

**Cambridge International Examinations** Cambridge International General Certificate of Secondary Education

	CANDIDATE NAME		
	CENTRE NUMBER		CANDIDATE NUMBER
*	MATHEMATICS		0580/32
	Paper 3 (Core)		October/November 2017
л			2 hours
	Candidates answer	on the Question Paper.	
	Additional Materials	: Electronic calculator Tracing paper (optional)	Geometrical instruments

## 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  $\pi$ , 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 16 printed pages.



2

Pab	lo leave	s hom	e at 07	35 an	d arriv	es at s	chool	at 082	20.						
(i)	Find h	ow ma	any mi	nutes i	it takes	s Pablo	o to ge	t to sc	hool.						
															min [1]
(ii)	The fir	st less	son sta	rts at (	)855 a	nd end	ls 1 ho	our 15	minute	es latei					
	Find the time the first lesson ends.														
															[1]
(iii)	In one He buy A 1-da	schoo ys a 5- y ticke	l week day tic et cost	c of 5 c cket th s \$1.60	days, F at cost 6 .	ablo g s \$7.7	oes to 5 .	and fi	rom sc	hool o	n the ł	ous ead	ch day.		
	Calcul	ate ho	w muc	h Pab	lo save	es by b	ouying	a 5-da	y tick	et.					
										9	5				[2]
Pab	lo recore	ds the	time, c	correct	to the	neares	st minu	ute, ea	ch stuc	lent in	his cla	ass spe	ent on t	heir ho	nework.
30	42	56	12	15	10	50	8	58	24	34	41	11	36	18	
9	21	48	35	42	27	44	52	15	56	19	22	54	41	30	
(i)	Find th	ne rang	ge.												
															min [1]
(ii)	Compl You m	ete the ay use	e frequ the ta	iency t lly col	able. lumn te	o help	you.								
	Pab (i) (ii) (iii) Pab 30 9 (i) (ii)	<ul> <li>Pablo leave</li> <li>(i) Find h</li> <li>(ii) The fin</li> <li>Find th</li> <li>Find th</li> <li>(iii) In one</li> <li>He buy A 1-da</li> <li>Calcul</li> <li>Pablo record</li> <li>30 42</li> <li>9 21</li> <li>(i) Find th</li> <li>(ii) Find th</li> </ul>	<ul> <li>Pablo leaves hom</li> <li>(i) Find how ma</li> <li>(ii) The first less Find the time</li> <li>(iii) In one school He buys a 5-A 1-day tick</li> <li>Calculate ho</li> <li>Pablo records the</li> <li>30 42 56</li> <li>9 21 48</li> <li>(i) Find the range</li> <li>(ii) Complete the You may use</li> </ul>	<ul> <li>Pablo leaves home at 07</li> <li>(i) Find how many mi</li> <li>(ii) The first lesson star Find the time the find the time the find the time the find the time the find the buys a 5-day tic A 1-day ticket cost Calculate how muct Calculate how muct Pablo records the time, or 30 42 56 12 9 21 48 35</li> <li>(i) Find the range.</li> <li>(ii) Complete the freque You may use the tage</li> </ul>	<ul> <li>Pablo leaves home at 0735 and</li> <li>(i) Find how many minutes if</li> <li>(ii) The first lesson starts at 0 Find the time the first less</li> <li>(iii) In one school week of 5 of He buys a 5-day ticket th A 1-day ticket costs \$1.60 Calculate how much Pablo Calculate how much Pablo Pablo records the time, correct 30 42 56 12 15 9 21 48 35 42</li> <li>(i) Find the range.</li> <li>(ii) Complete the frequency of You may use the tally columns.</li> </ul>	<ul> <li>Pablo leaves home at 07 35 and arriv</li> <li>(i) Find how many minutes it takes</li> <li>(ii) The first lesson starts at 08 55 a Find the time the first lesson en Find the total tota</li></ul>	<ul> <li>Pablo leaves home at 07 35 and arrives at s</li> <li>(i) Find how many minutes it takes Pablo</li> <li>(ii) The first lesson starts at 08 55 and end Find the time the first lesson ends.</li> <li>(iii) In one school week of 5 days, Pablo g He buys a 5-day ticket that costs \$7.7 A 1-day ticket costs \$1.66. 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Time (minutes)	Tally	Frequency
0 to 9		
10 to 19		
20 to 29		
30 to 39		
40 to 49		
50 to 59		
	Total	30

(iii) Draw a bar chart to show this information. Complete the scale on the frequency axis.



(iv) Write down the modal class interval.

(a) Write the number 8045 in words. ......[1] (b) Write down a number between 60 and 70 that is (i) a square number, ......[1] (ii) a prime number, a common multiple of 4 and 17. (iii) ......[1] (c) (i) Write 98 as a product of its prime factors. ......[2] Find the highest common factor (HCF) of 98 and 182. (ii) (d) Find the value of (i) 6<sup>4</sup>,  $\sqrt[3]{24389}$ , (ii) **(iii)** 14<sup>1</sup>, (iv)  $5^{-3}$ . 

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3 (a) Write down the order of rotational symmetry of each shape.



- 4 Leo, Kim and Priya own a shop.
  - (a) (i) Pens cost \$1.45 each. Andre has a \$10 note.

Find the greatest number of pens that he can buy and how much change he receives.

									N	umbe	r of pe	ens =	 	
											Chan	ge =	\$ 	 . [3]
	(ii)	The price In a sale th	of a pa nis pric	ck of e is r	`printe educe	er pape d by 1	er is \$5 5%.	5.60 .						
		Calculate	the sale	e pric	e.									
											\$		 	 . [2]
(b)	Eacl The	h day, Kim results for	records 10 day	s the s s are	numbe showr	er of p 1 belov	eople w.	who b	uy a pe	en.				
			40	7	19	25	18	19	32	57	12	47		
	Find	l the mediar	1.											
											••••		 	 . [2]
(c)	The The	shop make profit is sha	s a pro ared in	fit of the r	\$700( atio	). Leo :	Kim :	Priya	= 6:	3:5.				
	Calc	culate the ar	nount	they e	each r	eceive								
											L	eo = (	\$ 	 •
											K	im = 3	\$ 	

Priya = \$ ...... [3]

(d) Leo changed \$1400 into pounds (£). The exchange rate was  $\pounds 1 = \$1.54$ .

Work out how many pounds Leo received.

£.....[2]

(e) Priya invested \$2000 for 3 years at a rate of 2.6% per year compound interest.

Calculate the value of her investment at the end of the 3 years.

\$.....[3]

5 Nico asked each of 900 students at her school what their favourite subject is. The students only chose Science, Art, Mathematics, History or Geography. The pie chart shows some of this information.



- (a) Show that 225 students chose Science.
- (b) Find how many students chose Art.

.....[2]

(c) 125 students chose History and 140 chose Geography.

Complete the pie chart to show this information.

[1]

(d)	One	e of the 900 students is selected at random.
	(i)	Write down the probability that their favourite subject is French.
	(ii)	[1] Find the probability that their favourite subject is Art. Give your answer as a fraction in its lowest terms.
		[2]
(e)	The	total number of students in the school is 2520.
	Esti	mate how many students you would expect to choose History as their favourite subject.

9

.....[2]

6 The diagram shows the positions of two towns, *A* and *B*. The scale is 1 centimetre represents 10 kilometres.



• B

(i) Find the actual distance from A to B.
(ii) Measure the bearing of B from A.
(iii) Measure the bearing of B from A.
(iii) Another town, C, is 78 km from A on a bearing of 103°. Mark and label the position of town C on the diagram.
(ii) Chailai takes 45 minutes to drive the 78 km from town A to town C. Calculate her average speed in kilometres per hour.

## (c) In this part, use a ruler and compasses only and show your construction arcs.

11

Mr Lei is moving house. He wants to live

- nearer to town *B* than town *A*
- and
- less than 70 km from town *A*.

Construct and shade the region on the diagram in which he wants to live.

[5]

7 (a) Write down the mathematical name for this polygon.



r	11	

(ii) Write down the mathematical name for this quadrilateral.



	[1]	I
•••••••••••••••••••		L

(iii) Write down the type of angle shown in this diagram.



[	1]
---	----

- (b) A cuboid measures 25 cm by 12 cm by 8 cm.
  - (i) Calculate the volume.

(ii) Write this volume in cubic metres.

.....m<sup>3</sup> [1]

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(iv) Calculate CD.

*CD* = ..... cm [3]

- 8 (a) Simplify.

  - (b) Write down an expression, in terms of x and y, for the total cost of x cakes at 90 cents each and y drinks at 75 cents each.

...... cents [2]

(c) Factorise completely.  $12p^2 - 8p$ 

.....[2]

(d) Solve. 4(7r-3) = 128

(e) Solve the simultaneous equations. You must show all your working.

$$4x + 3y = 43$$
$$6x + 7y = 92$$

 $x = \dots$  $y = \dots$  [4]

Question 9 is printed on the next page.

(i) Complete the table of values for  $y = x^2 + 3x - 4$ . 9 **(a)** 

x	-3	-2	-1	0	1	2	3
у	-4	-6		-4	0		





Write down the co-ordinates of the point of intersection of the line y = 5 and the graph of (ii)  $y = x^2 + 3x - 4$  for  $-3 \le x \le 3$ .

(.....)[1]

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[3]

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