Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

8022099525

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

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 **(a)** Write 32 652

(i) correct to the nearest 10,

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

(ii) correct to the nearest 100.

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

(b) Write 62.584 correct to 1 decimal place.

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

(c) Calculate 4.8^4.

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

(d) Find $\sqrt[3]{216}$.

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

(e) Find the highest common factor (HCF) of 18 and 45.

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

(f) Find the lowest common multiple (LCM) of 6 and 8.

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

(g) Divide 442 in the ratio 8 : 9.

Answer(g) ..... : .....[2]

(h) Sem buys 7 hamburgers each costing \$1.20 .

Find how much change he receives from \$10.

Answer(h) \$ ..... [2]

2 **(a)** Write 0.75 as a fraction.

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

(b) Write $\frac{2}{3}$ as a percentage, giving your answer correct to 4 significant figures.

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

(c) Write 48% as a fraction in its lowest terms.

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

(d) Find 8% of 72.

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

(e) The price of a jacket is \$96.
The price is reduced by 20%.

Find the new price of the jacket.

Answer(e) \$ ..... [2]

(f) \$800 is invested for 5 years at 3% per year simple interest.

Find the total interest received at the end of the 5 years.

Answer(f) \$ ..... [2]

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3 A special die has 10 faces numbered 1 to 10.
When the die is rolled it is equally likely to land on any face.

Find the probability that the die lands on

(a) an even number,

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

(b) a prime number,

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

(c) 11,

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

(d) a square number less than 5.

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

4 Jacinta asks some students in her class which colour they prefer.
The results are in the table.

Colour	Number of students
Brown	1
Green	4
Black	8
Pink	12
Blue	15

(a) Calculate the total number of students.

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

(b) Write down the most popular colour.

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

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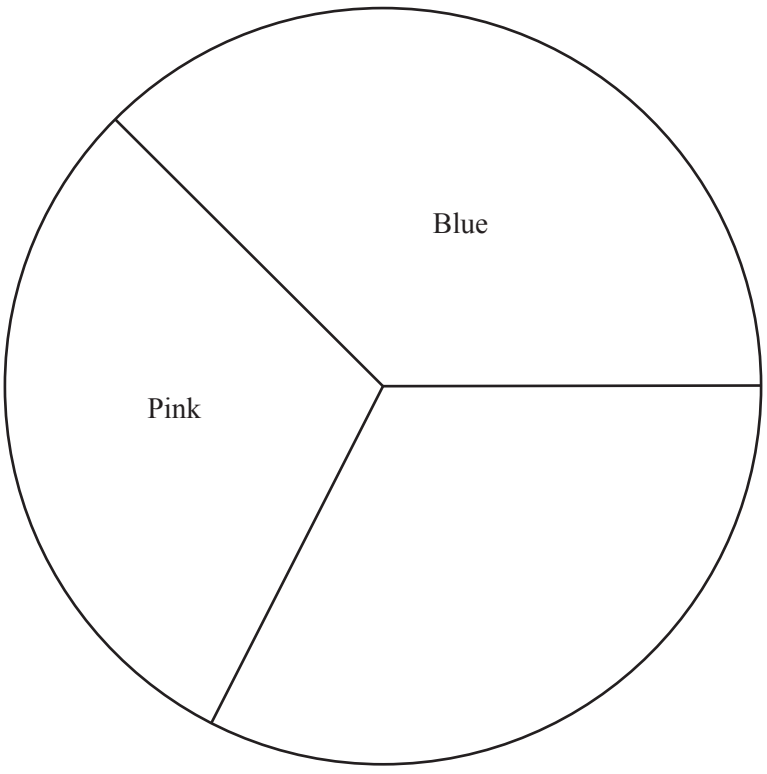
(c) Jacinta wants to draw a pie chart for these results.

Colour	Number of students	Sector angle in pie chart
Brown	1	
Green	4	
Black	8	
Pink	12	108°
Blue	15	135°

(i) Complete the table.

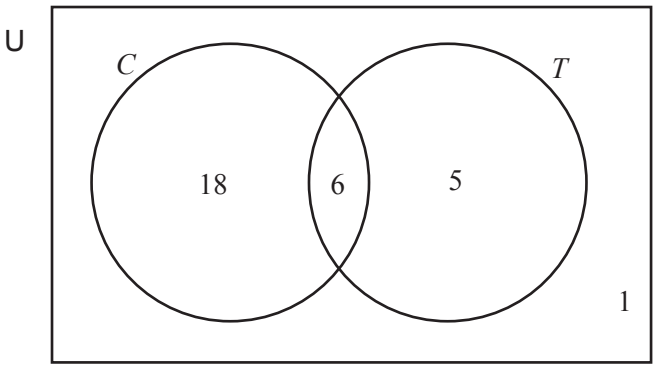
[2]

(ii) Complete the pie chart to show this information.
Two sectors have been drawn for you.



[2]

5 HanRa asked 30 students if they ate cereal (C) or toast (T) for breakfast.
The information is shown in the Venn diagram.



Write down the number of students in

(a) $C \cap T$,

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

(b) C,

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

(c) $(C \cup T)'$,

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

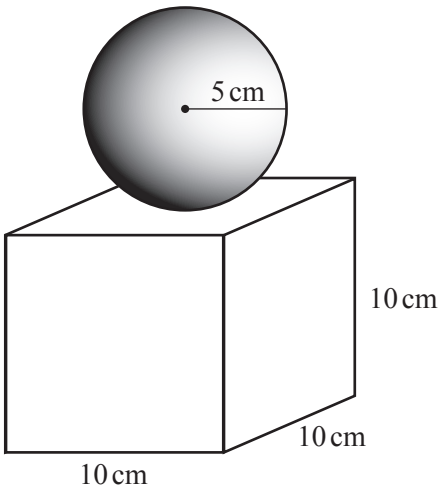
(d) $T \cup C'$.

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

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6

NOT TO SCALE



A trophy is in the shape of a cube of side 10 cm with a sphere of radius 5 cm on top.

(a) Find the surface area of the cube.

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

(b) Find the surface area of the sphere.

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

(c) Find the total **volume** of the trophy.

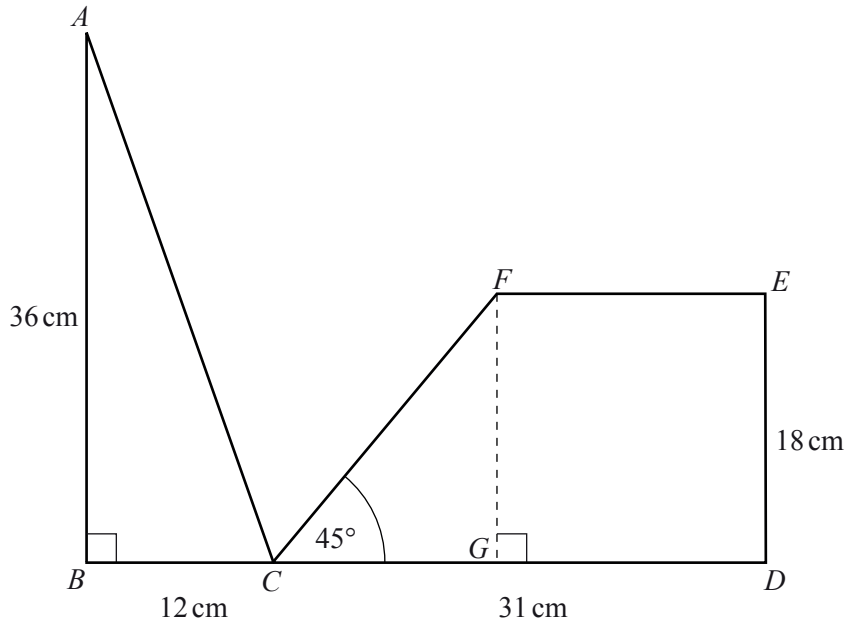
Answer(c) ..... cm^3 [4]

The trophy is made from metal that costs 4 cents per cm^3.

(d) Find the cost of the metal used to make the trophy.
Give your answer in dollars.

Answer(d) $ ..... [2]

7



NOT TO SCALE

The diagram shows a triangle *ABC* and a trapezium *CDEF*.
BCGD is a straight line and angle *FCD* = 45°.

AB = 36 cm, *BC* = 12 cm, *CD* = 31 cm and *ED* = 18 cm.

(a) Find the size of angle *CFE*.

Answer(a) Angle *CFE* = ... [1]

(b) Use trigonometry to calculate the size of angle *BCA*.

Answer(b) Angle *BCA* = ... [2]

(c) Use Pythagoras' Theorem to find the length of *AC*.

Answer(c) AC = ... cm [2]

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(d) Use trigonometry to calculate the length of CF.

Answer(d) $CF =$ ..... cm [3]

(e) **(i)** Explain why $EF = 13$ cm.

[2]

(ii) Find the total perimeter of the shape.

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

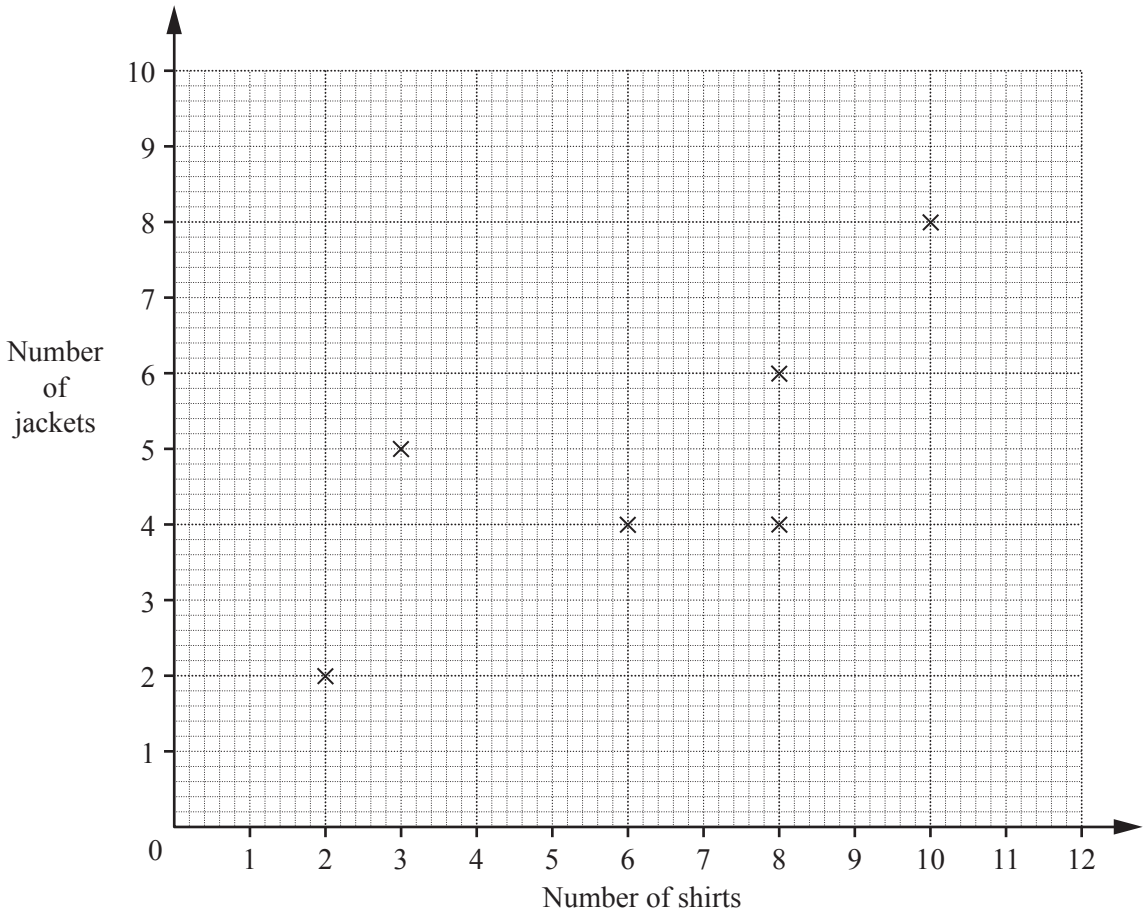
(f) Calculate the total area of the shape.

Answer(f) .....cm^2 [3]

8 The table shows the number of shirts and the number of jackets owned by 12 students.

Shirts	3	6	2	8	8	10	6	5	9	8	4	12
Jackets	5	4	2	4	6	8	5	4	6	5	4	7

(a) Complete the scatter diagram.
The first 6 points have been plotted for you.



[2]

(b) Write down the type of correlation shown by the scatter diagram.

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

(c) **(i)** Find the mean number of shirts.

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

(ii) Find the mean number of jackets.

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

(iii) On the diagram, plot the mean point. [1]

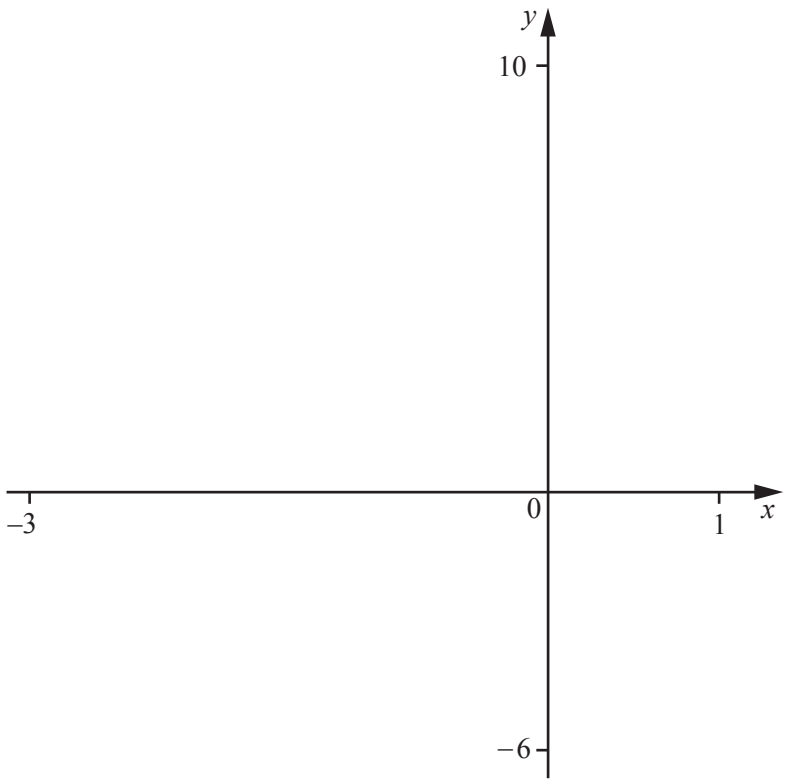
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(d) On the diagram, draw a line of best fit by eye. [2]

(e) Use your line of best fit to estimate the number of jackets for a student who has 7 shirts.

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

9



$f(x) = 6 - 5x - 3x^2$

(a) On the diagram, sketch the graph of $y = f(x)$ for $-3 \leqslant x \leqslant 1$. [2]

(b) Write down the y co-ordinate of the point where the graph crosses the y-axis.

Answer(b) $y =$ ..... [1]

(c) Write down the x co-ordinates of the points where the graph crosses the x-axis.

Answer(c) $x =$ ..... and $x =$ .....[2]

(d) Find the co-ordinates of the local maximum point.

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

(e) $g(x) = 2x + 4$

On the same diagram, sketch the graph of $y = g(x)$. [2]

(f) Find the co-ordinates of the points of intersection of $f(x)$ and $g(x)$.

Answer(f) (..... , ...) and (..... , ...) [2]

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10 **(a)** Solve.

(i) $5x + 6 = -4$

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

(ii) $6x + 3 < 21$

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

(b) Simplify.

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

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

(ii) $(t^2)^4$

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

(iii) $18r^3 \div 3r$

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

(c) Expand and simplify.

$$4(x - 3) + 3(2x + 1)$$

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

(d) Factorise completely.

$$15y - 3y^2$$

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

Question 11 is printed on the next page.

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11 **(a)** Ahmed cycles 15 kilometres in 50 minutes.

Find his average speed in kilometres per hour.

Answer(a) .....km/h [3]

(b) George runs 15 kilometres at an average speed of 12 kilometres per hour.

Find how many minutes it takes George to run the 15 kilometres.

Answer(b) .....min [3]

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