

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

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

0580/13 **MATHEMATICS** 

Paper 1 (Core) October/November 2011

1 hour

Candidates answer on the Question Paper.

Additional Materials: 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  $\pi$ , 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 12 printed pages.



1	During April the probability that it will rain on any one day is $\frac{5}{6}$ .		
	On how many of the 30 days in April would it be expected to rain?		
	Answer		[1]
2	(a) Write, in figures, the number		
	one hundred and five thousand and two.		
	Answer(a)		[1]
	(b) Write your answer to part (a) correct to the nearest ten thousand.		
	Answer(b)		[1]
3	Simplify the expression.		
3	7x + 11y + x - 6y		
	7x + 11y + x = 6y		
	Answer		[2]
_			
4	Insert <b>one</b> pair of brackets into each calculation to make the answer co	rrect.	
	(a) $7 \times 6 - 3 + 5 = 26$		[1]
	<b>(b)</b> $8 - 6 \times 4 - 1 = -10$		[1]

5	Write the following	in order of	size, starting	with the sma	allest.		
	0.525	$\frac{11}{21}$	$\frac{111}{211}$	52.4%			
	Ansv	ver			<	<	 [2]
6	Thomas fills glasses Each glass holds 30	s from a jug centilitres.	containing 2	2.4 litres of w	ater.		
	How many glasses of	can Thomas	fill?				
					Answer		 [2]
7	Martha divides \$240	) between sp	pending and	saving in the	ratio		
		spending:	saving = 7:8	3.			
	Calculate the amoun	nt Martha ha	s for spendi	ng.			
					Answer \$		 [2]

8		210	211	212	213	214	215	216	
	From the list of nur	nbers, fin	d						
	(a) a prime number	er,							
						Answer(	(a)		[1]
	<b>(b)</b> a cube number	·.							
						Answer(	Ъ)		[1]
9	Calculate the selling	g price of	a bicycle	bought fo	or \$120 an	d sold at a	profit of	15%.	
						Answer	\$		[2]
						Answer	\$		[2]
10	Solve the simultane	eous equa	tions.	x	+ 5y = 22		\$		[2]
10	Solve the simultane	eous equa	tions.	x x	+5y = 22 $+3y = 12$		\$		[2]
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10	Solve the simultane	eous equa	tions.	x x	+5y = 22 $+3y = 12$				[2]

Solve the equation.			
$\frac{2x-3}{2}=2$			
	Answer x =		[2]
The population of a city is 128 000, correct to the near	rest thousand.		
(a) Write 128 000 in standard form.			
	Answer(a)		[1]
<b>(b)</b> Write down the upper bound of the population.			
	Answer(b)		[1]
Pedro invested \$800 at a rate of 5% per year <b>compou</b> t Calculate the <b>total</b> amount he has after 2 years.	nd interest.		
	The population of a city is 128 000, correct to the near  (a) Write 128 000 in standard form.  (b) Write down the upper bound of the population.  Pedro invested \$800 at a rate of 5% per year compou	Answer x =  The population of a city is 128 000, correct to the nearest thousand.  (a) Write 128 000 in standard form.  Answer(a)  (b) Write down the upper bound of the population.  Answer(b)	Answer x =

	$5g^2h + 10hj$	
	Answer	[2]
15	For her holiday, Dina changed 500 Swiss francs (CHF) into pounds (£). The rate was £1 = CHF 1.6734.	
	Calculate how much Dina received in pounds. Give your answer correct to 2 decimal places.	
	Answer £	[2]
16	Simplify $4x^4 \times 5x^5$ .	
	Answer	[2]

17 The scale of a map is 1:500 000.
On the map the centres of two cities are 26 cm apart.

For Examiner's Use

Calculate the actual distance, in kilometres, between the centres of the two cities.

Answer km [2]

18 Show that  $3^{-2} + 2^{-2} = \frac{13}{36}$ .

Write down all the steps of your working.

Answer

[2]

19	In Vienna, the mid-day temperatures, in °C, are recorded during a week in December
	This information is shown below.

-2 2 1 -3 -1 -2 0

Calculate

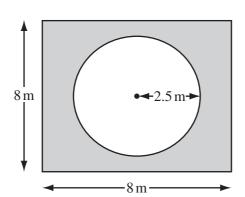
(a) the difference between the highest temperature and the lowest temperature,

Answer(a)	°C	[1]

**(b)** the mean temperature.

Answer(b) °C	7	[2]
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**20** 



NOT TO SCALE

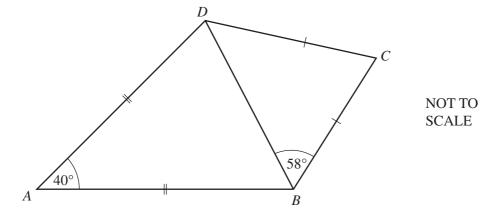
The diagram shows a circular pool of radius 2.5 m. A square piece of land surrounds the pool. Each side of the square is 8 m long.

Calculate the shaded area of the land that surrounds the pool.

Answer m<sup>2</sup> [3]

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For Examiner's Use



In the quadrilateral ABCD, AB = AD and CB = CD.

Angle  $BAD = 40^{\circ}$  and angle  $CBD = 58^{\circ}$ .

- (a) Calculate
  - (i) angle ABD,

$$Answer(a)(i)$$
 Angle  $ABD =$  [1]

(ii) angle BCD.

$$Answer(a)(ii) Angle BCD =$$
 [1]

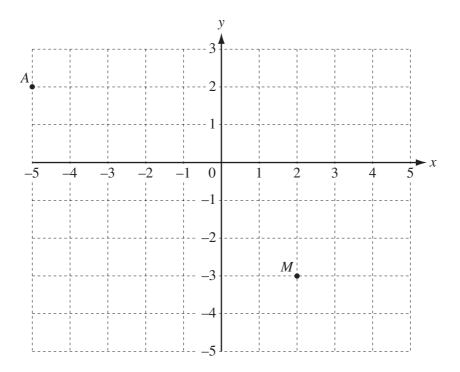
**(b)** Write down the mathematical name for the quadrilateral *ABCD*.

$$Answer(b)$$
 [1]

22	(a)	Calculate	$\frac{700}{28.6^3}$ .		
				Answer(a)	 [1]
	(b)	Work out	$(8 \times 10^6)^2$ , giving your answer in standard		
				Answer(b)	 [2]

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For Examiner's Use



The diagram shows two points A(-5, 2) and M(2, -3).

- (a) B is the point (5, -2).
  - (i) On the grid, mark the point B.

[1]

(ii) Write  $\overrightarrow{AB}$  as a column vector.

$$Answer(a)(ii) \overrightarrow{AB} = \left( \begin{array}{c} \\ \end{array} \right)$$
 [1]

**(b)** M is the midpoint of the line BD.

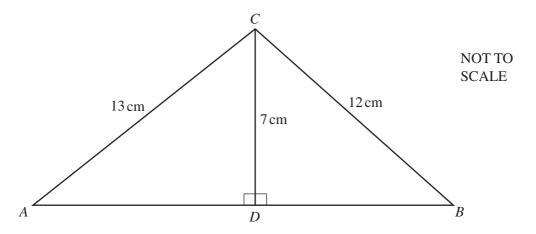
Find the co-ordinates of D.

Answer(b) ( , , , , , , ) [2]

Question 24 is printed on the next page.

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For Examiner's Use



In triangle ABC, D is on AB so that angle ADC = angle BDC =  $90^{\circ}$ .

AC = 13 cm, BC = 12 cm and CD = 7 cm.

(a) Calculate the length of *DB*.

**(b)** Use trigonometry to calculate angle *CAD*.

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

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