

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

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

MATHEMATICS 0580/13

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.

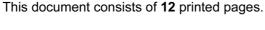
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

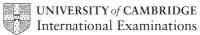
For  $\pi$ , use either your calculator value or 3.142.

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.





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[1]
[1]
[1]
[1]
[1]
[2]
[1]
[1]
_

5	Write the followin	g in order of	size, starting	with the small	est.		
	0.525	$\frac{11}{21}$	$\frac{111}{211}$	52.4%			
	Ans	wer	<	<		<	 [2]
6	Thomas fills glasse Each glass holds 3		containing 2	.4 litres of wate	er.		
	How many glasses	can Thomas	fill?				
					Answer		 [2]
7	Martha divides \$2	40 between sp	pending and	saving in the ra	ntio		
		spending:	saving = 7:8	<b>3.</b>			
	Calculate the amou	ınt Martha ha	s for spendir	ıg.			
					Answer \$		[2]
					ΙΙΙΙΟΤΙΟΙ Ψ		 <u></u> ]

8		210	211	212	213	214	215	216	
	From the list of n	umbers, fii	nd						
	(a) a prime num	ber,							
						Answer(a	a)		[1]
	(b) a cube numb	er.							
						Answer(t	<i>b)</i>		[1]
9	Calculate the selli	ing price o	f a bicycle	e bought	for \$120 an	d sold at a	profit of	f 15%.	
						Answer	\$		[2]
10	Solve the simultar	neous equa	ations.						
					x + 5y = 22 $x + 3y = 12$				
						Answer x	=		
						y			[2]

		Answer \$	 [2]
13	Pedro invested \$800 at a rate of 5% per year <b>compound</b> Calculate the <b>total</b> amount he has after 2 years.	d interest.	
		Answer(b)	 [1]
	<b>(b)</b> Write down the upper bound of the population.	Answer(a)	 [1]
12	The population of a city is 128 000, correct to the near (a) Write 128 000 in standard form.	est thousand.	
		Answer x =	 [2]
		,	F03
	$\frac{2x-3}{2}=2$		

	$5g^2h + 10hj$
	Answer[2
5	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 £[
_	
6	Simplify $4x^4 \times 5x^5$ .

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
-2		1	-3	-1	-2	U

Calculate

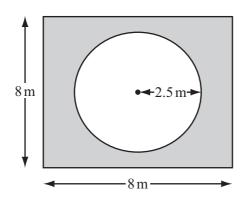
(a) the difference between the highest temperature and the lowest temperature,

Answer(a)	°C	Г11
mis wer (a)	 $\sim$	L.1

**(b)** the mean temperature.

Answer(b)	 °C	[2]
11.15 6. (6)	 _	

**20** 



NOT TO SCALE

The diagram shows a circular pool of radius 2.5 m. A square piece of land surrounds the pool.

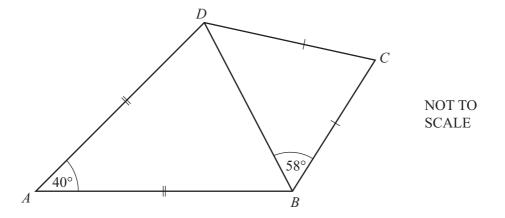
Each side of the square is 8 m long.

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

Answer 
$$m^2$$
 [3]

21

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]

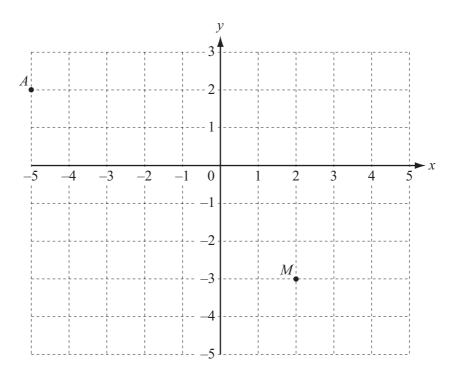
**(b)** Write down the mathematical name for the quadrilateral *ABCD*.

$$Answer(b) \qquad [1]$$

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

23

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.

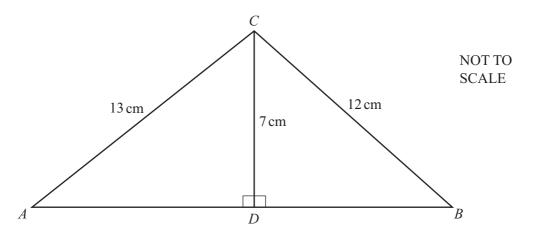
Find the co-ordinates of D.

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

Question 24 is printed on the next page.

24

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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