

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

CANDIDATE NAME				
CENTRE NUMBER		CANDIDATE NUMBER		



MATHEMATICS 0580/33

Paper 3 (Core) May/June 2010

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator

Electronic calculator Geometrical instruments
Mathematical tables (optional) Tracing paper (optional)

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 a pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, 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.

This document consists of 12 printed pages.



1

A b	ookshop sold a total of 2750 books in January.	
(a)	The ratio hardback books sold: paperback books sold was 4:7. Calculate how many paperback books were sold.	
(b)	Answer(a)	[2]
(c)	Answer(b)	[2]
(d)	In February, the bookshop sold 14% more than the 2750 books sold in January. Calculate the number of books sold in February.	[2]
(e)	Answer(d)	[3]
(f)	Answer(e) \$	[1]
	Answer(f)	[1]

For
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2	(a)	Write down	
		(i) five numbers which are multiples of 7,	
		Answer(a)(i) , , , , , , , , , , , , , , , , , , ,	[2]
		(ii) two common multiples of 4 and 7.	
		Answer(a)(ii) and	[2]
	(b)	10 12 13 16 17 23 25 39	
		From the list above, write down	
		(i) a square number that is also an odd number,	
		(i) a square number that is also an odd number,	
		Answer(b)(i)	[1]
		(ii) a prime number that is one more than a square number.	
		4 (7)(")	F17
			[1]
	(c)	n is an integer and n^3 is between 60 and 70. Find the value of n .	
		Answer(c) n =	[1]
	(A)		[-]
	(a)	k and m are prime numbers.	
		$k^2+m=23$	
		Find k and m .	

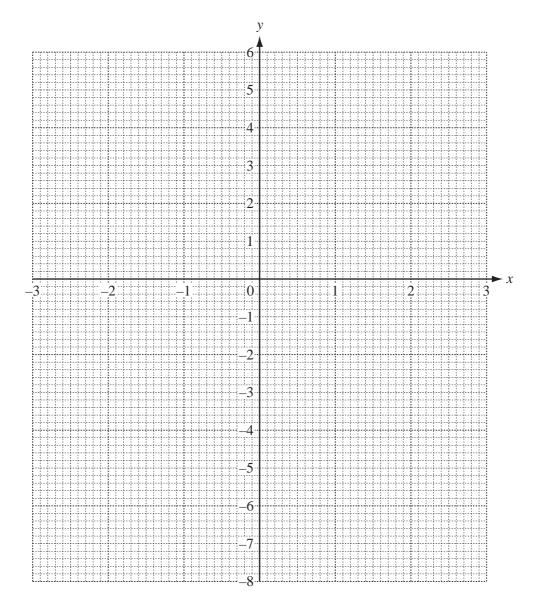
Answer(d) k =

m = [2]

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

x	-3	-2	-1	0	1	2	3
y	-7	-1		5		3	

(b) On the grid below draw the graph of $y = 5 + x - x^2$ for $-3 \le x \le 3$.



[4]

(c) Use your graph to solve the equation $5 + x - x^2 = 2$.

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[3]

(d) (i) Complete the table of values for y = 2x - 1.



х	-3	0	3
у			

[2]

(iii) Write down the gradient of y = 2x - 1.

(e) Write down the co-ordinates of the points where the line y = 2x - 1 intersects the graph of $y = 5 + x - x^2$.

4 (a) Solve the equation.

$$3(x+1) + 5(x-3) = 48$$

$$Answer(a) x =$$
 [3]

(b) Make f the subject of the formula g = 7f - 5.

$$Answer(b) f =$$
 [2]

(c) Factorise completely 6xy - 10yz.

 $Answer(c) \qquad [2]$

5

x cm x cm C NOT TO SCALE (x+3) cm

Triangles DAB and DCB form a kite ABCD. Angle DAB = angle DCB = 90°.

AD = DC = x cm and AB = BC = (x + 3) cm.

(a) Complete the following statement.

Triangle *ADB* is to triangle *CDB*. [1]

(b) When x = 8, calculate angle *DBC*.

Answer(b) Angle DBC = [2]

- (c) When x = 5, calculate
 - (i) the area of triangle *BCD*,

Answer(c)(i) cm^2 [2]

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(ii) the area of the kite ABCD.

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

(d) For a different value of x, the perimeter of the kite is 62 cm.

Write down and solve an equation to find this value of x.

Answer(d) x = [3]

In triangle ABC, BC = 9 cm and AC = 11 cm. The side AB has been drawn for you. (a) Using ruler and compasses only, complete the triangle ABC. [2] **(b)** Measure and write down the size of angle *CAB*. Answer(b) Angle CAB = [1] (c) For the constructions below, use a straight edge and compasses only. Leave in all your construction arcs. (i) Construct the bisector of angle ABC. Label the point P where the bisector crosses AC. [2] (ii) Construct the locus of points which are equidistant from A and from C. Label the point Q where the locus crosses AC. [2] (d) (i) Write down the length of PQ in centimetres. *Answer(d)*(i) cm [1] (ii) Shade the region inside the triangle which is nearer to AB than to BC and nearer to C than to A. [1] (e) Triangle ABC is a scale drawing. The 9 cm line, BC, represents a wall 45 metres long.

Examiner's Use

The scale of the drawing is 1:n.

Find the value of n.

For

Examiner's Use

7	(a)	The	first four terms of	of a seque	nce are gi	ven below	7.	
				5	9	13	17	
		Wri	te down					
		(i)	the next term,					
							Answer(a)(i) [1]	
		(ii)	the 8th term,					
							Answer(a)(ii) [1]	
		(iii)	an expression, i	n terms of	n, for the	<i>n</i> th term	of the sequence.	
							Answer(a)(iii) [2]	
	(b)	The	first four terms of	of a differ	ent seauer	nce are giv		
	(~)			4	10	18	28	
		(i)	Find the next te					
							Answer(b)(i) [1]	
		(ii)	The <i>n</i> th term of	this seque	ence is no	(n+p) w	here p is an integer.	
			Find the value of					
							Answer(b)(ii) p =	
		(iii)	Find the 100th t	erm of thi	s sequenc	e.		
							7.740	
							Answer(b)(iii) [1]	_

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[1]

8	He l	n has 50 model cars. has 10 blue cars and 19 red cars. has no yellow cars.		
	(a)	Tom chooses a car at random.		
		Write down the probability that it is		
		(i) red,		
			Answer(a)(i)	[1]
		(ii) red or blue,		
			Answer(a)(ii)	[1]
		(iii) not blue,		
			Answer(a)(iii)	[1]
		(iv) yellow.		
			Answer(a)(iv)	[1]
	(b)	The probability that a car is damaged is 1.		
		How many cars are damaged?		

9 The table below shows the number of visitors to a museum each day during one week.

For Examiner's Use

[1]

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of visitors	64	34	75	77	85	96	38

(a)	Work out the mean number of visitors per day during this week.	
	Answer(a)	[2]
(b)	Find the range.	

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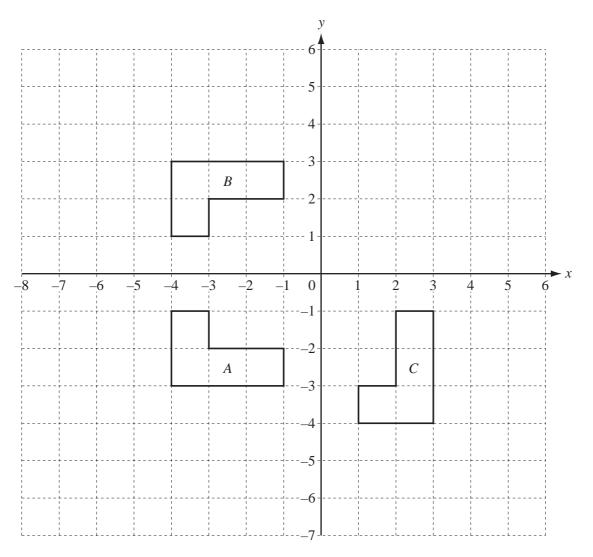
10	In this question give all your answers correct to 2 decimal places.				
	(a)	A bank has an exchange rate of $1 = 0.6513$.			
		(i)	Jonathan changes \$500 into euros (€). Calculate the amount Jonathan receives.		
		(ii)	Arika changes €300 into dollars. Calculate the amount Arika receives.	<i>Answer(a)</i> (i) €	[2]
	(b)		nia borrows \$325 for 2 years at a rate of 3.8% per culate the total amount Dania owes after 2 years.	Answer(a)(ii) \$year simple interest.	[3]
	(c)		e borrows \$550 for 2 years at a rate of 6% per year culate the total amount Lee owes after 2 years.	Answer(b) \$	[3]
				Answer(c) \$	[3]

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Question 11 is printed on the next page.

11

For Examiner's Use



Shapes A, B and C are shown on the grid.

- (a) Describe fully the single transformation which maps
 - (i) shape A onto shape B,

Answer(a)(i) [2]

(ii) shape A onto shape C.

Answer(a)(ii) [3]

(b) On the grid draw the image of shape A after

(i) a translation by the vector $\begin{pmatrix} 6 \\ 4 \end{pmatrix}$, [2]

(ii) an enlargement, scale factor 2, centre the origin. [2]

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