Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

5260108957

MATHEMATICS **0580/33**

Paper 3 (Core) **May/June 2019**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 104.

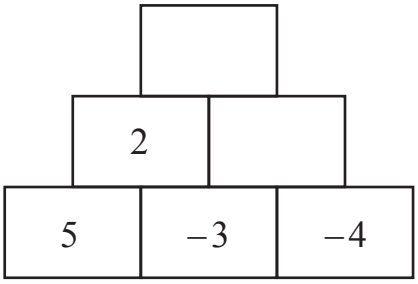
DC (JM/SW) 166636/2
© UCLES 2019

1 **(a)** Write this number in figures.

One million three hundred and two thousand five hundred and ninety-six.

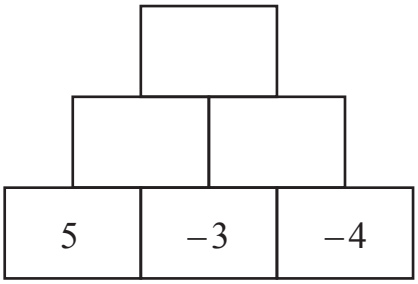
..... [1]

(b) **(i)** Two numbers are **added** together to give the number in the box immediately above.



Complete the diagram. [2]

(ii) Two numbers are **multiplied** together to give the number in the box immediately above.



Complete the diagram. [3]

(c) Write these in order of size, starting with the smallest.

$\frac{5}{27}$ 18.4% 1.83×10^{-1} 5^{-1}

..... < ..... < ..... < ..... [2]

smallest

(d) Work out 142 as a percentage of 304.

..... % [1]

(e) **(i)** Find the highest common factor (HCF) of 28 and 98.

..... [2]

(ii) Find the lowest common multiple (LCM) of 28 and 98.

..... [2]

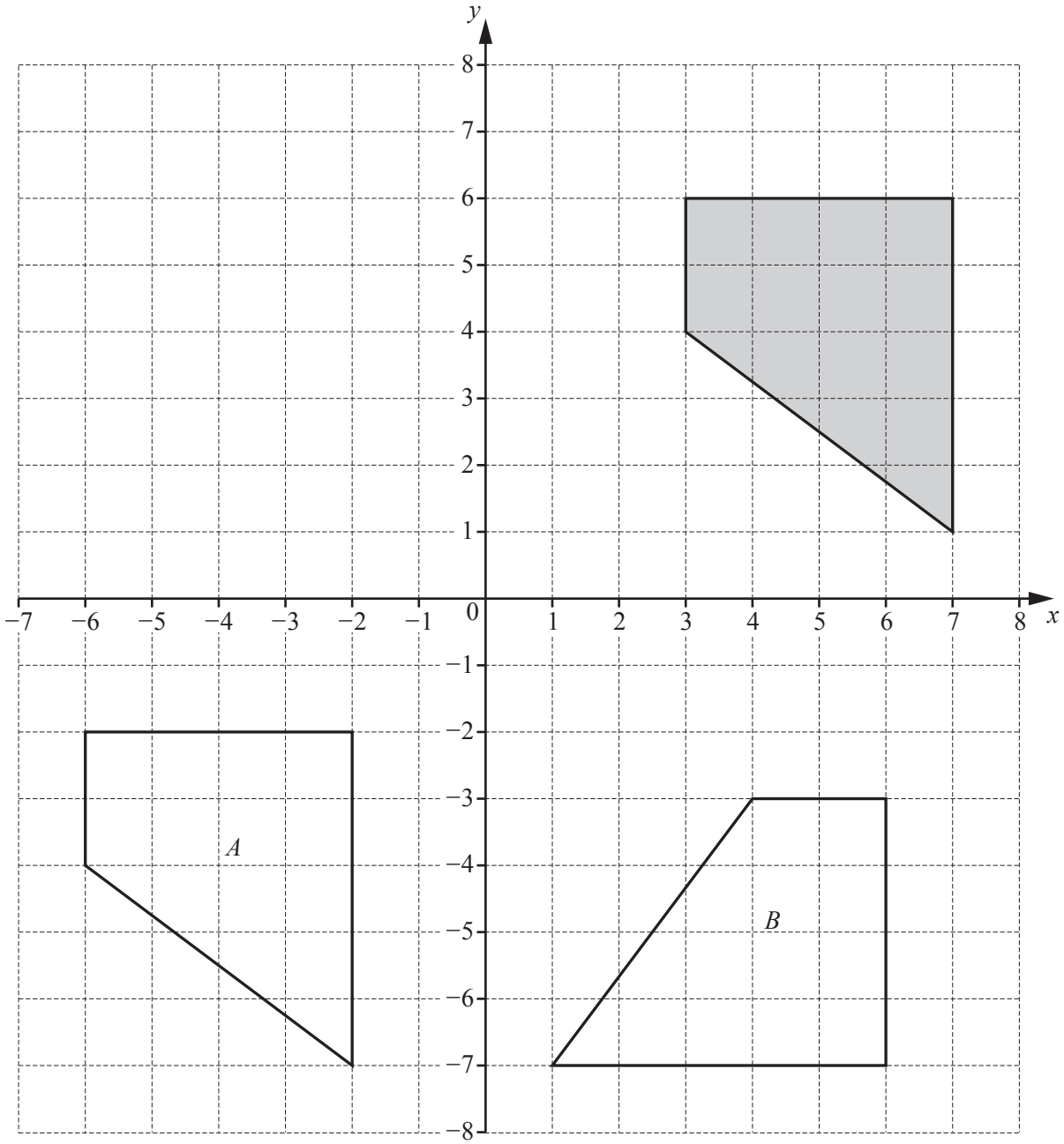
(f) The average distance from Earth to Mars is 2.25×10^8 km.
A space ship travels from Earth to Mars at an average speed of 5.8×10^4 km/h.

Find how long, in hours, the journey takes.

..... hours [2]

© UCLES 2019

2 Three quadrilaterals are shown on a 1 cm^2 grid.



(a) Write down the mathematical name of the shaded quadrilateral.

..... [1]

(b) For the shaded quadrilateral

(i) **measure** the perimeter,

..... cm [1]

(ii) work out the area.

..... cm^2 [1]

(c) Describe fully the **single** transformation that maps the shaded quadrilateral onto

(i) quadrilateral A,

.....

..... [2]

(ii) quadrilateral B.

.....

..... [3]

(d) On the grid,

(i) reflect the shaded quadrilateral in the line $x = 1$, [2]

(ii) enlarge the shaded quadrilateral by scale factor $\frac{1}{2}$, centre $(-1, 0)$. [2]

© UCLES 2019

[Turn over

3 The music teacher at a school forms an orchestra.
The instruments in the orchestra are 36 string, 15 woodwind and 12 brass.

(a) Write the ratio string : woodwind : brass in its simplest form.

..... : ..... : ..... [2]

(b) The 36 string instruments are violins, cellos and double basses in the ratio

violins : cellos : double basses = 9 : 2 : 1.

(i) Show that the number of violins is 27.

[1]

(ii) Work out the number of cellos and the number of double basses.

Cellos .....

Double basses ..... [2]

(c) The 15 woodwind instruments are oboes, flutes and clarinets.
20% of these instruments are oboes.
There are twice as many flutes as clarinets.

Find the number of flutes.

..... [2]

(d) Of the 12 brass instruments, $\frac{1}{3}$ are trumpets, 3 are trombones and the remainder are horns.

Find the number of horns.

..... [2]

© UCLES 2019

(e) The music teacher needs to buy all the instruments for the orchestra.

	Number of instruments	Price of each instrument ($)	Cost ($)
String	36	131	4716
Woodwind	15	217	
Brass	12	221	

(i) Complete the table. [1]

(ii) Find the total cost of all the instruments.

$ ..... [1]

(f) The school is given 65% of the total cost of all the instruments.

Find how much more money is needed.

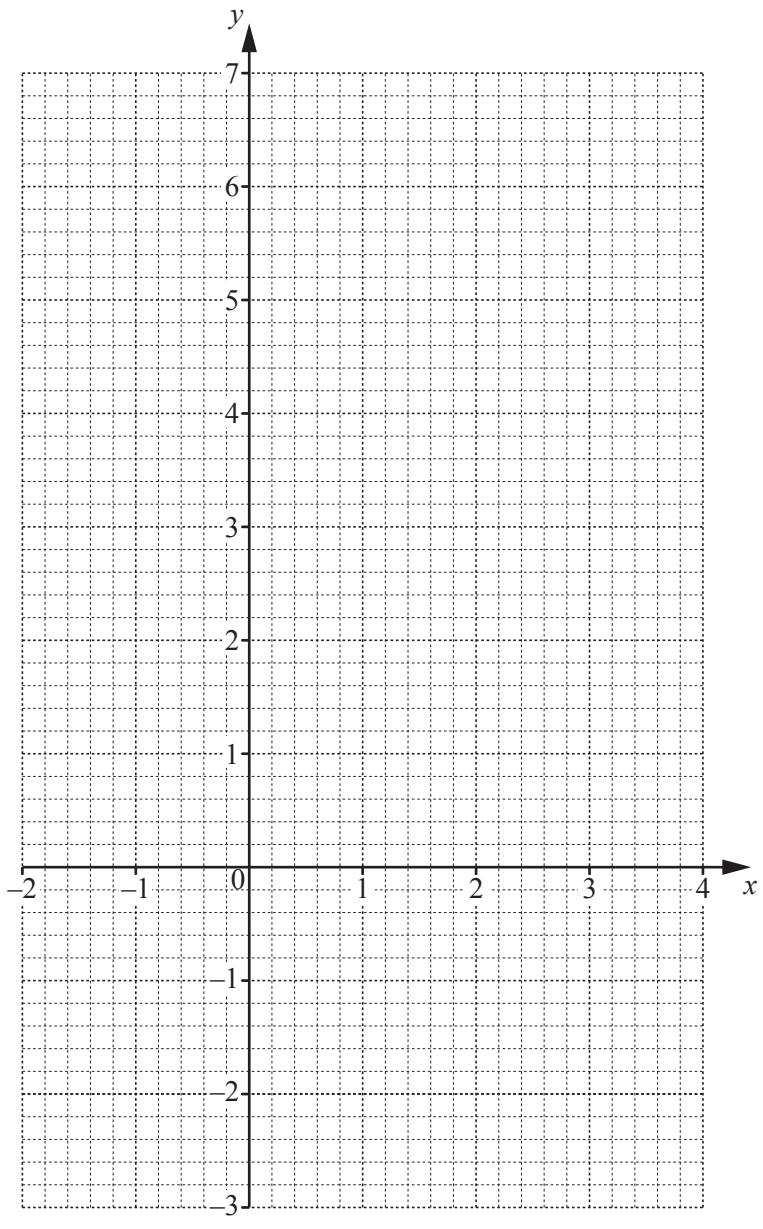
$ ..... [2]

4 **(a)** Complete the table of values for $y = 5 + 2x - x^2$.

x	-2	-1	0	1	2	3	4
y		2	5	6			-3

[2]

(b) On the grid, draw the graph of $y = 5 + 2x - x^2$ for $-2 \leqslant x \leqslant 4$.



[4]

(c) **(i)** On the grid, draw the line of symmetry. [1]

(ii) Write down the equation of the line of symmetry.

..... [1]

© UCLES 2019

(d) Use your graph to find the solutions of the equation $5+2x-x^2=4$.

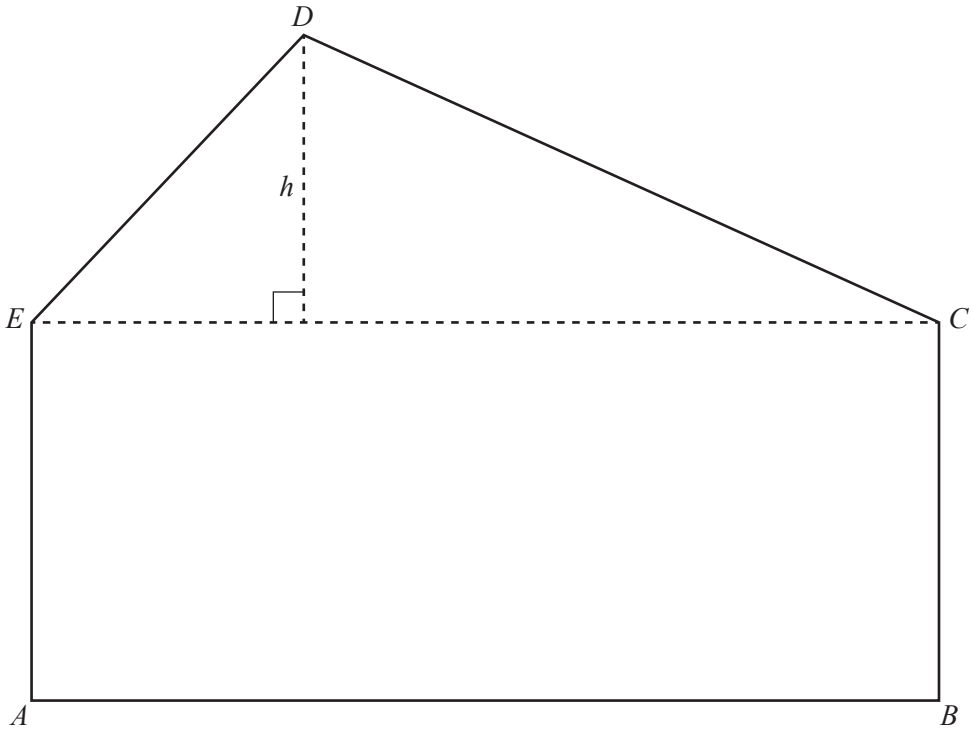
$x =$ ..... or $x =$ ..... [2]

(e) **(i)** On the grid, draw a line from $(-1, 2)$ to $(1, 6)$. [1]

(ii) Find the equation of this line in the form $y = mx+c$.

$y =$ ..... [3]

5 The scale drawing shows a play area, *ABCDE*.
The scale is 1 centimetre represents 3 metres.



Scale: 1 cm to 3 m

(a) Find the actual distance h in metres.

$h =$ ..... m [2]

(b) Find the actual area of triangle *CDE*.

..... m^2 [3]

(c) A straight path crosses the play area from *C* to *AB*.
It is equidistant from *CB* and *CD*.

Using a straight edge and compasses only, construct the path.
Show all your construction arcs. [2]

(d) There is a circular pool in the play area.
The pool has a diameter of 8 m.

Calculate

(i) the circumference of the pool,

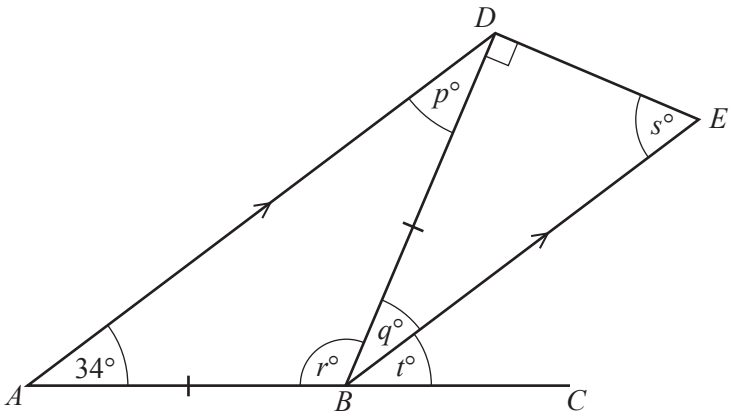
..... m [2]

(ii) the area of the pool.

..... m^2 [2]

© UCLES 2019

6 (a)



NOT TO SCALE

In the diagram, ABC is a straight line.
AD is parallel to BE, angle $BAD = 34°$ and $AB = BD$.

(i) Complete the statements.

(a) $p =$ ..... because ..... [2]

(b) $q =$ ..... because ..... [2]

(ii) Work out the value of r and the value of s.

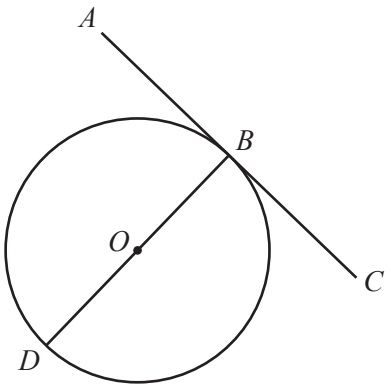
$r =$ .....

$s =$ ..... [2]

(iii) Find the value of t and give a reason for your answer.

$t =$ ..... because ..... [2]

(b)



NOT TO SCALE

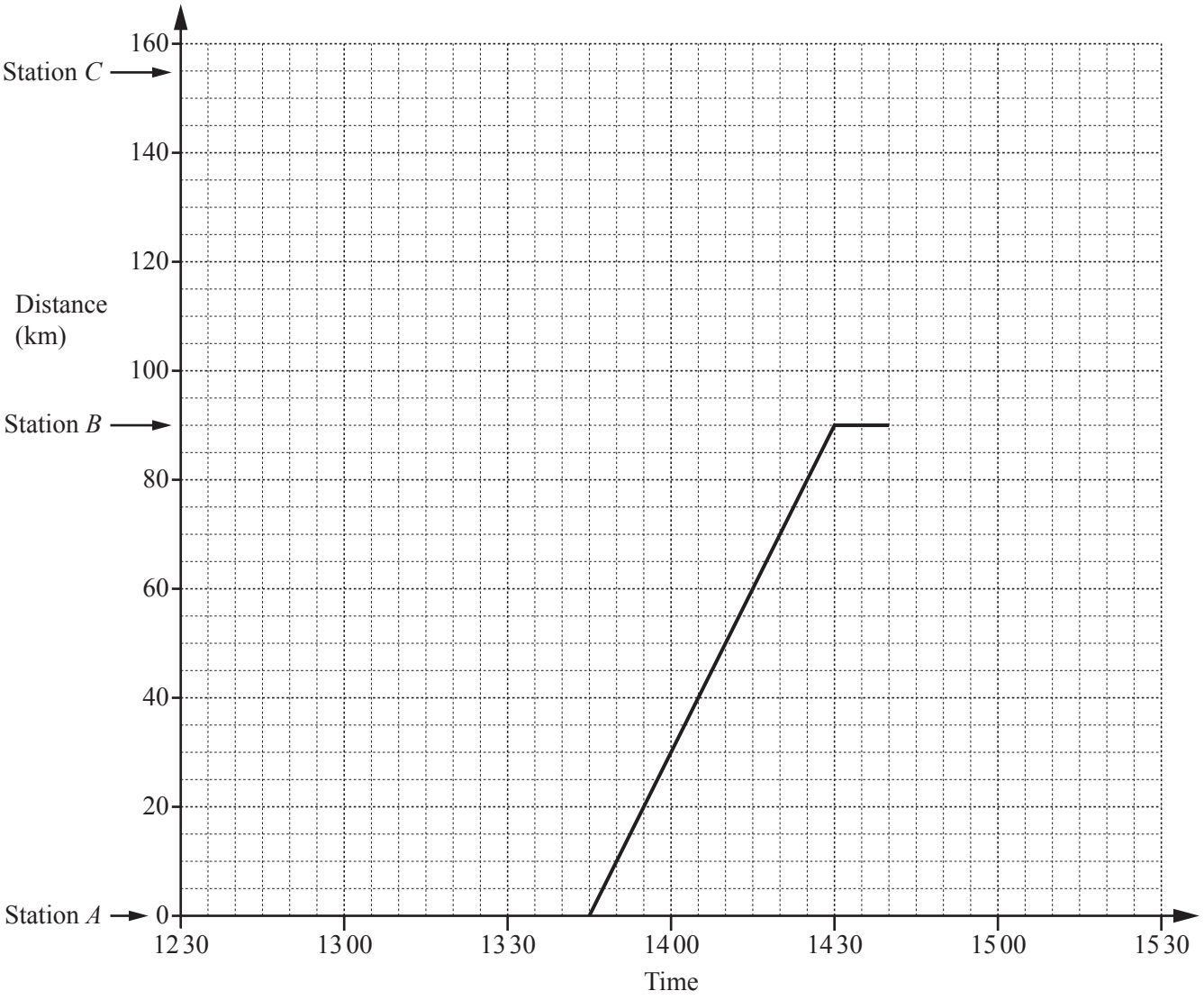
In the diagram, B and D are points on the circumference of a circle, centre O.
AC is a straight line touching the circle at B only and BD is a straight line through O.

Complete the statement.

Angle $ABD =$ ..... because .....

..... [2]

7 The travel graph shows part of a train journey between station *A* and station *C*.



(a) (i) Calculate, in km/h, the speed of the train between station *A* and station *B*.

.....km/h [2]

(ii) The train leaves station *B* at 14 40.

For how many minutes did the train stop at station *B*?

.....min [1]

(iii) The train travels at a constant speed between station *B* and station *C*, arriving at 15 20.

Complete the travel graph for the journey between station *B* and station *C*. [1]

(iv) On which part of the journey was the train travelling faster?

Between station ..... and station ..... [1]

© UCLES 2019

(b) Another train leaves station *C* at 12 45.
It travels to station *A* at a constant speed of 62 km/h without stopping at station *B*.

(i) Work out how long, in hours and minutes, this journey takes.

..... h ..... min [2]

(ii) Write down the time this train arrives at station *A*.

..... [1]

(iii) On the grid, show the journey of this train. [1]

(iv) Find the distance from station *A* when the two trains pass each other.

..... km [1]

8 **(a)** Kyung records the number of people in each of 24 cars on Wednesday.
His results are shown below.

1	3	6	1	2	2	4	5
3	4	1	5	3	2	4	1
1	1	2	4	4	1	2	1

(i) Complete the frequency table.
You may use the tally column to help you.

Number in a car	Tally	Frequency
1		
2		
3		
4		
5		
6		

[2]

(ii) Write down the mode.

..... [1]

(iii) Work out the range.

..... [1]

(iv) Work out the median.

..... [1]

(v) Calculate the mean.

..... [3]

(vi) One of these cars is chosen at random.

Find the probability that the number of people in this car is 4.

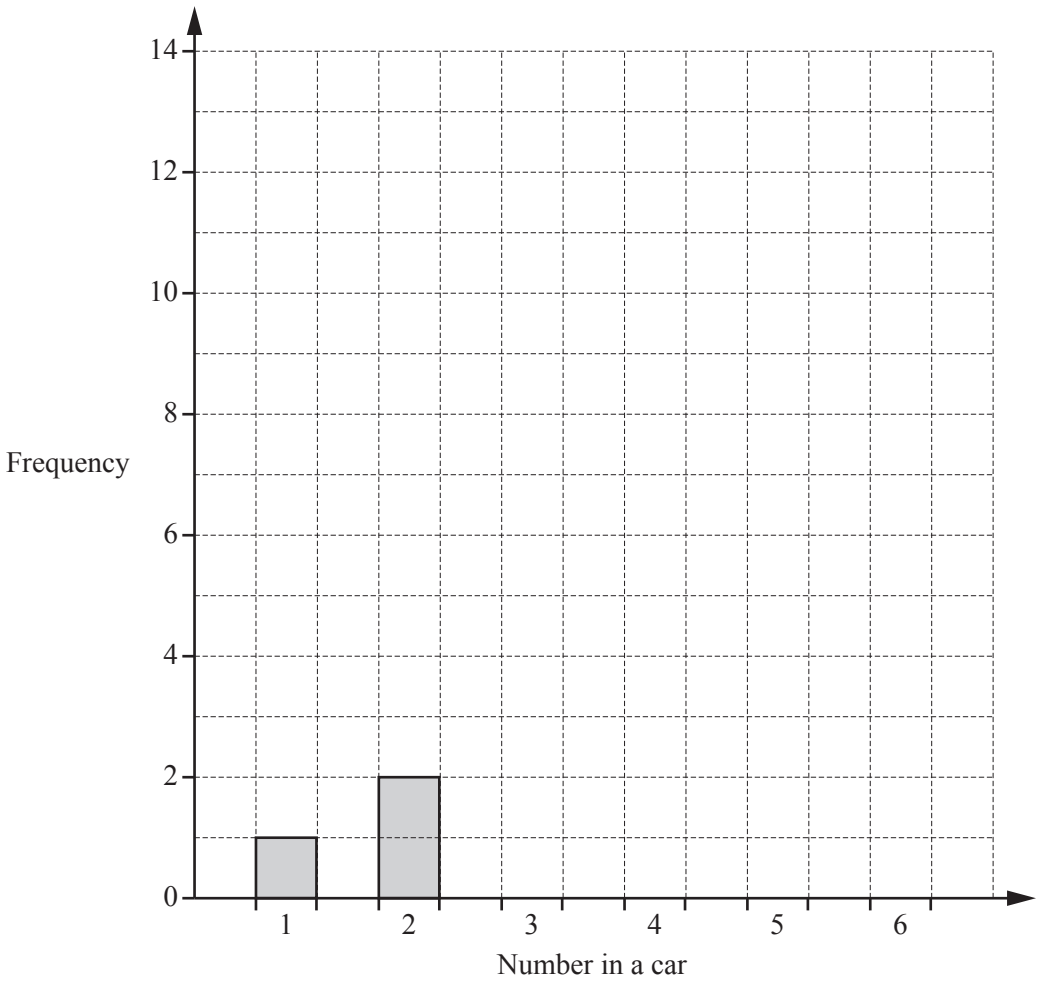
..... [1]

© UCLES 2019

(b) Kyung also records the number of people in each of 24 cars on Saturday.
The table shows the results.

Number in a car	1	2	3	4	5	6
Frequency	1	2	5	13	2	1

On the grid, complete the bar chart to show these results.



[2]

(c) Write down one comparison between the frequency tables in **part (a)(i)** and **part (b)**.

.....

..... [1]

Question 9 is printed on the next page.

9 Mr Razif travels by bus from Singapore to Kuala Lumpur with his wife and his four children.

(a)

Ticket Price	
Adult	$32.40
Child	$24.40
Family (2 adults and 3 children)	$115.00

Work out how much Mr Razif saves if he buys a family ticket and one child ticket rather than six individual tickets.

$ ..... [4]

(b) The bus leaves Singapore at 1240 and arrives in Kuala Lumpur at 1735.

Work out, in hours and minutes, the time this journey takes.

..... h .....min [1]

(c) Mr Razif changes some dollars into Malaysian ringgits.
He receives 318 ringgits when the exchange rate is $1 = 4.24 ringgits.

Work out how many dollars he changes.

$ ..... [2]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

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

© UCLES 2019