

Cambridge International Examinations

	Cambridge International Examinations Cambridge International General Certificate of Secondary Education
Cambridge IGCSE	Cambridge International Examinations Cambridge International General Certificate of Secondary Education
CANDIDATE NAME	
CENTRE NUMBER	CANDIDATE NUMBER



MATHEMATICS 0580/32

Paper 3 (Core) May/June 2015

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator Geometrical instruments

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 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

CAMBRIDGE International Examinations

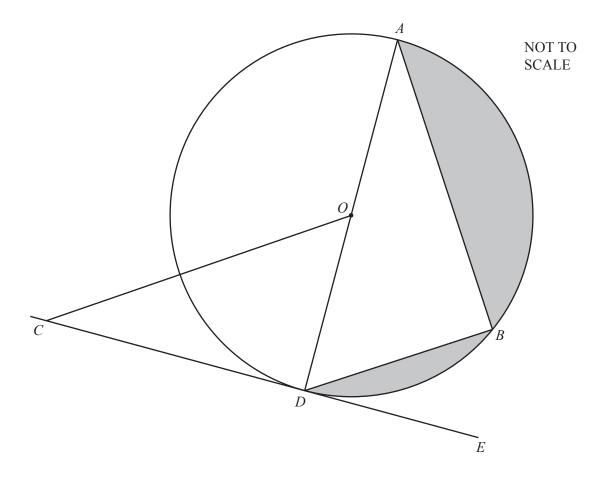
From the list above, write down (i) the factors of 24, Answer(a)(i)	1	(a)		4	3	0	2	9	5	7	
Answer(a)(i) (ii) a prime factor of 24, Answer(a)(ii) (iii) the highest common factor (HCF) of 56 and 91, Answer(a)(iii) (iv) the square root of 49, Answer(a)(iv) (v) the cube root of 27. Answer(a)(v) (b) (i) Using four numbers from the list in part (a), form the largest 4-digit number. Answer(b)(i) (ii) Write your answer to part (b)(i) in words. Answer(b)(ii) (c) Find (i) the common multiple of 5 and 8 between 100 and 150, Answer(c)(i) Answer(c)(i)		1	Fror	n the list above,	write dow	n					
(ii) a prime factor of 24, Answer(a)(ii)		((i)	the factors of 24	4,						
(iii) the highest common factor (HCF) of 56 and 91, Answer(a)(iii)								Answer(a	a)(i)		 [1]
(iii) the highest common factor (HCF) of 56 and 91, Answer(a)(iii)		(1	ii)	a prime factor o	of 24,						
(iv) the square root of 49, Answer(a)(iii)								Answer(a,)(ii)		 [1]
(iv) the square root of 49, Answer(a)(iv)		(i	ii)	the highest com	mon facto	r (HCF) of	56 and 91	,			
(iv) the square root of 49, Answer(a)(iv)											
(v) the cube root of 27. Answer(a)(iv)								Answer(a)	(iii)		 [1]
(v) the cube root of 27. Answer(a)(v)		(i	v)	the square root	of 49,						
(i) Using four numbers from the list in part (a), form the largest 4-digit number. Answer(b)(i)								Answer(a)	(iv)		 [1]
(b) (i) Using four numbers from the list in part (a), form the largest 4-digit number. Answer(b)(i)		((v)	the cube root of	£27.						
(ii) Write your answer to part (b)(i) in words. Answer(b)(ii)								Answer(a)(v)		 [1]
(ii) Write your answer to part (b)(i) in words. Answer(b)(ii)		(b)	(i)	Using four num	bers from	the list in p	art (a) , fo	orm the large	est 4-digit n	umber.	
(ii) Write your answer to part (b)(i) in words. Answer(b)(ii)								4			F13
Answer(b)(ii)		(::/	Write your engy	war ta maut	(b)(i) in w	romda	Answer(t	9)(1)		 [1]
(c) Find (i) the common multiple of 5 and 8 between 100 and 150, Answer(c)(i)		(.	11)	write your allsv	ver to part	(b)(1) III w	orus.				
(c) Find (i) the common multiple of 5 and 8 between 100 and 150, $Answer(c)(i)$ (ii) the square number between 350 and 390.				Answer(b)(ii)							
(i) the common multiple of 5 and 8 between 100 and 150, Answer(c)(i)											 [1]
(i) the common multiple of 5 and 8 between 100 and 150, Answer(c)(i)		(c) l	Find	ł							
Answer(c)(i)					altiple of 5	and 8 betw	veen 100 a	nd 150,			
(ii) the square number between 350 and 390.											
								Answer(c	<i>c)</i> (i)		 [1]
<i>Answer(c)</i> (ii)		(ii)	the square numb	ber betwee	n 350 and 3	390.				
<i>Answer(c)</i> (ii)											
								Answer(c)(ii)		 [1]

			3	
2	(a)	Sim	plify. $7e - 5f + 4e - f$	
	<i>a</i> >	E.	Answer(a) [[2]
	(b)	Fino	If the value of $8g - 9h$ when $g = 5$ and $h = -3$.	
			Answer(b)	[2]
	(c)	Solv	We the equation. $4x - 7 = 29$	
			$Answer(c) x = \dots $	[2]
	(d)	Sim	plify. $k^4 div k^{11}$	
			Answer(d)	[1]
	(e)	Pen	s cost p cents and pencils cost w cents.	
		(i)	Aisha buys 3 pens and 5 pencils for \$2.20. Complete the equation representing this cost in cents.	
			$Answer(e)(i) 3p + 5w = \dots$	[1]
		(ii)	Bishen buys 4 pens and 10 pencils for \$3.50. Write down an equation representing this cost in cents.	
			Answer(e)(ii)	[1]

(iii) Solve your equations to find the value of p and the value of w.

 $Answer(e)(iii) p = \dots$ $w = \dots$ [3]

3



The diagram shows a circle, centre O and diameter AD. B is on the circumference of the circle and the line CDE touches the circle at D. $AD = 21 \,\mathrm{cm}$ and $CD = 16 \,\mathrm{cm}$.

- (a) Calculate
 - (i) the circumference of the circle,

Answer(a)(i) cm [2]

(ii) the area of the circle.

Answer(a)(ii) cm² [2]

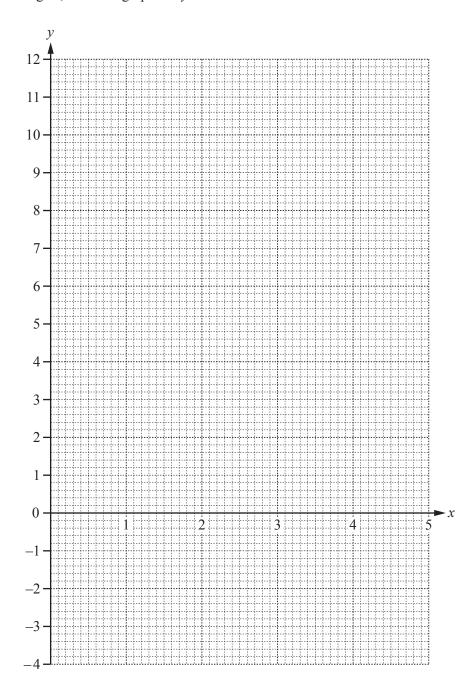
(b)	(i)	Write down the size of angle ABD.
		$Answer(b)(i) Angle ABD = \dots [1]$
	(ii)	BD = 9 cm.
		Show that $AB = 19.0 \mathrm{cm}$, correct to 3 significant figures.
		Answer(b)(ii)
		[3]
(c)	(i)	Calculate the area of triangle <i>ABD</i> .
(0)	(-)	Cureulate the area of thangle 1122.
		$Answer(c)(i) \dots cm^2 [2]$
	(ii)	Work out the total area of the shaded segments of the circle.
		$Answer(c)(ii) \dots cm^2 [2]$
(d)	(i)	Write down the mathematical name of the line <i>CDE</i> .
		$Answer(d)(i) \dots [1]$
	(ii)	Write down the mathematical name of the line <i>OD</i> .
		$Answer(d)(ii) \dots [1]$
	(iii)	Use trigonometry to calculate the size of angle <i>OCD</i> .
		Answer(d)(iii) Angle OCD =

4 (a) (i) Complete the table of values for $y = 8 + 3x - x^2$.

x	0	1	2	3	4	5
У	8		10	8	4	

[2]

(ii) On the grid, draw the graph of $y = 8 + 3x - x^2$ for $0 \le x \le 5$.



[3]

(iii) Write down the co-ordinates of the highest point of the graph.

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

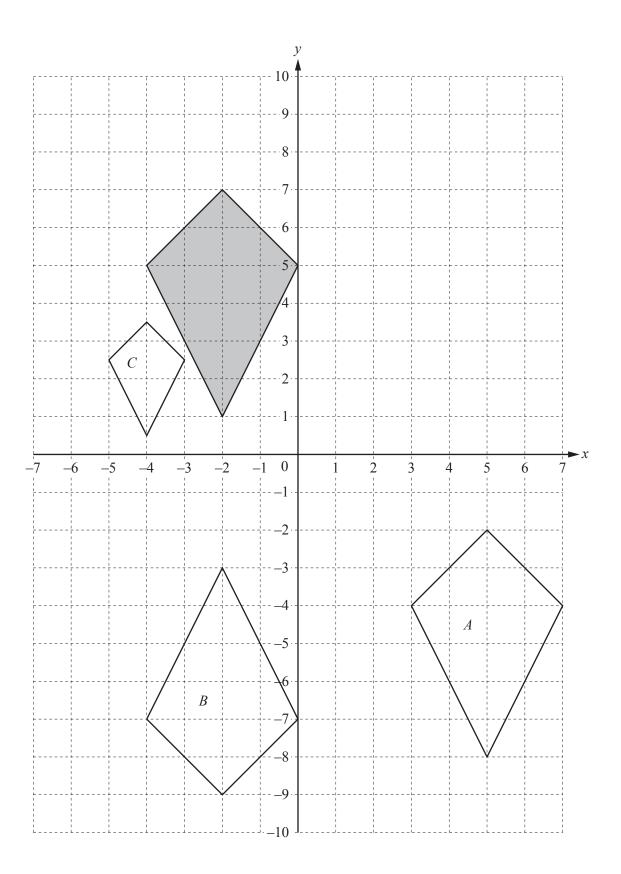
(b) (i) Complete the table of values for $y = \frac{12}{x}$.

x	1	2	3	4	5
у	12		4		2.4

[2]

- (ii) On the same grid, draw the graph of $y = \frac{12}{x}$ for $1 \le x \le 5$. [3]
- (c) Use your graphs to write down the solutions of the equation $8 + 3x x^2 = \frac{12}{x}$.

Answer(c) x = or x = [2]



(a)	r the shaded quadrilateral, write down	
	its mathematical name,	
	<i>Answer(a)</i> (i)	[1]
(the number of lines of symmetry.	
	Answer(a)(ii)	[1]
(b)	e quadrilaterals are drawn on a 1 cm ² grid.	
	ork out the area of the shaded quadrilateral.	
	<i>Answer(b)</i> cm ²	² [1]
	Answer (b) CIII	[1]
(c)	scribe fully the single transformation that maps the shaded quadrilateral onto	
	quadrilateral A ,	
	<i>Answer(c)</i> (i)	
		[2]
	quadrilateral B ,	
	Answer(c)(ii)	
		[2]
(i	quadrilateral C.	
	Answer(c)(iii)	
		[3]
	the grid, draw the image of the shaded quadrilateral after a rotation of 90° clockwise abourgin.	t the [2]

Kna	ımısı	is trying to reach the standard required for competing in an international atmetics competition.	
(a)		arrives home from college at 1615. divides his time before going to bed between training, studying and eating.	
	(i)	He spends $3\frac{1}{4}$ hours training.	
		Show that $3\frac{1}{4}$ hours is equivalent to 195 minutes.	
		Answer(a)(i)	
			[1]
	(ii)	He spends $2\frac{1}{2}$ hours studying and 45 minutes eating.	
		Work out the time he goes to bed.	
		<i>Answer(a)</i> (ii)	[2]
	(iii)	Find, in its simplest form, the ratio training: studying: eating.	
		Answer(a)(iii) Training: studying: eating =:	[2]
(b)	Kha	amisi divides his 195 minutes training into three sessions.	
		• 40% of the time on the running track	
		 ²/₁₃ of the time with his trainer the remaining time in the gym 	
	Cal	culate the time, in minutes, he spends	
	(i)	on the running track,	
	()		
		<i>Answer(b)</i> (i) min	[1]
	(ii)	with his trainer,	
		<i>Answer(b)</i> (ii) min	[1]
	(iii)	in the gym.	[+]
	(111)	₅ ,	
		Answer(b)(iii) min	[1]

(c)	Khamisi is a sprinter and he wants to qualify for the 200 metres race.
	His best time is 22.5 seconds and the qualifying time is 20.7 seconds.

Calculate the percentage decrease in his best time needed in order to reach the qualifying time.

Answer(c) % [3]

(a) A random sample of 100 nails is taken from the machine. The lengths are measured and recorded in the table.

Length (mm)	62	63	64	65	66	67	68
Number of nails	0	12	30	35		8	0

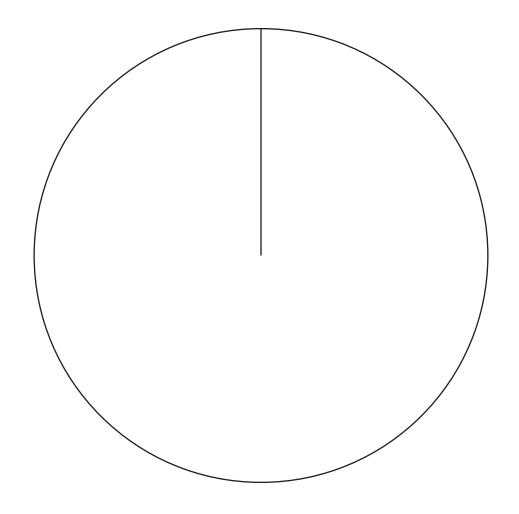
(i)	Complete the table.		[1]
(ii)	Write down the modal length.		
(iii)	Write down the range of the lengths.	Answer(a)(ii) mm	[1]
(iv)	Calculate the mean length.	Answer(a)(iii) mm	[1]

Answer(a)(iv) mm [3]

(v) Nails that have length 64 mm, 65 mm or 66 mm are accepted. Other nails are rejected.

Number of nails accepted	80
Number of nails rejected	20

Complete the pie chart to show the proportion of nails that are accepted and rejected.



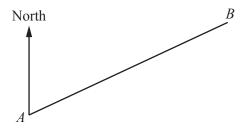
[3]

(b) One nail from the machine measures 65 mm, correct to the nearest millimetre.

Complete the statement about the length, $n \, \text{mm}$, of this nail.

 $Answer(b) \dots \leq n \leq 1$

8 The scale drawing shows one side, *AB*, of a 4-sided field. The scale is 1 centimetre represents 20 metres.



Scale: 1 cm to 20 m

(a)	(i) Work out the actual distance AB .
	$Answer(a)(i) AB = \dots m [2]$
	(ii) Measure the bearing of B from A . $Answer(a) (ii) $
(b)	In this part use a ruler and compasses only and show your construction arcs clearly.
	Point C is 240 m from A and 140 m from B.
	On the scale drawing, construct the position of point C . [2]
(c)	Point D is 200 m on a bearing of 135° from A .
	On the scale drawing, draw accurately the line <i>AD</i> .
(d)	Work out the actual perimeter of the field <i>ABCD</i> .
	Answer(d) m [3

Question 9 is printed on the next page.

			16	
9	Nin	ıa is g	going on a holiday to Dubai from her home in Mumbai.	
	(a)	At t	the airport she buys 2 packets of sandwiches and 3 magazines.	
		Cor	mplete her shopping bill in Indian rupees.	
			2 packets of sandwiches at 325 rupees per packet = rupees	
			3 magazines at 75 rupees per magazine = rupees	
			Total = rupees	[3]
	(b)	She	changed 10 000 rupees to dirhams when the exchange rate was 18.3 rupees = 1 dirham.	
		Hov	w much did she receive?	
			Answer(b) dirhams	[2]
	(c)		e flight from Mumbai to Dubai takes 2 hours 50 minutes. e distance from Mumbai to Dubai is 1937 km.	
		(i)	Show that the average speed of the flight is 684 km/h, correct to the nearest whole number.	
			Answer(c)(i)	
				[2]
		(ii)	Nina's flight leaves Mumbai at 1315.	
			The local time in Mumbai is $1\frac{1}{2}$ hours ahead of the local time in Dubai.	
			Find the time of arrival in Dubai. Give your answer in the 24-hour clock.	

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 International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

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