Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

7948302236

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **May/June 2015**

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 **16** printed pages.

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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 12 13 14 15 16

From the list of numbers write down

(a) one of the even numbers,

Answer(a) ..... [1]

(b) a prime number,

Answer(b) ..... [1]

(c) a multiple of 7,

Answer(c) ..... [1]

(d) a factor of 84,

Answer(d) ..... [1]

(e) a square number,

Answer(e) ..... [1]

(f) a triangle number.

Answer(f) ..... [1]

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2 **(a)** Work out.

$$\frac{17.56 - 6.2}{1.83}$$

Answer(a) ..... [1]

(b) Find $\frac{8}{9}$ of 162.

Answer(b) ..... [1]

(c) Write 348.375 correct to

(i) 1 decimal place,

Answer(c)(i) ..... [1]

(ii) the nearest 10.

Answer(c)(ii) ..... [1]

(d) Write the following numbers in order, starting with the smallest.

$\frac{1}{3}$ 0.3 33% 3.33×10^{-1}

Answer(d) ..... < ..... < ..... < ..... [2]
smallest

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3 A shop manager buys a box of 48 tins of beans for $16.80 .

(a) Calculate the cost of each tin of beans.
Give your answer in cents.

Answer(a) ..... cents [1]

(b) The shop manager sells each tin of beans for 75 cents.

(i) Find the profit made on each tin of beans.

Answer(b)(i) ..... cents [1]

(ii) Calculate the percentage profit.

Answer(b)(ii) .....% [2]

(c) In a special offer, the shop manager reduces the selling price of 75 cents by 20%.

(i) Find the new selling price of each tin of beans.

Answer(c)(i) ..... cents [2]

(ii) Tirza buys 8 tins of beans at the special offer price.

Find how much change she receives from $5.
Give your answer in cents.

Answer(c)(ii) ..... cents [2]

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4 **(a)** The marks for a test taken by 20 students are recorded below.

56	73	42	55	63	59	65	48	77	65
73	64	52	41	78	62	73	49	55	64

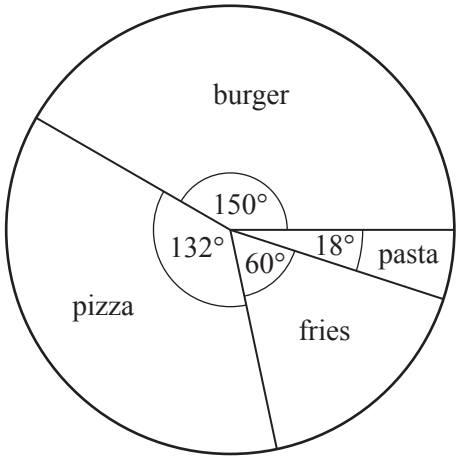
Complete the ordered stem-and-leaf diagram to show this information.

Stem	Leaf
.....	.....
.....	.....
.....	.....
.....	.....

Key: 5 | 1 = 51

[3]

(b) 60 people each choose their favourite food.
The pie chart shows the results.



(i) Write down the most popular choice of food.

Answer(b)(i) ..... [1]

(ii) Calculate the number of people who chose pizza.

Answer(b)(ii) ..... [2]

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5 **(a)** Solve the following equations.

(i) $\frac{t}{2} = 8$

Answer(a)(i) ..... [1]

(ii) $7.15x + 9.2 = 37.8$

Answer(a)(ii) ..... [2]

(b) $M = 3.4L + 2.8N$

(i) Find the value of M when $L = -2.1$ and $N = 0.6$.

Answer(b)(i) $M =$ ..... [2]

(ii) Rearrange the formula to make N the subject.

Answer(b)(ii) $N =$ ..... [2]

(c) Simplify.

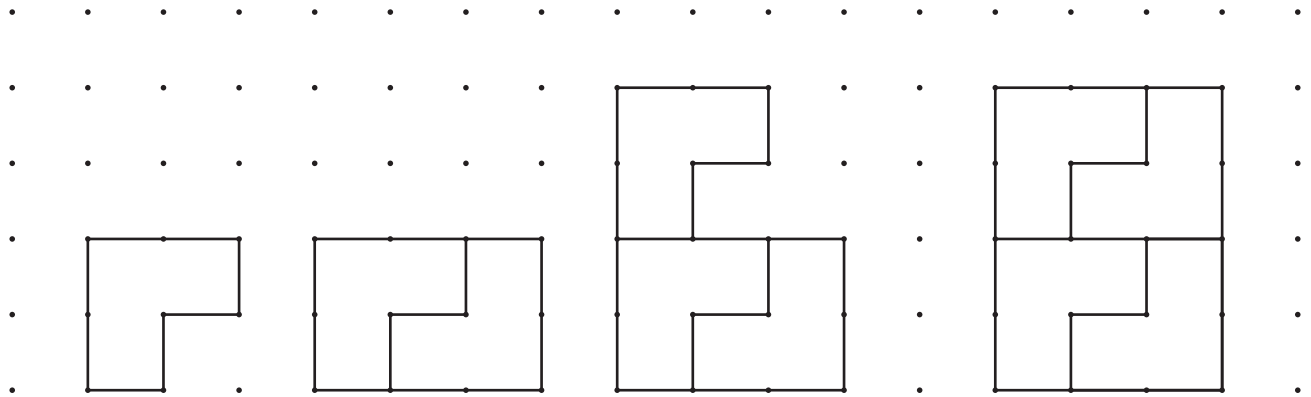
(i) $n^4 \times n^8$

Answer(c)(i) ..... [1]

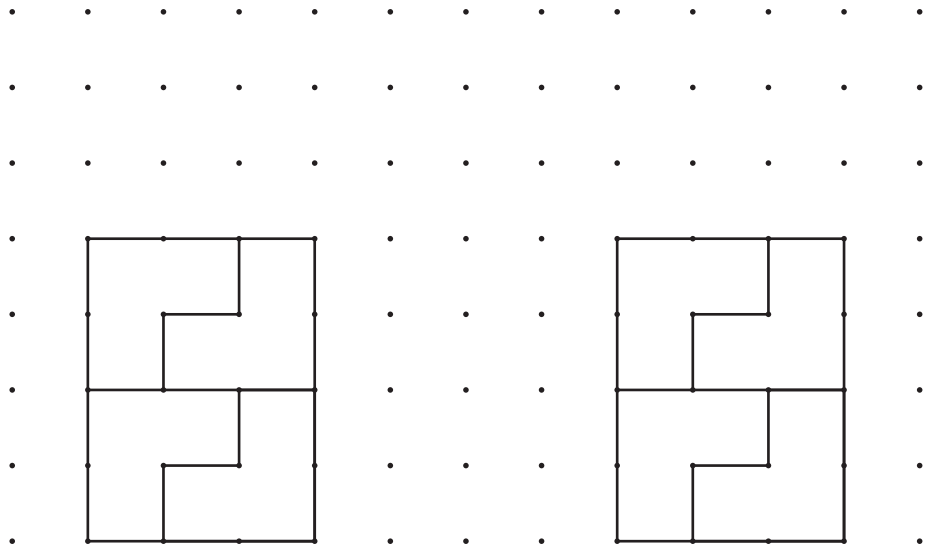
(ii) $\frac{16y^9}{4y^3}$

Answer(c)(ii) ..... [2]

6 The shapes below are drawn on a 1 cm^2 grid.



Shape 1 Shape 2 Shape 3 Shape 4



Shape 5 Shape 6

(a) Complete Shape 5 and Shape 6 in the pattern. [2]

(b) Shape 1 has an area of 3 cm^2.

Complete the sequence of areas by finding the area of each shape.

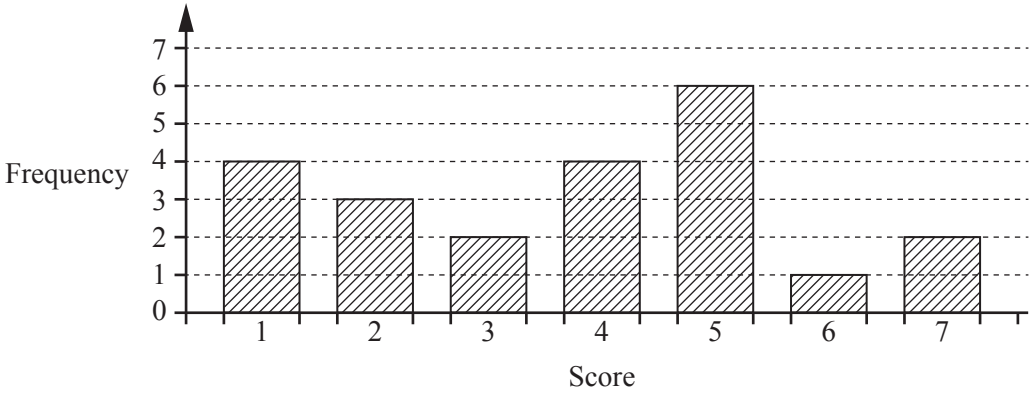
Answer(b) 3, ... , ... , ... , ... , ... [2]

(c) Find an expression, in terms of n, for the area of Shape n.

Answer(c) .....cm^2 [1]

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7 A quiz had 7 questions each worth 1 mark.
The bar chart shows the scores for 22 students.



(a) Complete the frequency table using the bar chart above.

Score	Frequency
1	4
2	
3	
4	
5	
6	
7	2

[2]

(b) Find

(i) the mode,

Answer(b)(i) ..... [1]

(ii) the range,

Answer(b)(ii) ..... [1]

(iii) the median,

Answer(b)(iii) ..... [1]

(iv) the mean,

Answer(b)(iv) ..... [2]

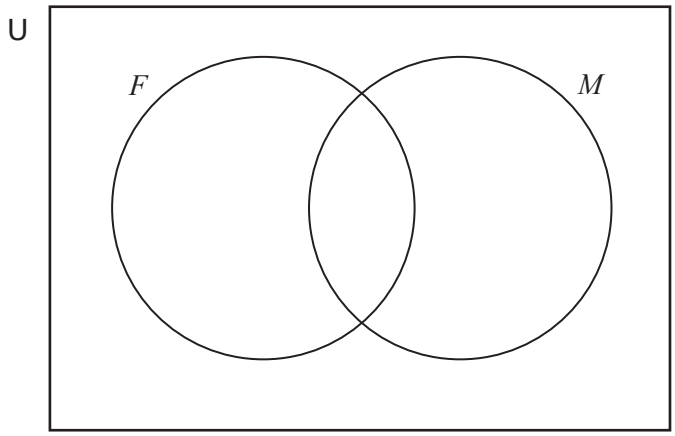
(v) the interquartile range.

Answer(b)(v) ..... [2]

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8 In a class of 24 students
- 8 study French (F)
- 6 study Music (M)
- 3 study both French and Music.

(a) Complete the Venn diagram.



[2]

(b) Write down the number of elements in each of the following sets.

(i) $F \cap M'$

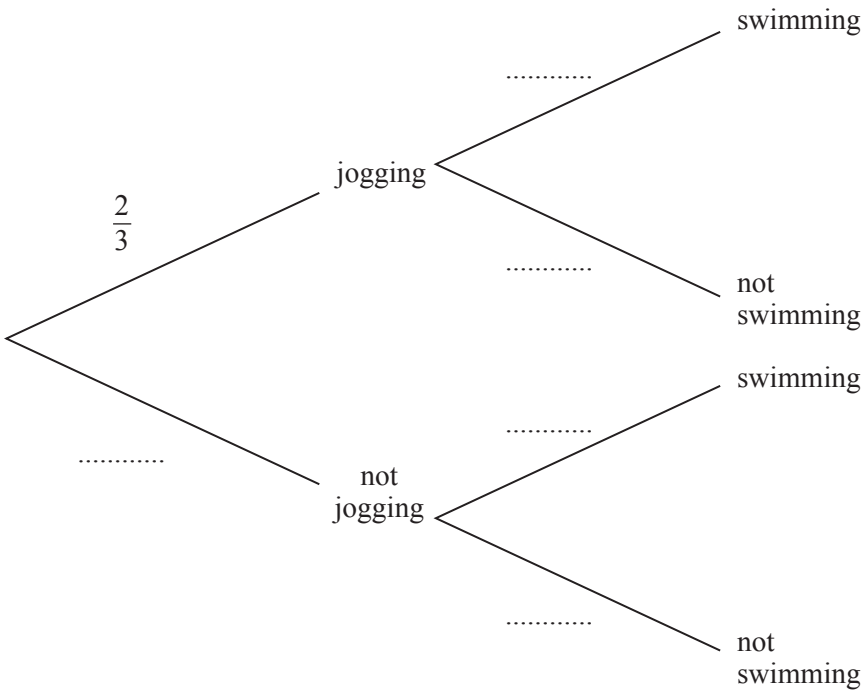
Answer(b)(i) ..... [1]

(ii) $(F \cup M)'$

Answer(b)(ii) ..... [1]

9 The probability that Dave goes jogging is $\frac{2}{3}$.
If Dave goes jogging, the probability that he goes swimming is $\frac{3}{4}$.
If Dave does not go jogging, the probability that he goes swimming is $\frac{9}{10}$.

(a) Complete the tree diagram.



[3]

(b) Find the probability that Dave does not go jogging and does not go swimming.

Answer(b) ..... [2]

(c) Find the probability that Dave goes swimming.

Answer(c) ..... [3]

10 The equation of a line is $y = \frac{3}{4}x + 2$.

(a) (i) Write down the gradient of this line.

Answer(a)(i) ..... [1]

(ii) Write down the co-ordinates of the point where the line crosses the y-axis.

Answer(a)(ii) (..... , ...) [1]

(iii) Find the co-ordinates of the point where the line crosses the x-axis.

Answer(a)(iii) (..... , ...) [2]

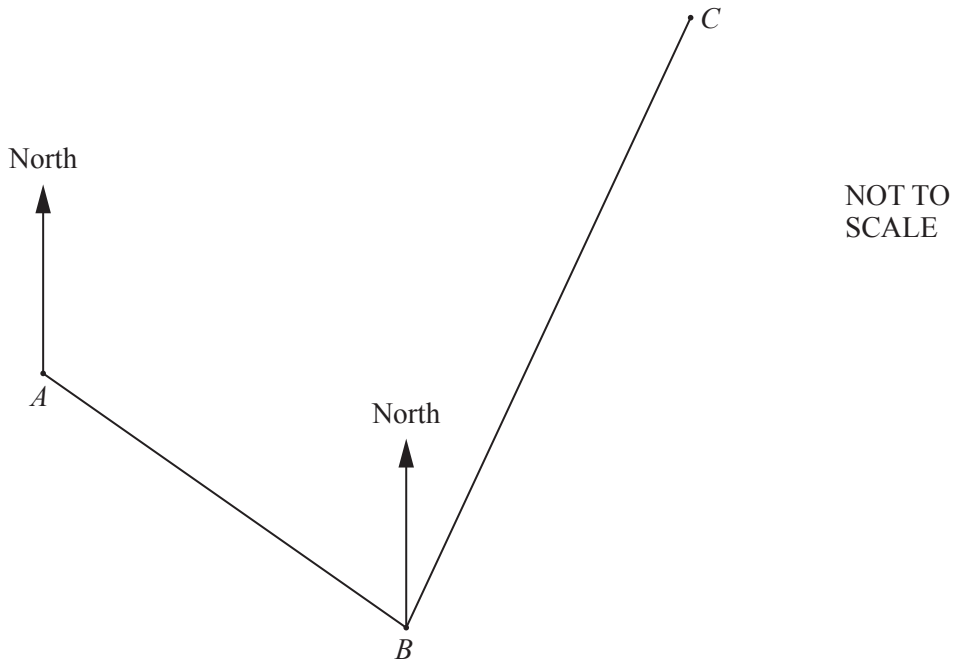
(b) Write down the equation of the line parallel to $y = \frac{3}{4}x + 2$ that passes through the point (0, –3).

Answer(b) ..... [1]

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11 A snail travels 3 metres from A to B on a bearing of 120°.
It then travels 4.5 metres from B to C on a bearing of 030°.

(a) Show this information on the diagram.



[2]

(b) Angle $ABC = 90°$.

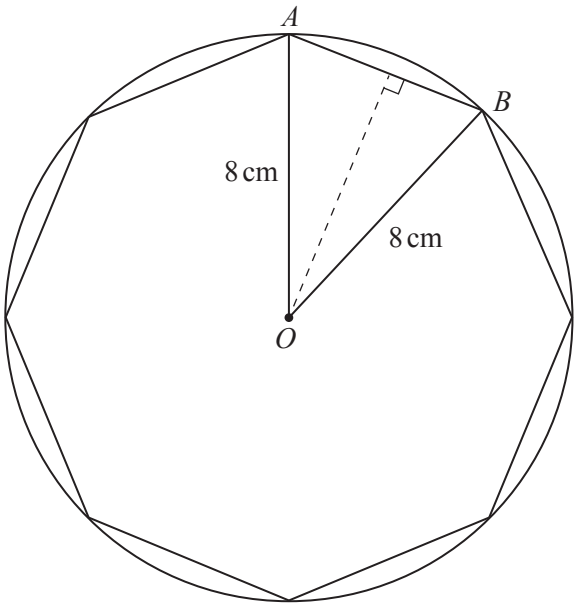
Calculate the distance AC.

Answer(b) ..... metres [2]

(c) Use trigonometry to find the bearing of C from A.

Answer(c) ..... [3]

12



NOT TO SCALE

Each vertex of a regular octagon lies on the circumference of a circle, centre O, radius 8 cm.

(a) Calculate the circumference of the circle.

Answer(a) ..... cm [2]

(b) Calculate the area of the circle.

Answer(b) ..... cm^2 [2]

(c) Show that angle $BOA = 45°$.

[1]

(d) Find angle BAO.

Answer(d) Angle $BAO =$ ..... [2]

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(e) Find the size of each interior angle of a regular octagon.

Answer(e) ..... [1]

(f) **(i)** Use trigonometry to show that $BA = 6.12$ cm, correct to 3 significant figures.

[2]

(ii) Find the area of triangle OAB.

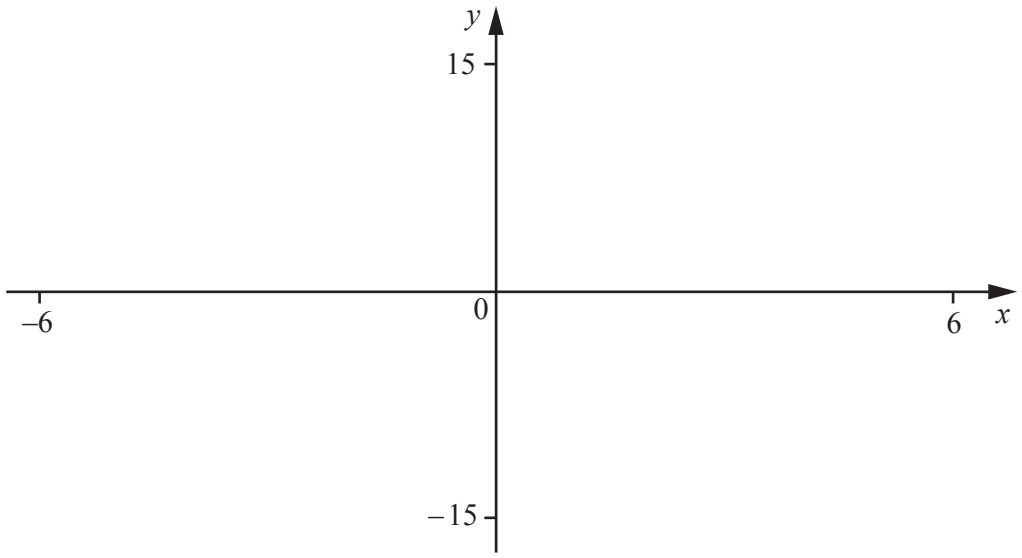
Answer(f)(ii) ..... cm^2 [4]

(iii) Find the area of the octagon.

Answer(f)(iii) ..... cm^2 [1]

Question 13 is printed on the next page.

13



$f(x) = -0.2x^3 - 0.2x^2 + 6x$

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

(b) Find the co-ordinates of

(i) the points where the graph crosses the x-axis,

Answer(b)(i) (..... , ...), (..... , ...) (..... , ...) [2]

(ii) the local minimum point.

Answer(b)(ii) (..... , ...) [2]

(c) The range of $f(x)$ for the domain $-6 \leqslant x \leqslant 0$ is $k \leqslant f(x) \leqslant 0$.

Write down the value of k.

Answer(c) $k =$ ..... [1]

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