Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

8234053646

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **May/June 2016**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Graphics Calculator

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.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
Unless instructed otherwise, give your answers exactly or correct to three significant figures as appropriate.
Answers in degrees should be given to one decimal place.
For π, use your calculator value.
You must show all the relevant working to gain full marks and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 96.

This document consists of **18** printed pages and **2** blank pages.

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[Turn over

Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Curved surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

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Answer **all** the questions.

1 **(a)** Write 9427

(i) in words,

..... [1]

(ii) correct to the nearest 10.

..... [1]

(b) Here are four digits.

9 4 2 7

(i) Add two of these digits to make a square number.

..... + ... = ... [1]

(ii) Add two of these digits to make a factor of 48.

..... + ... = ... [1]

(iii) Add two of these digits to make a prime number.

..... + ... = ... [1]

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2 **(a)** Tariq does a survey of every house in his street.
He records the number of children in each house.

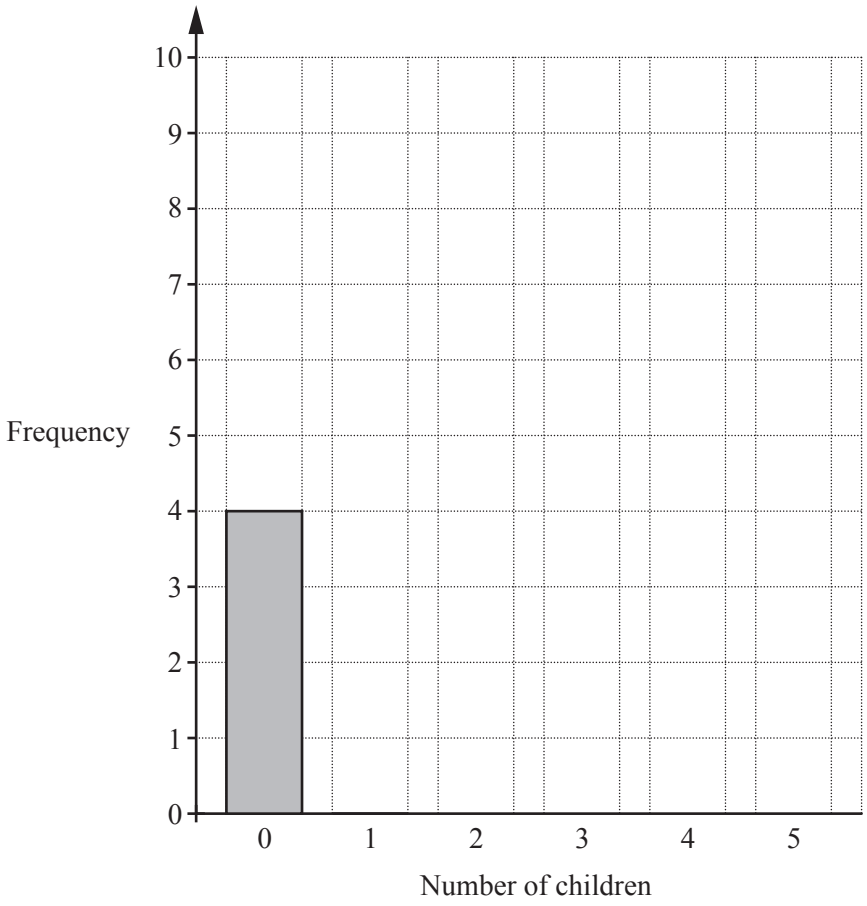
The table shows his results.

Number of children	0	1	2	3	4	5
Frequency	4	9	7	3	0	1

(i) Find how many houses were in the survey altogether.

..... [1]

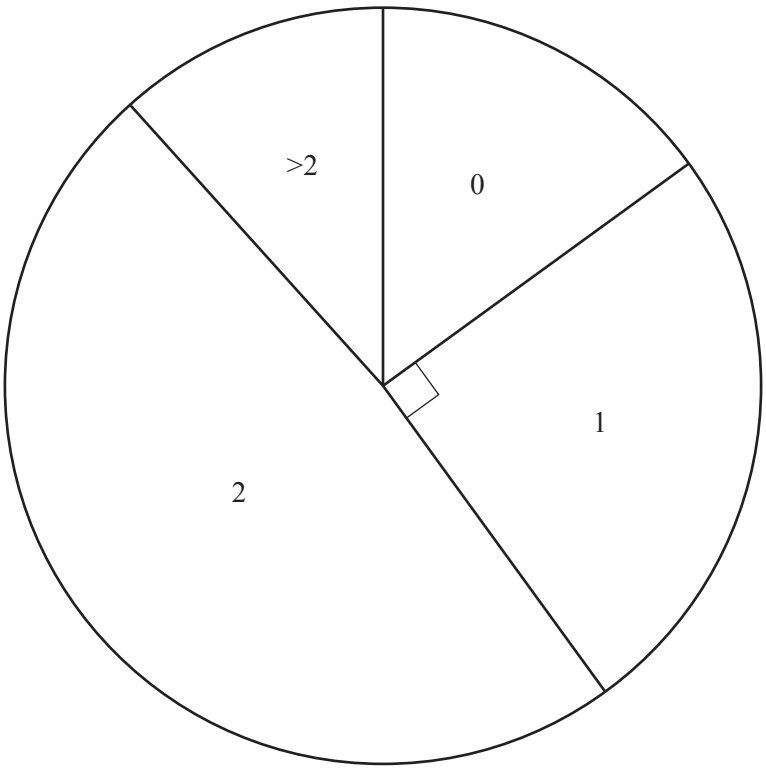
(ii) Complete the bar chart to show Tariq's results.



[2]

(b) A survey of the number of children in each house was carried out in another street.

Tariq draws the pie chart below to show the results.



(i) Write down the most common number of children in a house.

..... [1]

(ii) Explain the meaning of Tariq's label >2.

..... [1]

(iii) Measure the angle for 0 children in a house.

..... [1]

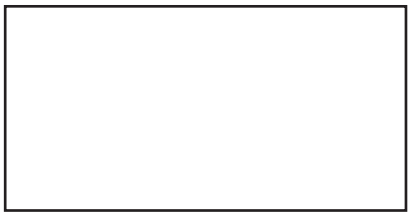
(iv) 15 houses in this survey had 1 child.

Work out the number of houses altogether in this survey.

..... [2]

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3 Sophie's garden is a rectangle.



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(a) Work out the perimeter of the garden.

..... m [1]

(b) Work out the area of the garden.
Give the units of your answer.

.... [3]

(c) Sophie buys $12\,m^3$ of soil.
She spreads the soil evenly over the whole of the garden.

Work out the depth of this soil.
Give your answer in centimetres.

..... cm [3]

(d) Ben's garden is also a rectangle.
It is an enlargement of Sophie's garden.
One side of Ben's garden is 20 m.

Work out the two possible measurements of the other side of Ben's garden.

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

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4 The total cost of having a party in a hotel is given by this formula.

Total cost = Cost of room hire + Cost per person × Number of people

The table shows the costs for two different rooms in the hotel.

Room Name	Cost of room hire ($)	Cost per person ($)
Disco room	450	15
Ballroom	575	11

(a) Work out the total cost for a party of 62 people in the Disco room.

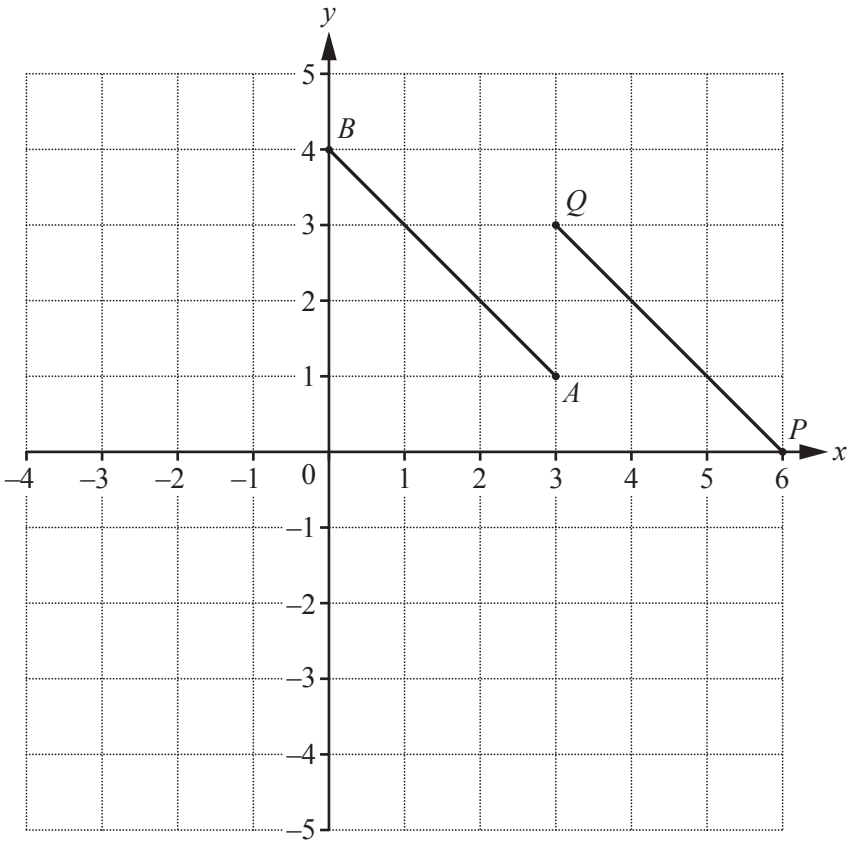
$ ..... [2]

(b) Geta has $1000 to spend on her birthday party.

Work out the largest number of people that can go to her party.
Show clearly how you decide.

..... [5]

5



(a) Write down the co-ordinates of A.

(..... , ...) [1]

(b) Write down the co-ordinates of B.

(..... , ...) [1]

(c) On the grid, plot the point (–3, –2).
Label the point C. [1]

(d) Write down the co-ordinates of the midpoint of AB.

(..... , ...) [1]

(e) Reflect the line AB in the y-axis. [1]

(f) Describe fully the **single** transformation that maps AB onto PQ.

.....

..... [2]

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6 **(a)** Here are the first three patterns in a sequence.

Pattern 1	Pattern 2	Pattern 3	Pattern 4
X X	X X	X X	
	X X	X X	
		X X	

(i) In the space above, draw Pattern 4. [1]

(ii) Work out the number of crosses in Pattern 15.

..... [1]

(b) Here are the first five terms of a different sequence.

21 17 13 9 5

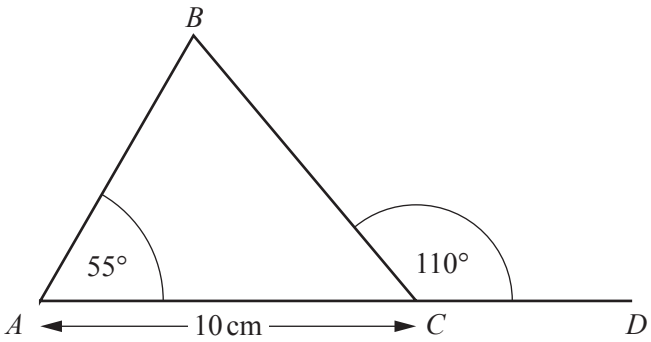
(i) Write down the next two terms in this sequence.

..... , ... [2]

(ii) Find an expression for the nth term of this sequence.

..... [2]

7 In the diagram, ACD is a straight line.



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(a) Is angle BCD acute, obtuse or reflex?

..... [1]

(b) **(i)** Find angle ACB.

Angle ACB = ... [1]

(ii) Find the length of BC.
Give a reason for your answer.

BC = ... cm because .....

..... [3]

8 **(a)** Simplify.

$4a + 3a - a$

..... [1]

(b) Multiply out the brackets.

$x(3x^2 - 5)$

..... [2]

(c) Solve.

$2x - 10 = 8$

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

(d) Simplify.

(i) $t^4 \times t^3$

..... [1]

(ii) $\dfrac{20t^5}{4t^2}$

..... [2]

9 **(a)** Write this ratio in its simplest form.

1 hour : 24 minutes

..... [2]

(b) Carmen works in an office.
She spends time on the phone and on the computer in the ratio 5 : 7.
One day Carmen worked for a total of 6 hours.

Calculate how long Carmen spent on the phone.

..... hours [2]

(c) Carmen recorded the number of hours she worked each day for ten days.

6 7 6 $5\frac{1}{2}$ 3 $1\frac{1}{2}$ 5 6 8 7

(i) Work out the range of these times.

..... hours [1]

(ii) Work out the mean time.

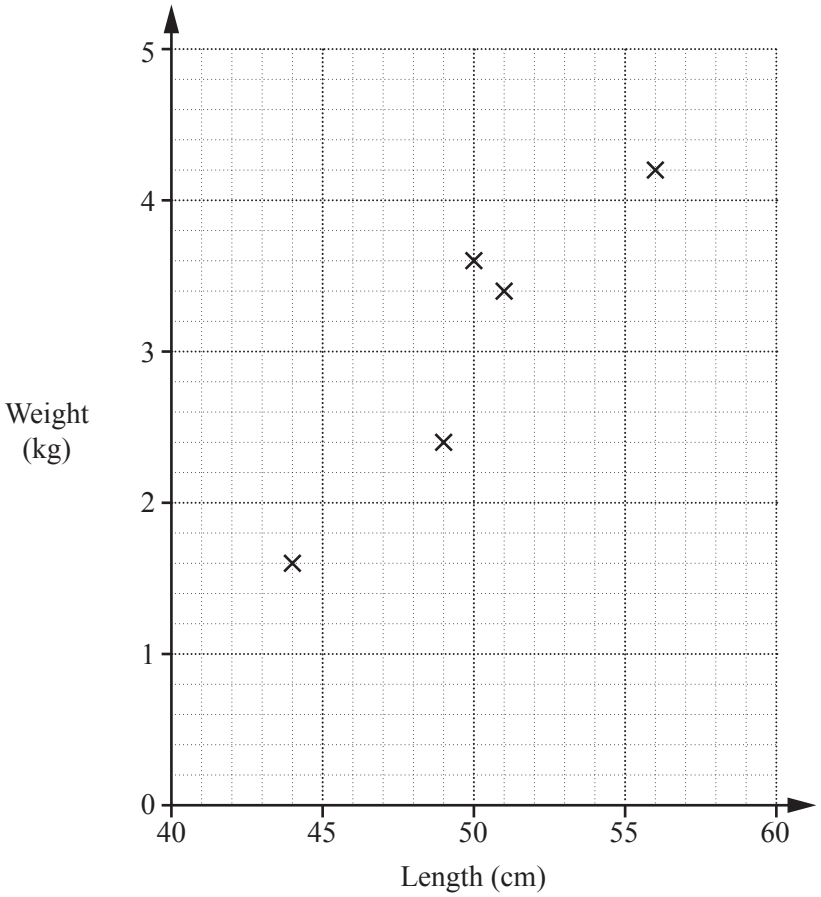
..... hours [1]

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10 The length and weight of each of eight new-born babies are shown in the table below.

Length (cm)	51	56	50	44	49	54	48	47
Weight (kg)	3.4	4.2	3.6	1.6	2.4	3.6	2.8	2.1

(a) On the grid, complete the scatter diagram to show this information.
The first five points have been plotted for you.



[2]

(b) What type of correlation is shown in your diagram?

..... [1]

(c) Draw a line of best fit on your scatter diagram. [1]

(d) Use your line of best fit to estimate the weight of a new-born baby of length 53 cm.

..... kg [1]

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11 **(a)** A car wheel has a diameter of 63 cm.

Calculate the circumference of this wheel and show that it is 198 cm, correct to the nearest cm.

[2]

(b) On a journey, this car wheel rotates 172 times in 12 seconds.

Calculate the average speed of the car in metres per second.

..... m/s [4]

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12 Each month, Ravi earns \$5850 plus 5% of any sales he makes.

(a) One month Ravi made sales of \$153 000.

Calculate the total amount that Ravi earned that month.

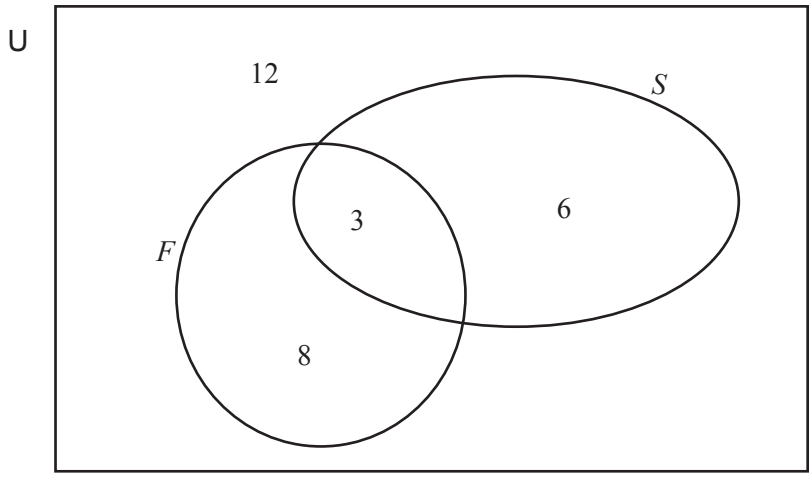
\$ ..... [3]

(b) The following month, Ravi made sales of \$172 000.

Calculate the percentage increase in the value of the sales he made.

..... % [3]

13 Each member of a class of students was asked which languages they could speak.
They could all speak English.
The only other languages were French (F) and Spanish (S).
The Venn diagram below shows the results.



(a) Find the total number of students in the class.

..... [1]

(b) Find the number of students in

(i) $F \cup S$,

..... [1]

(ii) $(F \cap S)'$.

..... [1]

(c) A student is chosen at random from the class.

Find the probability that this student

(i) speaks French,

..... [1]

(ii) speaks English, French and Spanish,

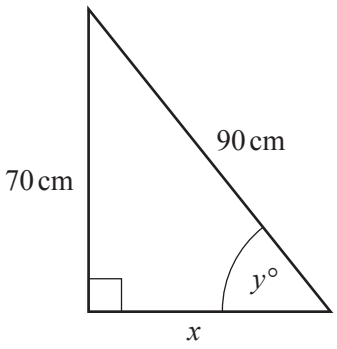
..... [1]

(iii) speaks exactly two languages.

..... [1]

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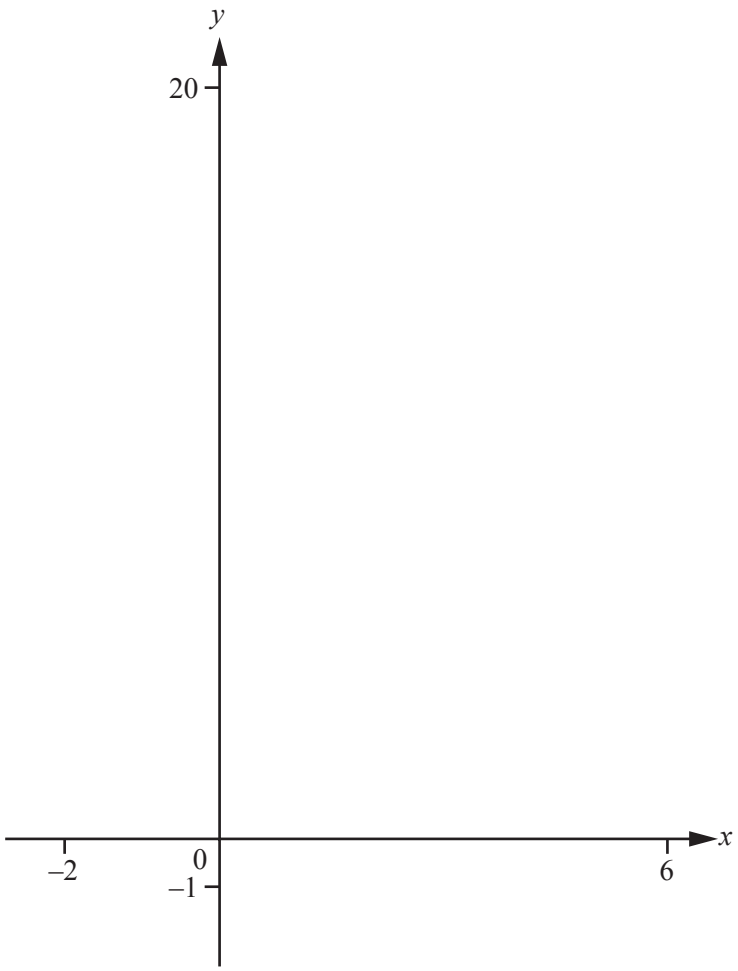
(a) Calculate x.

$x =$ ..... cm [3]

(b) Use trigonometry to calculate angle y.

$y =$ ..... [2]

15



(a) On the diagram, sketch the graph of $y = x^2 - 4x + 7$ for $-2 \leqslant x \leqslant 6$. [2]

(b) Find the co-ordinates of the local minimum point.

(..... , ...) [1]

(c) On the diagram, sketch the graph of $y = 2x + 3$. [2]

(d) Find the x co-ordinate of each of the points of intersection of

$y = x^2 - 4x + 7$ and $y = 2x + 3$.

x = ... and x = ... [2]

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