

# OCR

# F

## Practice Paper 1

### GCSE MATHEMATICS B

Candidates answer on the Question Paper.

**OCR supplied materials:** None

**Other materials required:**

- Geometrical instruments
- Tracing paper (optional)

**Duration:** 1 hour 30 minutes



Candidate forename		Candidate surname	
Centre number		Candidate number	

#### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  - *there may be more space than you need.*
- **Calculators can be used.**



#### Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  - *Use this as a guide as to how much time to spend on each question.*
- Questions labelled with an asterisk (\*) are ones where the quality of your written communication will be assessed.

#### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

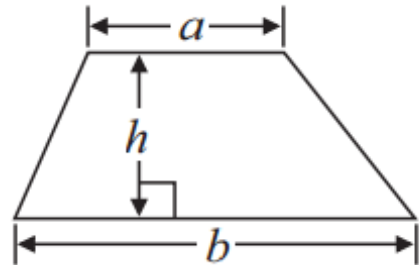
Teacher	Class
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# Overview

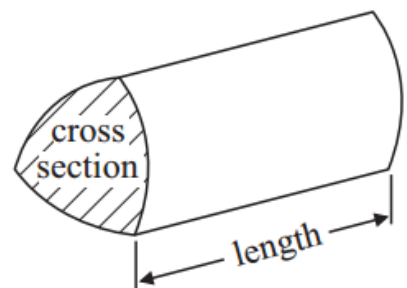
Q	Topic	Your Mark	Total
1	Pictogram		5
2	Measures		4
3	Number Properties		4
4	Fractions, decimals and percentages		2
5a	Listing Outcomes		2
5b	Rounding		2
6	Negative and Decimal Numbers		5
7	Co-ordinates		4
8	Order of Operations		4
9	Ratio		2
10	Probability Scale		3
11	Nets		4
12	Sequences		5
13	Stem and Leaf		3
14	Area of a Triangle & Trapezium		4
15	Pie Chart		4
16	Algebra – Simplify, Expand & Factorise		7
17	Questionnaire		4
18	Express as a Fraction		3
19	Transformations – Translation & Rotation		4
20	LCM Problem		2
21	Scatter graph		3
22	Solving an Equation		2
23	Solving inequalities & Change the Subject		4
24	Best Buy – Percentage Increase & Decrease		3
25	Pythagoras' Theorem		3
26	Averages from a Grouped Table		5
27	Angles on Parallel Lines		3
	Total		100

## Formulae Sheet: Foundation Tier

Area of trapezium =  $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section  $\times$  length







**PLEASE DO NOT WRITE ON THIS PAGE**

Answer **all** the questions.

1

Sian asked some students about their favourite animal. The pictogram shows the results.

		Frequency
Cat		16
Dog		13
Rabbit		
Hamster		
Other		

Key:  represents \_\_\_\_\_ people.

(a) Complete the key

[1]

(b) 13 people selected a dog. Show this on the pictogram.

[1]

(c) How many people selected rabbit?

..... [1]

(d) How many more people selected hamster than other?

..... [2]

2

Brittney is making a hutch for her rabbit.

Litres	Kilograms	Centimetres	Millilitres
Millimetres	Grams	Metres	Milligrams

Complete her shopping list, using the words from the box above.

(a) Wood for the hutch of length 2.5 .....

(b) Bricks for the hutch to stand on of height 75 .....

(c) A tin of paint containing 1.5 .....

(d) A box nails weighing 150 .....

[4]

**3** Here is a list of numbers.

15    144    42    1    6    125    28    2    81

From the list write down a number which

(a) Is a cube

..... [1]

(b) Has 3 and 7 as factors

..... [1]

(c) Is prime and a factor of 30

..... [1]

(d) Is square and a multiple of 4

..... [1]

**4** Write down

(a) 30% as a fraction.

..... [1]

(a)  $\frac{2}{5}$  as a decimal

..... [1]

- 5 Angel (A), Brittney (B), Chelsea (C) and Danielle (D) are going to see Justin Bieber in concert.  
 (a) They sit next to each other in a row of four seats.  
 Angel has to sit in an odd numbered seat.

Complete the table to show all twelve possible orders in which they could sit.  
 One has been done for you.

Seat 1	Seat 2	Seat 3	Seat 4
A	B	C	D

[2]

- (b) There were 34526 people at the concert.  
 Write this number correct to

(I) the nearest thousand

..... [1]

(II) three significant figures

..... [1]

6 The table shows the average temperature in cities in January 2016.

Country	England	Canada	Iceland	Russia
Temperature	$3^{\circ}\text{C}$	$-3^{\circ}\text{C}$	$-1^{\circ}\text{C}$	$-6^{\circ}\text{C}$

(a) Write the temperatures in ascending order, coldest first.

..... $^{\circ}\text{C}$  ..... $^{\circ}\text{C}$  ..... $^{\circ}\text{C}$  ..... $^{\circ}\text{C}$  [1]

(b) Calculate the range of temperatures.

..... $^{\circ}\text{C}$  [1]

The average snow fall in metres is recorded in the table for each of the countries in January 2016.

Country	England	Canada	Iceland	Russia
Snowfall	0.063 m	0.38 m	0.505 m	0.147 m

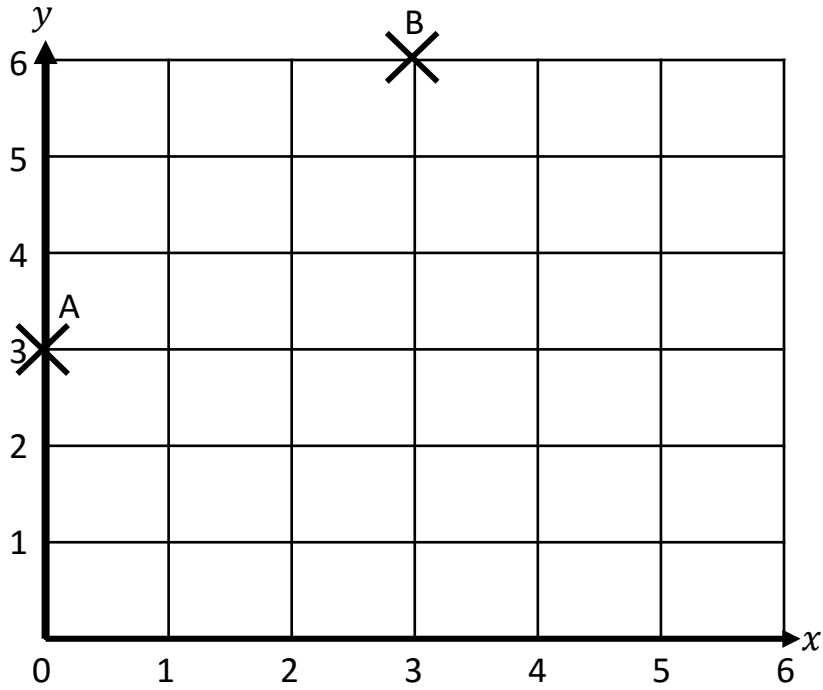
(c) Write the measurements in ascending order, smallest first.

.....m .....m .....m .....m [2]

(d) Which country had the most snow?

..... [1]





(a) (i) Write down the coordinates of point A

( \_\_\_\_\_ , \_\_\_\_\_ )

(ii) Write down the coordinates of point B

( \_\_\_\_\_ , \_\_\_\_\_ )

[2]

(b) On the grid, mark the point (3,0) with the letter C

(1)

(c) ABCD is a square.

Write down the coordinates of the place point D should be.

( \_\_\_\_\_ , \_\_\_\_\_ ) (1)

8

Work out.

(a) (I)  $17 - 7 \times 2$

..... [1]

(II)  $28 \div (7 - 3)$

..... [1]

(b) (I)  $7^2 + \sqrt{64}$

..... [1]

(II)  $3^4$

..... [1]

9

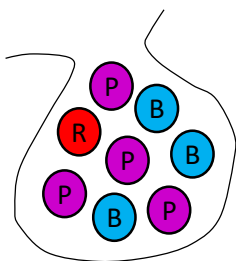
Amir and Ben share £450 in the ratio of 7:2.

How much money does Amir get?

£..... [2]

10 There are 8 beads in a bag.

One bead is red, three beads are blue and four beads are purple.



Raveen takes, at random, a bead from the bag.

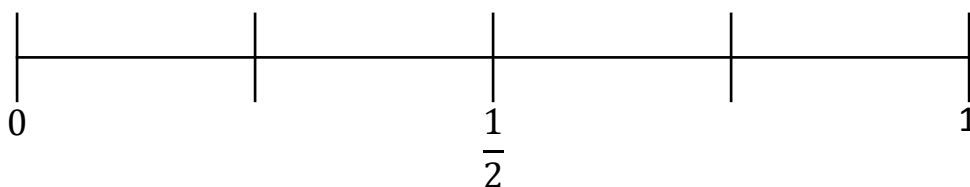
She looks at its colour and then puts the bead back in the bag.

On the probability line,

(i) Mark with the letter P the probability Raveen takes a purple bead.

(ii) Mark with the letter G the probability Raveen takes a green bead.

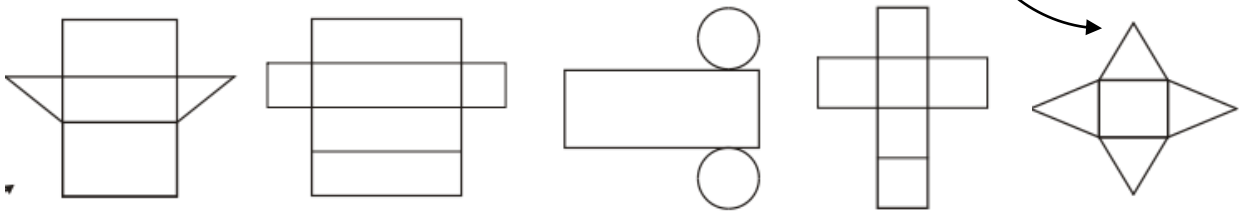
(iii) Mark with the letter R the probability Raveen takes a Red bead.



[3]

- 11 (a) The diagrams show some solid shapes and their nets.  
An arrow has been drawn from one solid shape to its net.

Draw an arrow from each of the other solid shapes to its net.



[2]

- (b) Shown below is a cuboid.

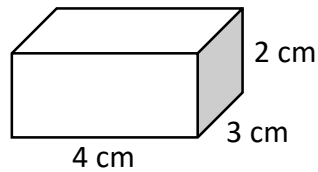
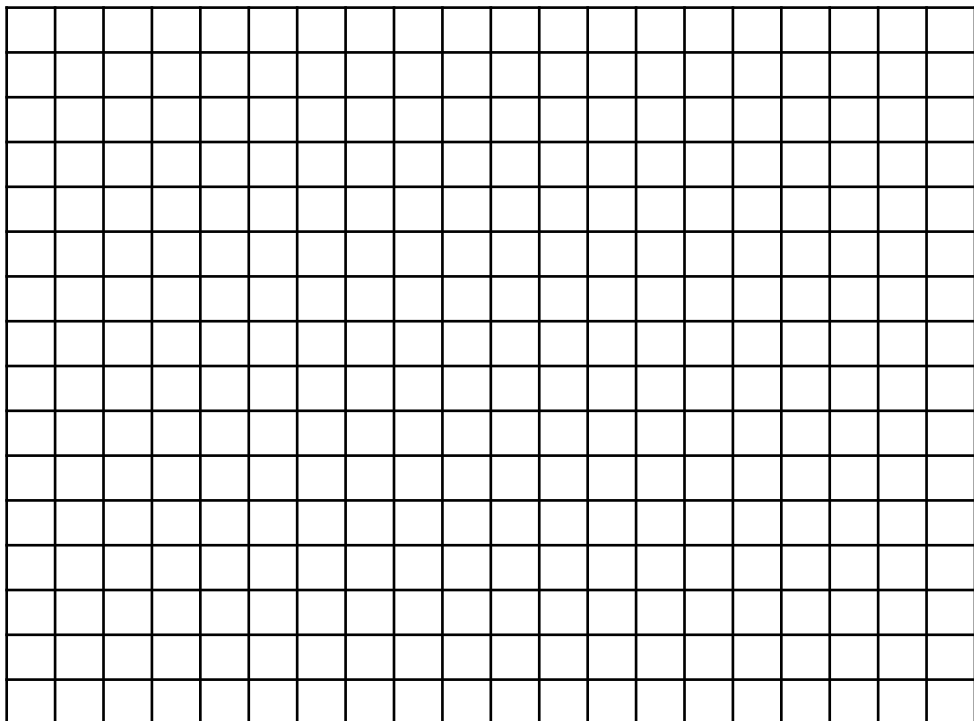


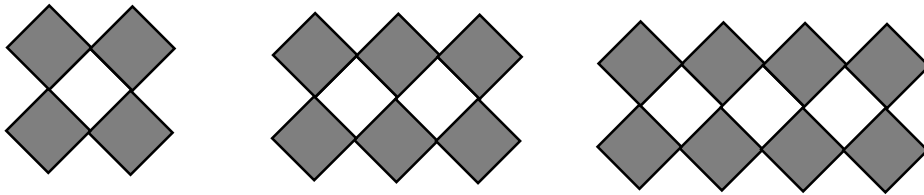
Diagram **NOT** accurately drawn

Draw a net for the cuboid.  
Each square represents  $1 \text{ cm}^2$

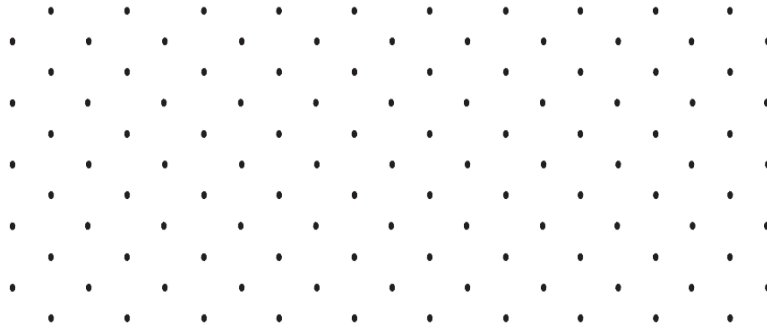


[2]

12 Harley draws this sequence of patterns.



(a) Draw the next pattern in the sequence on the isometric paper.



[1]

(b) Complete the table.

White Tiles	1	2	3	4	5
Grey Tiles	4	6	8		

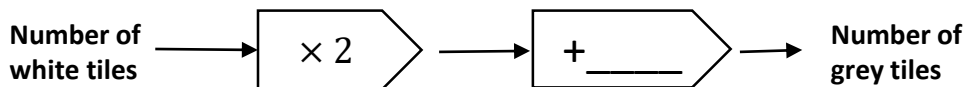
[1]

(c) The sequence is continued.

How many grey tiles will there be when there are 10 white tiles.

..... [1]

(d) (I) Complete the rule for the pattern.



[1]

(II) Use the rule to work out how many white tiles there will be when there are 250 grey tiles.

..... [1]

13

(a) Here are the ages of 24 people.

12	37	24	31	35	8
39	15	32	18	26	24
24	6	26	17	33	13
13	22	14	13	29	25

Show this information in an ordered stem and leaf diagram.



[3]

14 (a) Work out the area of this triangle.

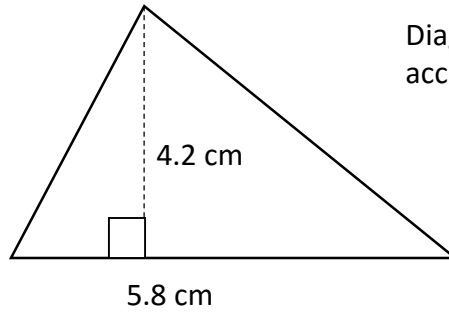


Diagram **NOT** accurately drawn

.....  $cm^2$  [2]

(b) Work out the area of this trapezium.

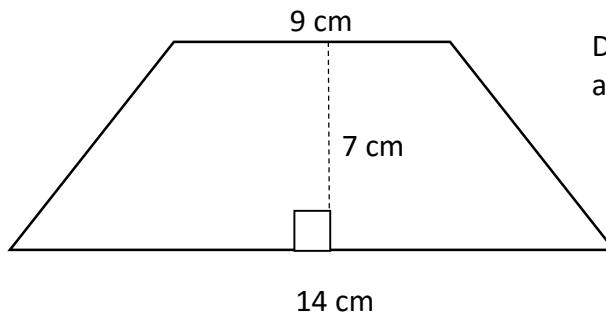


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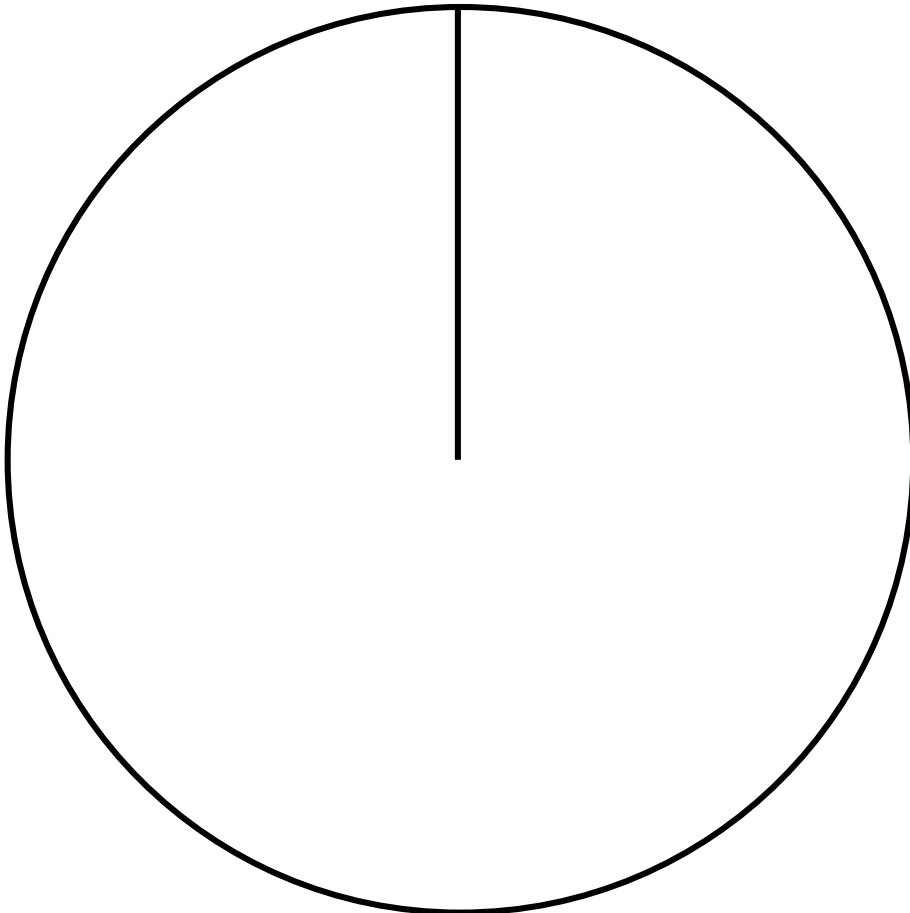
.....  $cm^2$  [2]

15 In the London Olympics 300 gold medals were awarded.

The table shows which countries won the gold medals.

Country	Frequency
United States	46
Chin	38
Great Britain & N. Ireland	29
Russian Federation	24
Other	163

Draw and label a pie chart to represent this data in the circle below.



[4]



16 (a) Simplify  $a + a + a + a - a + a + a$

..... [1]

(b) Simplify  $4b \times 3$

..... [1]

(c) Simplify  $3c + 4a + c - 3a$

..... [1]

(d) Expand  $3x(x - 5)$

..... [1]

(e) Factorise  $6x^2y + 3xy$

..... [1]

(f) Shown below is a regular polygon.

Write a formula for the perimeter of the polygon in its simplest form.

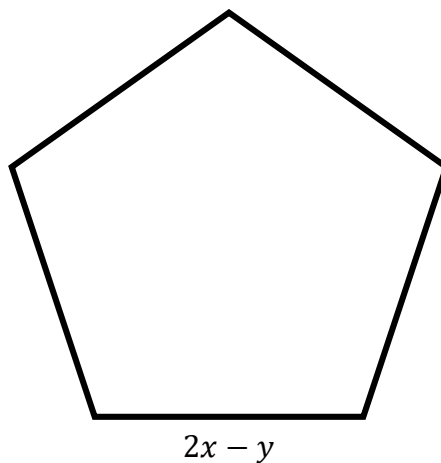


Diagram **NOT** accurately drawn

..... [2]

- 17 Abdullah wants to find out how much time year 11 students spend revising. He uses this question on a questionnaire.

How much time do you spend revising?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-2	2-4	4+

- (a) Write down **two** criticisms of this question

1 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

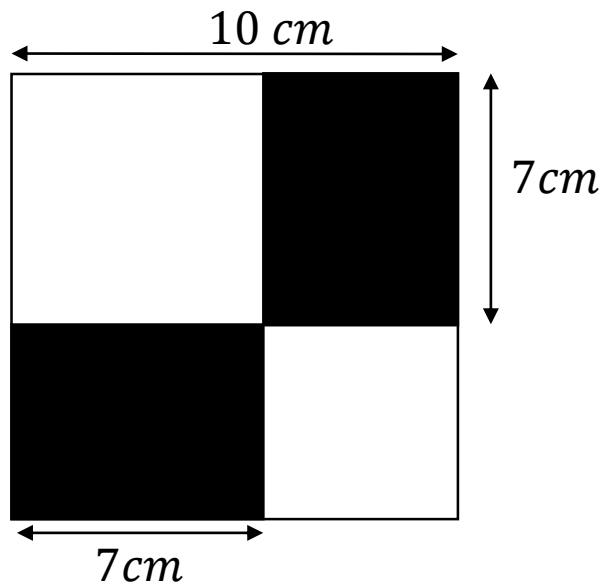
[2]

- (b) Design a more suitable question for Abdullah's questionnaire to find out how much time year 11 students spend revising.

[2]

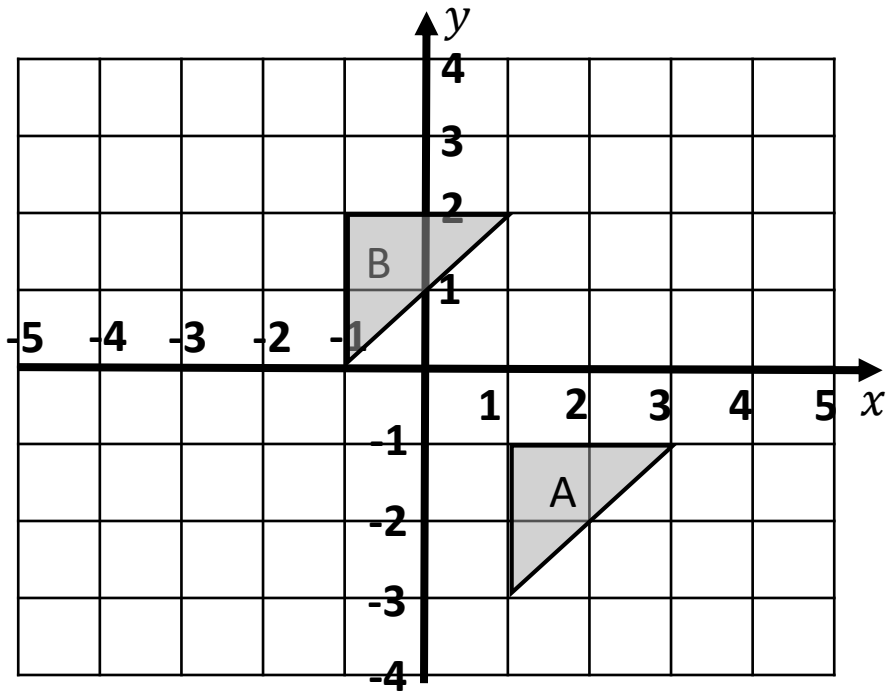
- 18 The shape is a square with two shaded rectangles.

Diagram **NOT**  
accurately drawn



What fraction of the shape is shaded?

..... [3]



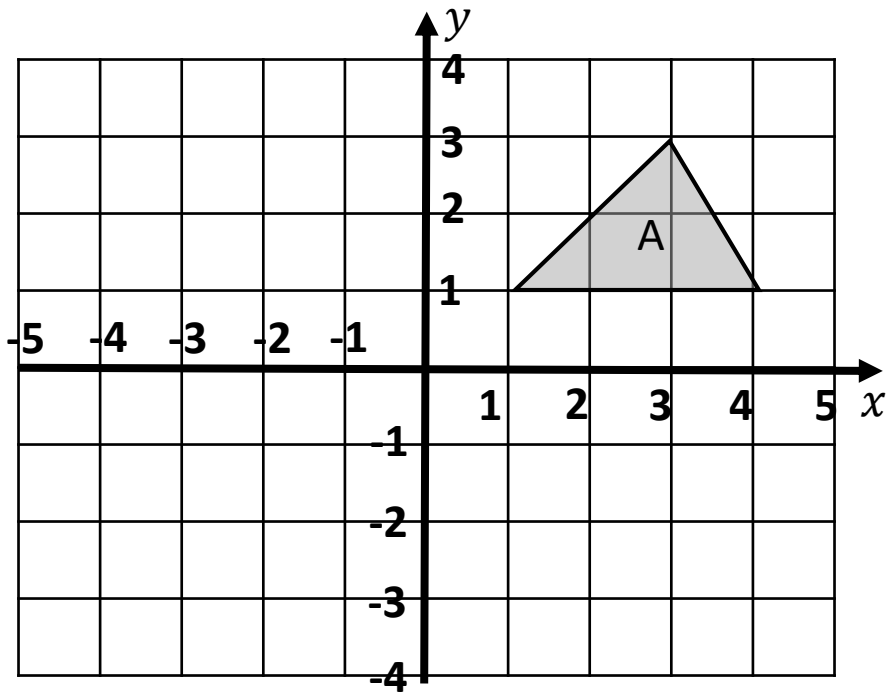
(a) Describe fully the single transformation from A to B.

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(2)



(b) Rotate triangle A  $90^\circ$  anticlockwise with a centre  $O$ .

(2)

**20** Two buses leave the station at the 10:30am.

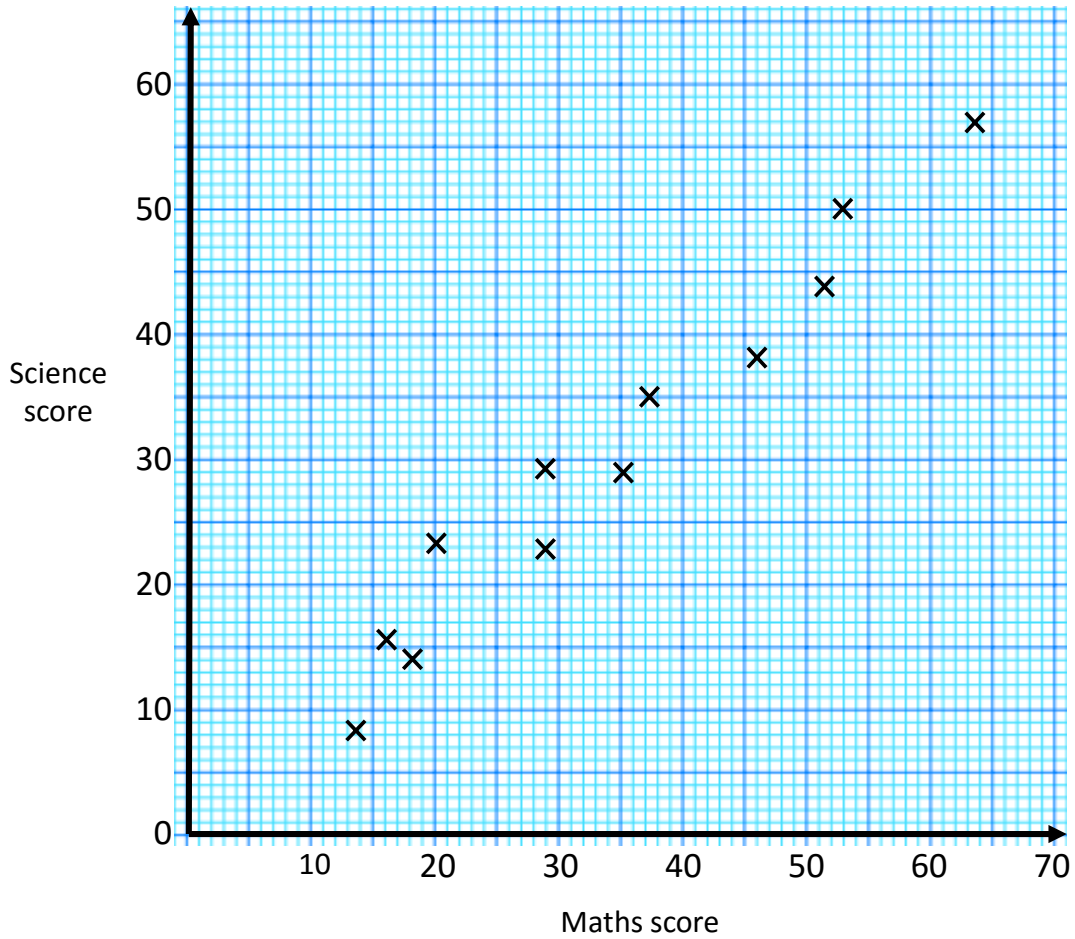
Bus A arrives back at the station every 12 minutes.

Bus B arrives back at the station every 24 minutes.

When is the next time both bus A and bus B are at the station together?

..... [2]

21 The scatter graph shows information about 12 students maths and science scores on a test.



(a) What type of correlation does this scatter graph show?

..... [1]

A Sophie scores 68 marks on her maths test but is off ill for the science test.

(b) Estimate the score Sophie would gain on the science test.

..... Marks [2]

22 Solve using algebra.

$$8x - 25 = 2x + 17$$

..... [2]

23 (a) Solve this inequality.

$$3(x + 2) < 21$$

..... [2]

(b) Rearrange this formula to make  $s$  the subject.

$$r = 4s + 9$$

..... [2]

**24\*** Georgia wants to buy an iPad.


The iPad that Georgia wants is sold in two different shops.

**Golden Delicious**



15% off usual price  
of £350

**Tech World**



£249 plus 20% VAT

Work out which shop Georgia should buy the iPad from.

..... [3]



25

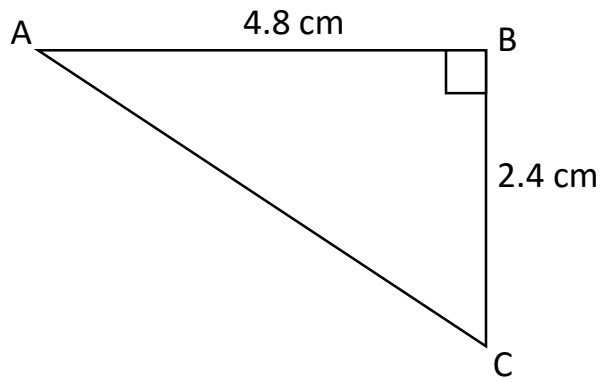


Diagram **NOT**  
accurately drawn

ABC is a right-angled triangle.

AB = 4.8 cm

BC = 2.4 cm

Calculate the length of AC.

Give your answer correct to 3 significant figures.

.....cm. [3]

- 26 The table shows information about the number of hours 40 children spend doing homework in a week.

Number of hours (h)	Frequency
$0 \leq h < 2$	7
$2 \leq h < 4$	10
$4 \leq h < 6$	12
$6 \leq h < 8$	8
$8 \leq h < 10$	3

- (a) Work out the modal class interval.

..... [1]

- (b) Work out an estimate for the mean number of hours.

..... hours [4]

- 27\* The diagram shows parallelogram ABCD.  
 E is a point on DA.  
 $CE = EB$ , angle  $EBA = 25^\circ$  and angle  $CED = 75^\circ$ .

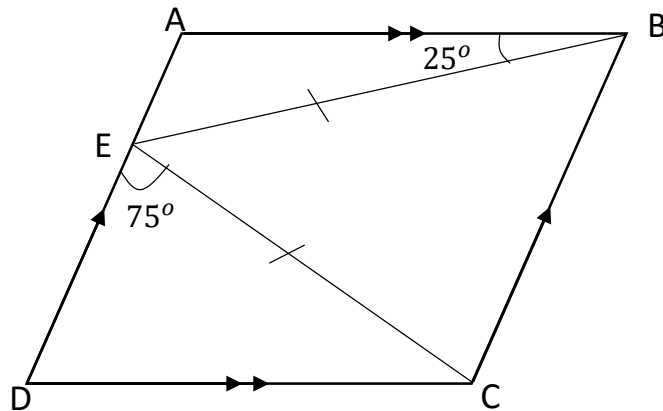


Diagram **NOT** accurately drawn

Work out angle  $AEC$ .  
 Give a reason for each angle you work out.

Angle  $AEC = \dots\dots\dots^\circ$  [3]

**TOTAL FOR PAPER 100 MARKS**