line.

Step 2: It has been translated by two squares upwards into the new position.



Jake says, “I can get from Shape A to the new position by doing things slightly differently.”

How does Jake move Shape A?

Step 1:

Step 1:

1 mark

Q2

Write the symbols +, −, ×, or ÷ to compare these statements.

$$784 \square 4 = 2 \square 98$$

$$358 \square 6 = 28 \square 13$$

2 marks

Q3

This table shows the time that a painter takes to paint the outside of four houses.

House	Time taken
A	5 weeks
B	From April 10 th to the end of the month
C	The whole of March
D	30 days

Write the letters A to D in order from the shortest to longest time taken.

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Shortest			Longest

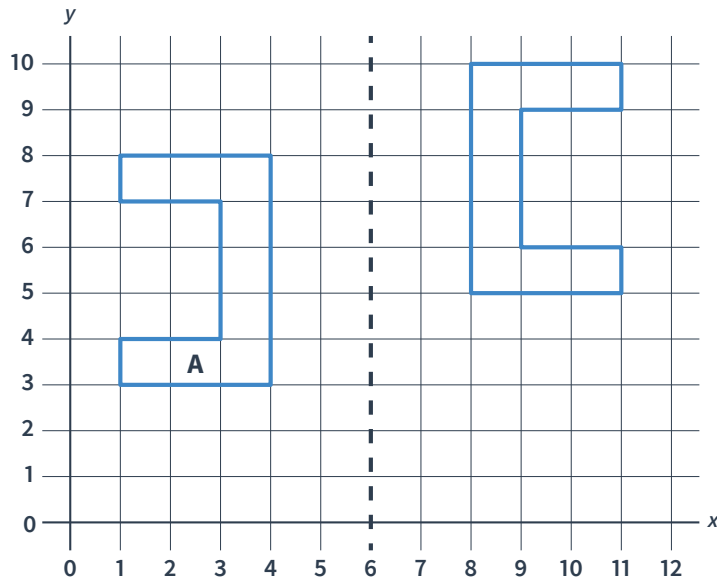
1 mark

Q1

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Step 1: It was reflected in the dotted line.

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Jake says, “I can get from Shape A to the new position by doing things slightly differently.”

How does Jake move Shape A?

Step 1:

Translate Shape A

2 squares upwards.

Step 1:

Reflect the shape in

the dotted line.

1 mark

Q2

Write the symbols +, −, ×, or ÷ to compare these statements.

784 4 = 2 98

358 6 = 28 13

2 marks

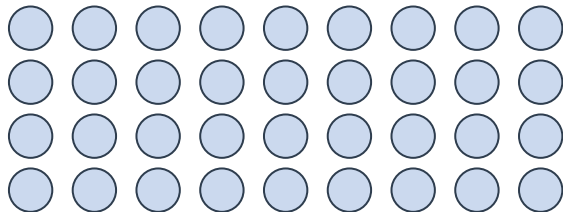
	Requirement	Mark	Additional guidance
Q1	Step 1: Translate Shape A 2 squares upwards. Step 2: Reflect the shape in the dotted line.	1	
Q2	÷, × +, × Award ONE mark for each correct pair of symbols (up to two marks).	2	
Q3	B D C A	1	

Q1 Each of these representations shows a square number in a different way.

Complete the notation for each square number.



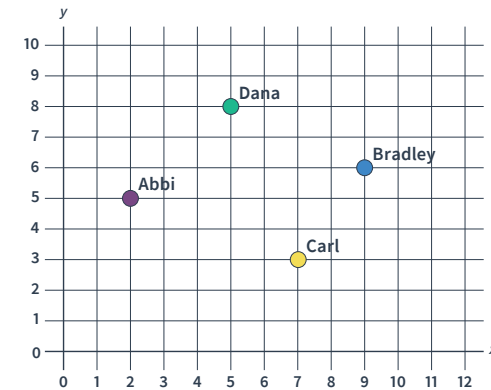
$$\square^2 = \square$$



$$\square^2 = \square$$

2 mark

Q2 Four children put plastic counters on a grid. Abbi says, “My counter is at position (2,5).” Bradley says, “My counter is at position (9,6).” Carl says, “My counter is at position (3,7).” Dana says, “My counter is at position (5,8).”



One of the children has made a mistake.

Circle the name of the person who has made a mistake and explain their mistake is.

ABBI BRADLEY CARL DANA

The mistake is that _____

1 mark

Q3

Mason enjoys watching episodes of his favourite cartoon.

Each episode lasts for 12 minutes.

So far, Mason has watched all the episodes from 1 to 38.

How long has Mason spent watching his favourite cartoon so far?

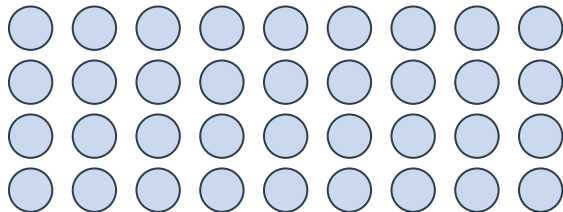
2 mark

Q1 Each of these representations shows a square number in a different way.

Complete the notation for each square number.



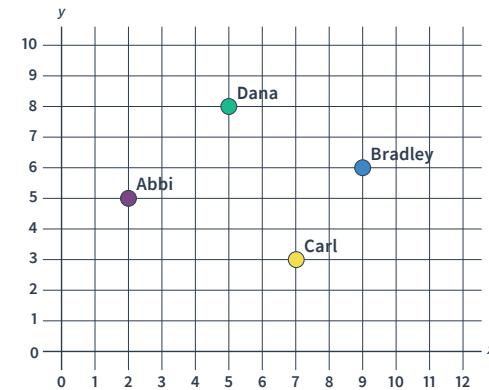
$$\boxed{7}^2 = \boxed{49}$$



$$\boxed{6}^2 = \boxed{36}$$

2 mark

Q2 Four children put plastic counters on a grid. Abbi says, “My counter is at position (2,5).” Bradley says, “My counter is at position (9,6).” Carl says, “My counter is at position (3,7).” Dana says, “My counter is at position (5,8).”



One of the children has made a mistake.

Circle the name of the person who has made a mistake and explain their mistake is.

ABBI BRADLEY **CARL** DANA

The mistake is that See mark

scheme for example

1 mark

Q3

Mason enjoys watching episodes of his favourite cartoon.

Each episode lasts for 12 minutes.

So far, Mason has watched all the episodes from 1 to 38.

How long has Mason spent watching his favourite cartoon so far?

7 hours 36 minutes

2 mark

	Requirement	Mark	Additional guidance
Q1	$7^2 = 49$ $6^2 = 36$ Award ONE mark for each correctly labelled diagram.	2	
Q2	CARL He has mixed up the x and y coordinates and put his counter at position $(7,3)$ instead of $(3,7)$.	1	
Q3	456 minutes OR 7 hours 36 minutes Award TWO marks for a correct answer. Award ONE mark for a correct method with only one arithmetic error.	2	

What are examiners looking for?

Q3

Mason enjoys watching episodes of his favourite cartoon.

Each episode lasts for 12 minutes.

So far, Mason has watched all the episodes from 1 to 38.

How long has Mason spent watching his favourite cartoon so far?

7 hours 36 minutes

Why are we asking this question?

This question is designed to assess children's ability to multiply numbers with two or more digits by a two-digit number (in this case, to multiply two two-digit numbers using long multiplication).

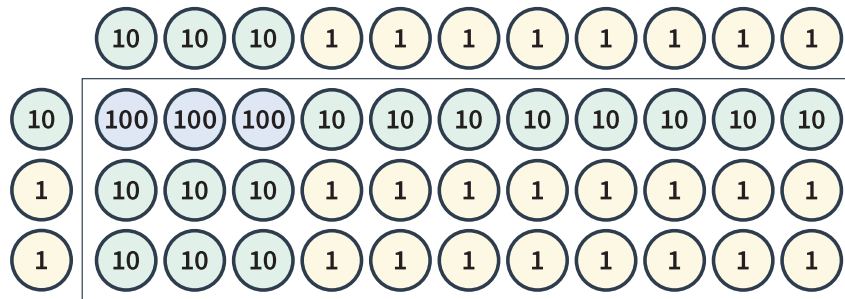
What common errors do we expect to see?

Some children may not comprehend the scenario correctly and may not recognise the correct operation needed to solve the problem.

Some children may partition 12 incorrectly as 1 and 2, calculating the answer as the total of 1×38 and 2×38 . Others may make a similar error by partitioning 38 incorrectly instead (working out the total of 12×3 and 12×8). In both examples, children do not assign the correct place value to digits.

How to encourage children to solve this question

Children may benefit from using concrete representations to model a long multiplication method. For example:

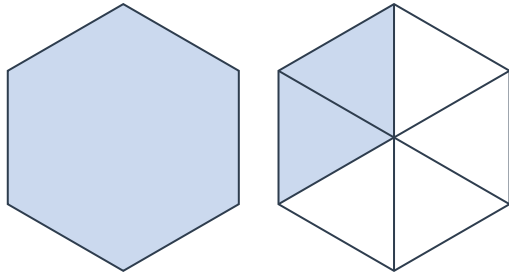


Note that, although this is a useful way to consolidate children’s understanding of the grid method of multiplication, it is not a quick strategy for children to use.

Encourage children to make the number 38 using arrow cards and then partition the number so that they are aware that they need to multiply 12×30 and 12×8 to find the overall answer.

Q1

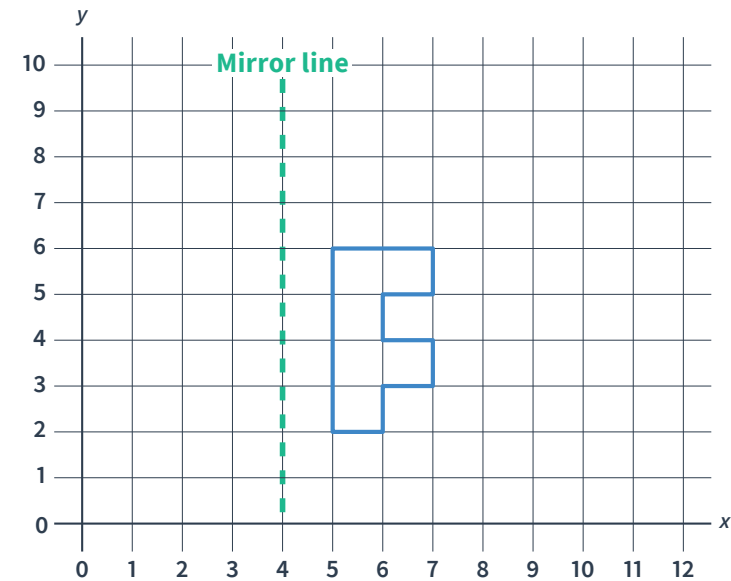
At the end of every day, a chocolate factory has $1\frac{2}{6}$ boxes of chocolates left over.



How many boxes of chocolates are left over by the end of a week?

1 mark

Q2



a

This shape is reflected in the mirror line to make a new shape.

Draw the position of the new shape on the grid. Label it Shape 2.

1 mark

b

Shape 2 is then translated by 3 squares to the right and 1 square downwards.

Draw the position of the new shape on the grid. Label it Shape 3.

1 mark

Q3

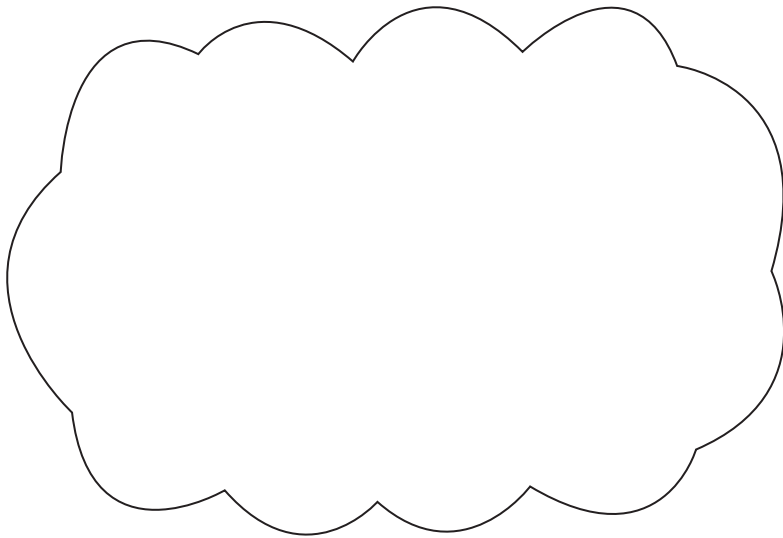
Alex says that she has shaded in 30% of this strip.



Josie says, “That’s not 30% because a percentage means ‘out of 100’ and there aren’t 100 parts to colour in 30 of.”

Who is correct? **ALEX / JOSIE**

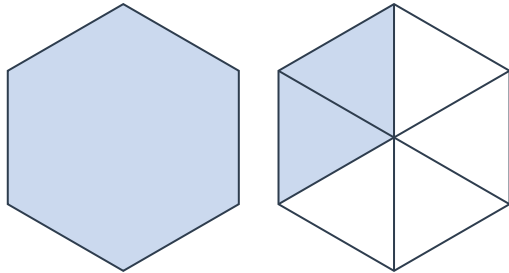
Explain your answer.



1 mark

Q1

At the end of every day, a chocolate factory has $1\frac{2}{6}$ boxes of chocolates left over.

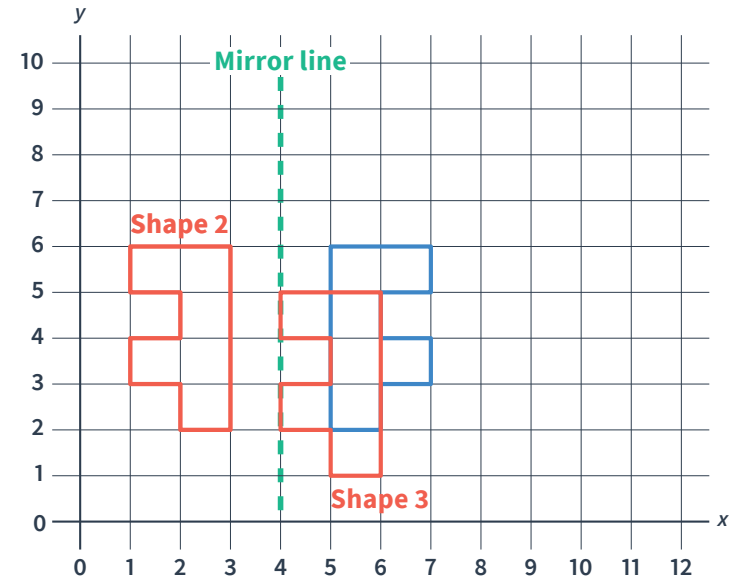


How many boxes of chocolates are left over by the end of a week?

$9\frac{2}{6}$ boxes

1 mark

Q2



a

This shape is reflected in the mirror line to make a new shape.

Draw the position of the new shape on the grid. Label it Shape 2.

1 mark

b

Shape 2 is then translated by 3 squares to the right and 1 square downwards.

Draw the position of the new shape on the grid. Label it Shape 3.

1 mark

Q3

Alex says that she has shaded in 30% of this strip.



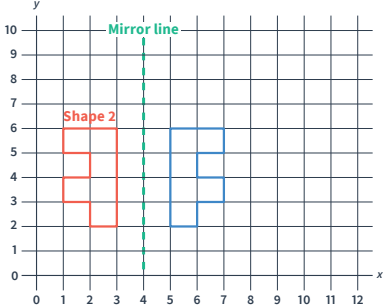
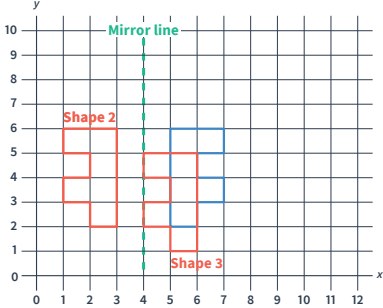
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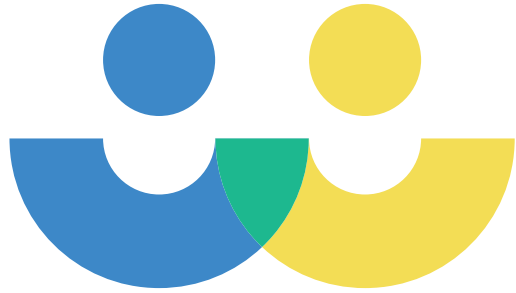
Who is correct? **ALEX** / JOSIE

Explain your answer.

*See mark scheme
for example*

1 mark

	Requirement	Mark	Additional guidance
Q1	$9\frac{2}{6}$ OR $9\frac{1}{3}$	1	
Q2a	Shape 2 drawn correctly: 	1	
Q2b	Shape 3 drawn correctly: 	1	
Q3	<p>Alex</p> <p>Alex is correct because 30 out of 100 is the same as 3 out of 10. Both are equivalent to 30%.</p> <p>Award ONE mark for both an appropriate answer as well as indicating that Alex is correct.</p>	1	



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