



## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

CANDIDATE NAME				
CENTRE NUMBER		CANDIDATE NUMBER		



MATHEMATICS 0581/12

Paper 1 (Core) October/November 2012

1 hour

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator

Mathematical tables (optional)

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 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  $\pi$ , 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 56.

This document consists of 11 printed pages and 1 blank page.



1	Work out $\frac{3}{7} \times \frac{5}{8}$ .
	Give your answer as a fraction.
	<i>Answer</i> [1]
2	Amisi travelled from Johannesburg to Cairo. She changed 500 Egyptian pounds (EGP) to South African rand (ZAR) when the exchange rate was 1 EGP = 1.24 ZAR.
	Calculate the amount she received.
	AnswerZAR [1]
3	Write the following numbers correct to one significant figure.  (a) 7682
	Answer(a)[1]
	<b>(b)</b> 0.07682
	<i>Answer(b)</i> [1]
4	Mars is ninety-one million, seven hundred thousand kilometres from Earth.
	(a) Write this number in figures.
	Answer(a) [1]  (b) Write your answer to part (a) in standard form.
	Answer(b) [1]

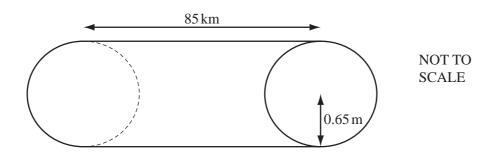
5	A bowl of fruit contains only 8 peaches, 5 orange One piece of fruit is chosen at random.	es and 6 apples.
	Write down the probability that it is	
	(a) an orange,	
		Anguay(a) [1]
		Answer(a) [1]
	(b) not a peach.	
		Answer(b)[1]
_		
6	The formula for changing a temperature in Celsiu	us to a temperature in Fahrenheit is $F = 1.8C + 32$ .
	Make <i>C</i> the subject of the formula.	
		Answer C =  [2]
7	$\mathbf{a} = \begin{pmatrix} 4 \\ -1 \end{pmatrix} \qquad \qquad \mathbf{b} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$	
	Work out $\mathbf{a} + 3\mathbf{b}$ .	
		Answer $\left(\begin{array}{c} \\ \end{array}\right)$ [2]

8	Work out.  (a) 4-5-6				Answer(a)			Exan	For miner's Use
	<b>(b)</b> $\frac{-8}{-2}$								
					Answer(b)			[1]	
9	Patrick buys so He sells all the Calculate his pe Show all your v	bananas for ercentage p	r \$40.60.						
					Answer		%	[3]	
10	12	13	14	15	Answer	17	18	[3]	
10	12 From the list of  (a) a factor of	numbers, v		15		17		[3]	
10	From the list of	numbers, v		15	16			[1]	
10	From the list of  (a) a factor of	numbers, v 36, of 8,		15	16  Answer(a)		18		

11	An athlete runs 1500 metres in 4 min	nutes.					
	Calculate her average speed in						
	(a) metres per minute,						
			Ans	wer(a)		m/min	[1]
	<b>(b)</b> kilometres per hour.						
			Ans	wer(b)		km/h	[2]
12	In a traffic survey of 125 cars the nu	mber of peop	ple in each ca	ar was record	ed.		
	Number of people in each car	1	2	3	4	5	
	Frequency	50	40	10	20	5	
	Find						
	(a) the range,						
			Ans	wer(a)			[1]
	(b) the median,						
			Ans	wer(b)			[1]
	(c) the mode.						
			Ans	wer(c)			[1]

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A water pipeline in Australia is a cylinder with  ${\bf radius}~0.65~{\bf metres}$  and length 85  ${\bf kilometres}$ .

Calculate the volume of water the pipeline contains when it is full. Give your answer in cubic metres.

Answer	 $m^3$	[3]

14 A shop is open during the following hours.

	Monday to Friday		Sunday
Opening time	0645	0730	0845
Closing time	1730	1730	1200

(a)	Write the c	closing time	on Saturday	in the	12-hour c	clock time
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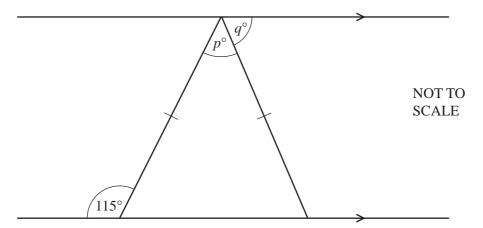
Α	lnswer(	(a)	[]	ľ

**(b)** Calculate the total number of hours the shop is open in one week.

Answer(b) h [2]

15 The diagram shows an isosceles triangle between two parallel lines.

For Examiner's Use



Calculate

(a) the value of p,

$$Answer(a) p =$$
 [2]

**(b)** the value of q.

$$Answer(b) q =$$
 [1]

16 Musa borrows \$600 for 2 years at a rate of 7.5% per year compound interest. At the end of the 2 years she repays the amount owing in full.

Calculate the total amount she has to repay. Give your answer correct to the nearest dollar.

4	LJ.
Answer \$	1.5
11115WCI \$	 Lº.

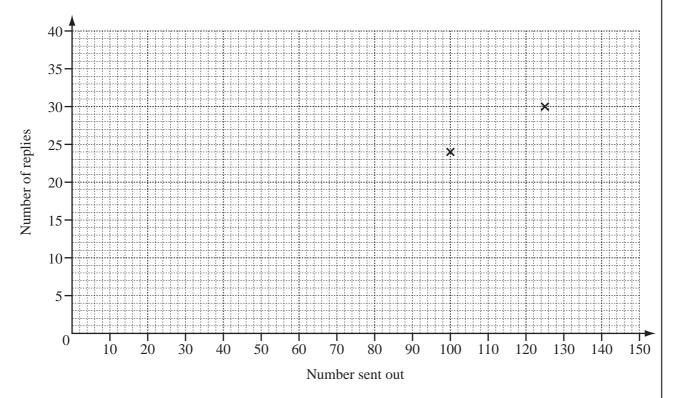
17	(a)	Factorise completely.	$6x^2 - 8xy$		
				Answer(a)	 [2]
	<b>(b)</b>	Simplify the following expr	ession.		
			$28a^5 \div 4a^{-2}$		
				Answer(b)	 [2]

18 A company sends out ten different questionnaires to its customers.

The table shows the number sent and replies received for each questionnaire.

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Questionnaire	A	В	С	D	Е	F	G	Н	I	J
Number sent out	100	125	150	140	70	105	100	90	120	130
Number of replies	24	30	35	34	15	25	22	21	30	31



(a) Complete the scatter diagram for these results.

The first two points have been plotted for you.

[2]

**(b)** Describe the correlation between the two sets of data.

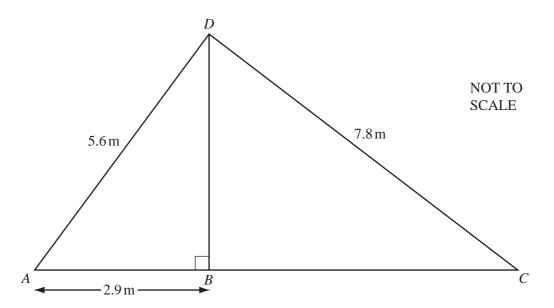
*Answer(b)* [1]

(c) Draw the line of best fit.

[1]

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(a) Calculate BD.

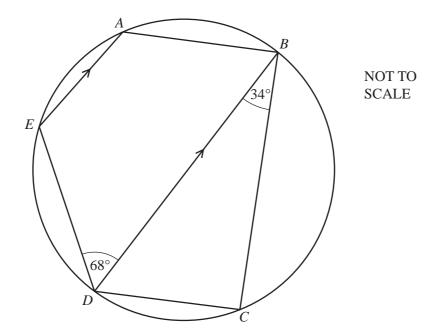
**(b)**  $DC = 7.8 \,\mathrm{m}$ .

Use trigonometry to calculate angle *BCD*.

$$Answer(b) \text{ Angle } BCD =$$
 [2]

**20** 

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The points A, B, C, D and E lie on a circle with diameter BD.

AE is parallel to BD.

Angle  $BDE = 68^{\circ}$  and angle  $DBC = 34^{\circ}$ .

(a)	Give the reason why angle $BCD$ is $90^{\circ}$ .				
	Ans	wer(a)			[1]
<b>(b)</b>	Fine	d			
	(i)	angle BDC,			
			Answer(b)(i)		[1]
	(ii)	angle DEA.			
			Answer(b)(ii)		[1]

(c) Find the sum of the angles of the pentagon ABCDE.

*Answer(c)* [2]

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