

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**Tuesday 21 May 2019 – Morning**

**GCSE (9–1) Mathematics**

**J560/01 Paper 1 (Foundation Tier)**

**Time allowed: 1 hour 30 minutes  
plus your additional time allowance**

**YOU MAY USE:**

**a scientific or graphical calculator  
geometrical instruments  
tracing paper**

**Please write clearly in black ink.**

**Centre number**

--	--	--	--	--

**Candidate number**

--	--	--	--

**First name(s)**

\_\_\_\_\_

**Last name**

\_\_\_\_\_

**READ INSTRUCTIONS OVERLEAF**



## **INSTRUCTIONS**

**Use black ink. You may use an HB pencil for graphs and diagrams.**

**Answer ALL the questions.**

**Read each question carefully before you start to write your answer.**

**Where appropriate, your answers should be supported with working. Marks may be given for a correct method even if the answer is incorrect.**

**Write your answer to each question in the space provided.**

**Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).**

## **INFORMATION**

**The total mark for this paper is 100.**

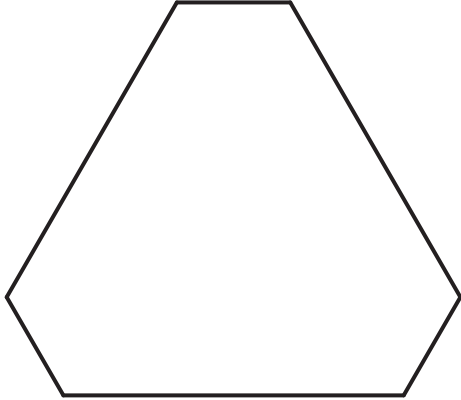
**The marks for each question are shown in brackets [ ].**

**Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.**

**BLANK PAGE**

**Answer ALL the questions.**

- 1 (a) Write down the mathematical name of this polygon.**



**(a) \_\_\_\_\_ [1]**

- (b) Write down the order of rotation symmetry of the polygon.**

**(b) \_\_\_\_\_ [1]**

**2 (a) Write down each of the following.**

**(i) An odd number.**

**(a)(i) \_\_\_\_\_ [1]**

**(ii) A factor of 25.**

**(ii) \_\_\_\_\_ [1]**

**(iii) A prime number between 20 and 30.**

**(iii) \_\_\_\_\_ [1]**

**(b) Show that 55 is NOT a square number. Use the space below. [2]**

**3 Complete this table of fractions, decimals and percentages. [3]**

<b>Fraction</b>		<b>Decimal</b>		<b>Percentage</b>
$\frac{1}{4}$	=		=	<b>25%</b>
$\frac{7}{100}$	=	<b>0.07</b>	=	
	=	<b>1.3</b>	=	<b>130%</b>

**4 Here are the first four terms of a sequence.**

**3          8          13          18**

**(a) (i) Write down the next term of the sequence.**

**(a)(i) \_\_\_\_\_ [1]**

**(ii) Explain how you worked out your answer.**

**\_\_\_\_\_ [1]**

**(b) Explain why 534 is NOT a term in this sequence.**

**\_\_\_\_\_ [1]**

- 5 Lev (L), Maria (M) and Nicholas (N) sit in a row of three seats.

- (a) Use the table to list all the different orders in which they could sit.

One possible order is already shown in the table.

You may not need to use all the rows in the table.

[2]

Seat 1	Seat 2	Seat 3
L	M	N

- (b) All possible orders in which they could sit are equally likely.

What is the probability that Lev (L) sits next to Maria (M)?

(b) \_\_\_\_\_ [1]



**6 (a) Multiply out.**

$$4(3x + 2)$$

**(a) \_\_\_\_\_ [1]**

**(b) Factorise.**

$$3c - 6d$$

**(b) \_\_\_\_\_ [1]**

**7 A survey asked whether some students went swimming (S) or played tennis (T) last month.**

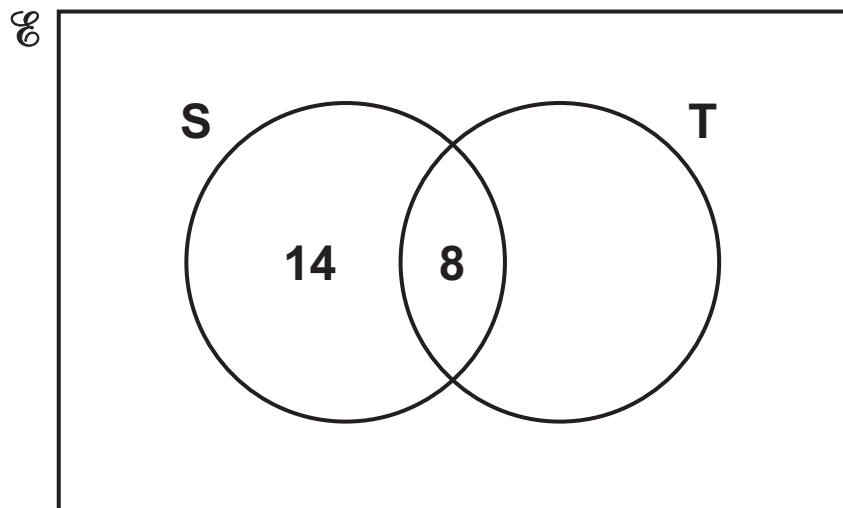
**17 played tennis.**

**11 did not go swimming and did not play tennis.**

**22 went swimming.**

**8 went swimming and played tennis.**

**Some of this information is shown on the Venn diagram below.**



**How many students were in the survey?**

\_\_\_\_\_ [3]

- 8 Kim is paid £9.40 per hour for the first 35 hours she works each week.  
After 35 hours she is paid at one and a quarter times the hourly rate.

One week Kim works 42 hours.

Calculate how much she is paid for that week.

£ \_\_\_\_\_ [6]

**9 Mike drinks  $\frac{2}{5}$  of a litre of juice each day.**

**Juice costs £4.40 for a 2 litre carton and £2.60 for a 1 litre carton.**

**Mike buys enough juice to last for 7 days.**

**What is the lowest price Mike can pay for this juice?  
Show how you decide.**

**£ \_\_\_\_\_ [4]**

**10 Mr and Mrs Wilde have five children who are all DIFFERENT ages.**

**The mean age is 6.4.**

**The range is 9.**

**The median is 6.**

**The oldest child is 12.**

**Work out the ages of the children.**

**Write their ages from youngest to oldest.**

***youngest***

***oldest***  
**[4]**

**11 Triangles A and B are drawn on the coordinate grid opposite.**

**(a) Describe fully the SINGLE transformation that maps triangle A onto triangle B.**

---

---

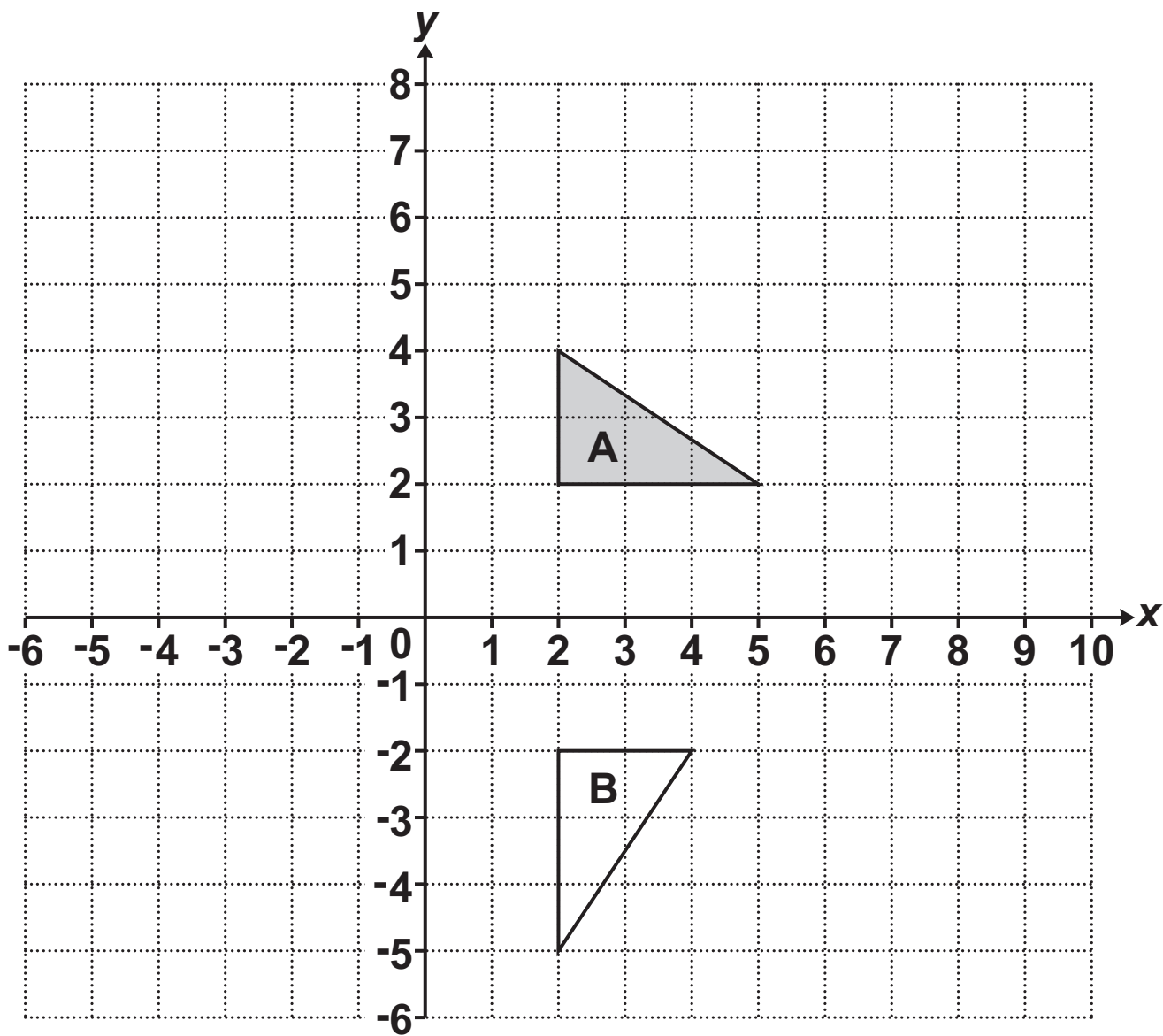
**[3]**

**(b) (i) On the grid opposite, reflect triangle A in the line  $x = 0$ .**

**Label the image C. [2]**

**(ii) On the grid opposite, translate triangle A by vector  $\begin{pmatrix} -5 \\ -4 \end{pmatrix}$ .**

**Label the image D. [2]**



- 12 Jack and Alex take rubbish to be recycled.  
Jack takes 520 kilograms, 87% of which can be recycled.  
Alex takes 750 kilograms, 61% of which can be recycled.**

**Calculate who takes the greatest amount of rubbish that can be recycled and by how much.**

\_\_\_\_\_ by \_\_\_\_\_ kg [3]

- 13 Calculate the area of a circle with radius 14 cm.**

\_\_\_\_\_ cm<sup>2</sup> [2]



**14 (a) (i) Round 356 to the nearest ten.**

**(a)(i) \_\_\_\_\_ [1]**

**(ii) Round 356.052 to 1 decimal place.**

**(ii) \_\_\_\_\_ [1]**

**(b) Find the value of  $y$  in each of the following.**

**(i)  $3 \times 3 \times 3 \times 3 = 3^y$**

**(b)(i)  $y =$  \_\_\_\_\_ [1]**

**(ii)  $6^3 \times 6^5 = 6^y$**

**(ii)  $y =$  \_\_\_\_\_ [1]**

**15 Anna and Paddy take part in the same fun run.**

**Anna completed the fun run in 2 hours.  
Her average speed was 6 kilometres per hour.  
Paddy completed the fun run in 90 minutes.**

**(a) Work out Paddy's average speed in kilometres per hour.**

**(a) \_\_\_\_\_ km/h [4]**

**(b) Anna says**

**Because I stopped for drinks, my average running speed was faster than 6 kilometres per hour.**

**Give one reason to support Anna's statement.**

\_\_\_\_\_  
\_\_\_\_\_ **[1]**

- 16 The volume of a piece of wood is  $620 \text{ cm}^3$ .  
Its density is  $0.85 \text{ g/cm}^3$ .

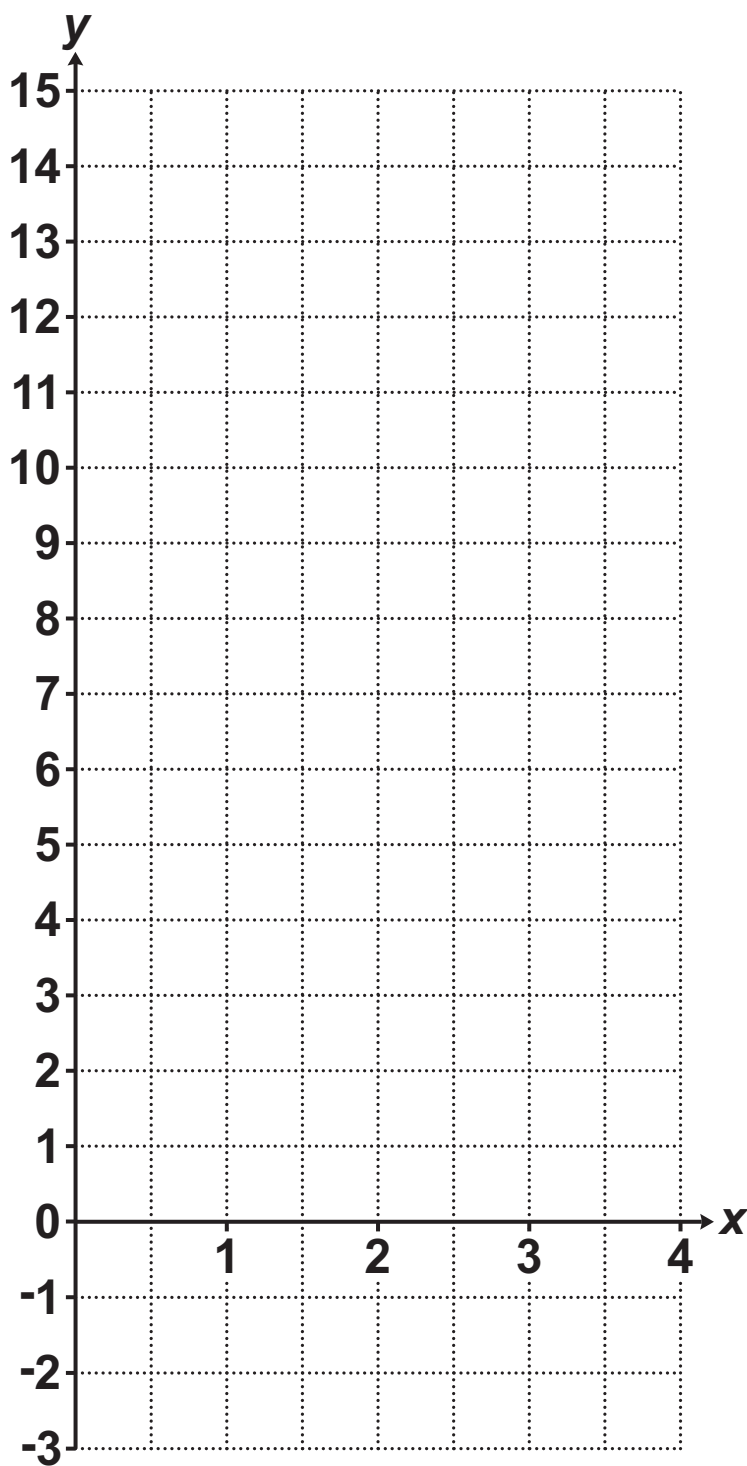
Work out its mass.

\_\_\_\_\_ g [2]

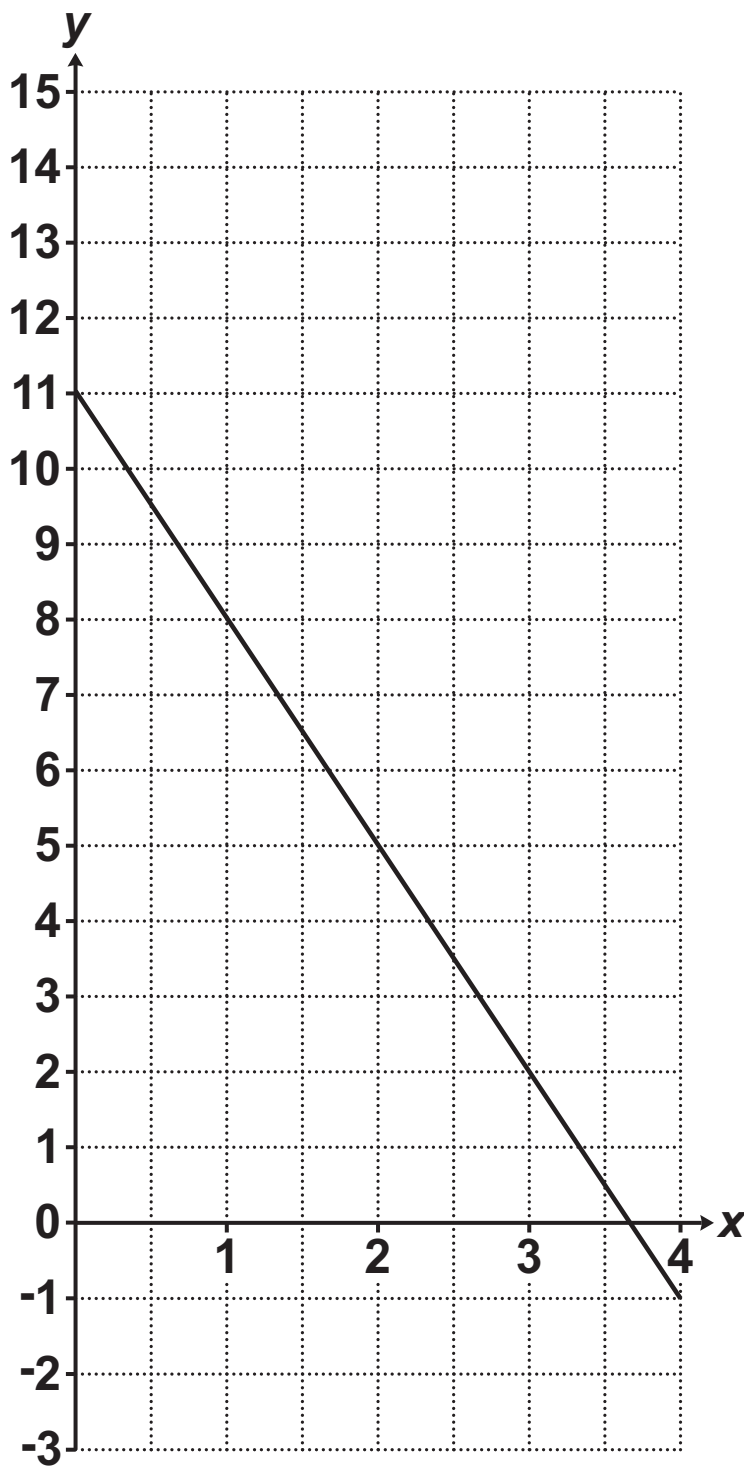
**17 (a) Complete this table for  $y = 4x - 2$ . [1]**

<b><math>x</math></b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b><math>y</math></b>	<b>-2</b>	<b>2</b>	<b>6</b>		<b>14</b>

- (b) On the grid below, draw the graph of  $y = 4x - 2$  for values of  $x$  from 0 to 4. [2]



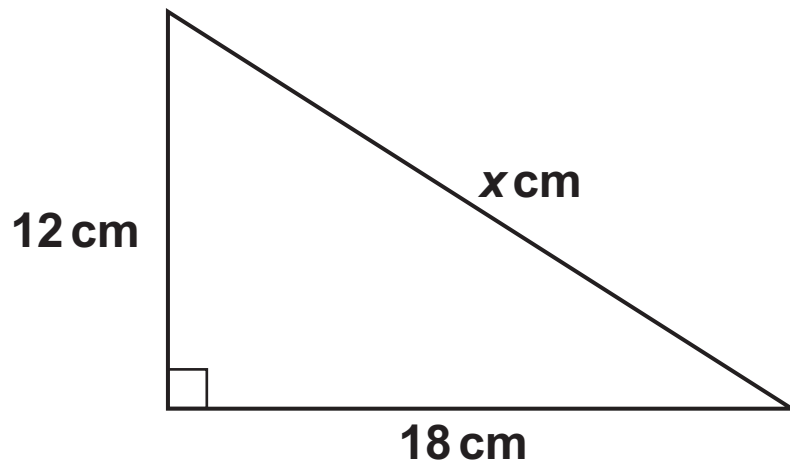
(c) The diagram below shows part of another straight line.



**Find the equation of this straight line.**

**(c) \_\_\_\_\_ [3]**

18 Here is a right-angled triangle.



Not to scale

Work out the value of  $x$ .

$x =$  \_\_\_\_\_ [3]



- 19 (a) Anne, Barry and Colin share a prize in the ratio  
 $3 : 4 : 5$ .  
Colin gives  $\frac{1}{3}$  of his share to a charity.

What fraction of the whole prize does Colin give to the charity?

(a) \_\_\_\_\_ [3]

- (b) Delia, Edwin and Freya share some money in the ratio  $5 : 7 : 8$ .  
Freya's share is £1600.

How much money did they share?

(b) £ \_\_\_\_\_ [2]

**20 Luke is an office receptionist.**  
**Each day, for 60 days, he records the number of people visiting the office.**

Number of people, ( $n$ )	Frequency		
$0 \leq n \leq 5$	20		
$5 < n \leq 10$	14		
$10 < n \leq 20$	11		
$20 < n \leq 40$	15		

**(a) Calculate an estimate of the mean number of people visiting the office.**

(a) \_\_\_\_\_ [4]

**(b) Luke says the range is 40.**

**Explain why he may be wrong.**

\_\_\_\_\_

\_\_\_\_\_ [1]

**21 James and Elizabeth buy some clothes.**

**James buys 5 shirts and 4 jumpers. He pays £163.  
Elizabeth buys 3 shirts and 2 jumpers. She pays £89.**

**Assume that each shirt has the same cost and that  
each jumper has the same cost.**

**Work out the cost of one shirt and the cost of one  
jumper.**

**You must show your working.**

**Cost of one shirt £ \_\_\_\_\_**

**Cost of one jumper £ \_\_\_\_\_ [5]**

**22 Claudia invests £25 000 at a rate of 2% per year compound interest.**

**Calculate the total amount of INTEREST she will have earned after 5 years.**

**Give your answer correct to the nearest penny.**

£ \_\_\_\_\_ [4]

**23 A bus timetable shows the following information.**

**A bus following route T leaves for the train station every 20 minutes.**

**A bus following route A leaves for the airport every 18 minutes.**

**A bus following route T and a bus following route A both leave at 8.37 am.**

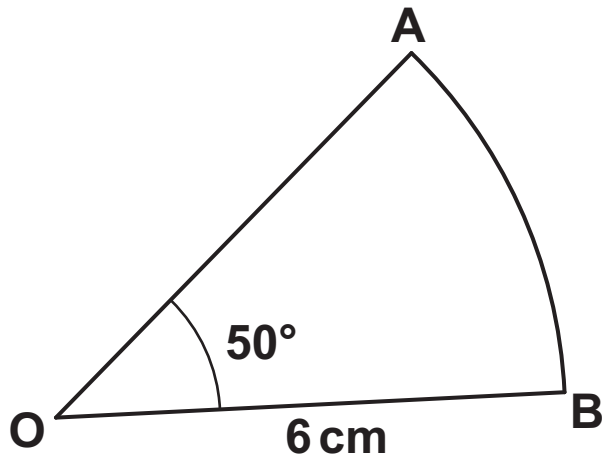
**(a) When is the next time one of each bus is timetabled to leave at the same time?**

**(a) \_\_\_\_\_ [4]**

**(b) Write down one assumption that was necessary to solve this problem.**

\_\_\_\_\_  
\_\_\_\_\_ [1]

**24** AOB is a sector of a circle, centre O.



**Not to scale**

**Show that the length of arc AB is 5.24 cm, correct to 3 significant figures. Use the space below. [3]**

- 25 Bennie is 7 years older than Ayesha.  
Chloe is twice as old as Bennie.  
The sum of their three ages is 57.**

**Work out the ages of Ayesha, Bennie and Chloe.**

**Ayesha's age is \_\_\_\_\_**

**Bennie's age is \_\_\_\_\_**

**Chloe's age is \_\_\_\_\_ [6]**

**END OF QUESTION PAPER**

### **Copyright Information**

**OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.**

**If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.**

**For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.**

**OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.**