

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						ANDIDATE JMBER			
MATHEMATICS	6							0	580/23
Paper 2 (Extend	ded)					Oc	tober/N	lovemb	er 2010
							1 ho	our 30 n	ninutes
Candidates ans	wer on th	he Questi	on Pape	er.					
Additional Mater	rials:	Electror Mathem			optional)	 cal instrumer aper (optiona			

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 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 70.



1 Write down the number which is 3.6 less than -4.7.

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Hee

Answer	[1]
11113 WC1	 [Ł J

A plane took 1 hour and 10 minutes to fly from Riyadh to Jeddah. The plane arrived in Jeddah at 23 05.

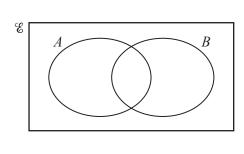
At what time did the plane depart from Riyadh?

4nswer	[1]

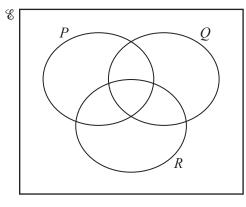
3 Calculate $\sqrt[3]{2.35^2 - 1.09^2}$. Give your answer correct to 4 decimal places.

Answer	[2]

4 Shade the required region on each Venn diagram.



 $A \cap B'$



 $(P \cup Q) \cap R'$

[2]

	3	
5	Show that $3\frac{3}{4} + 1\frac{1}{3} = 5\frac{1}{12}$. Write down all the steps in your working.	
	Answer	
		[2]
6	Write the following in order of size, smallest first.	
	$\frac{20}{41}$ $\frac{80}{161}$ 0.492 4.93%	
	41 161	
	Answer < < < < <	[2]
7	In France, the cost of one kilogram of apricots is $\& 3.38$. In the UK, the cost of one kilogram of apricots is $\& 4.39$. & £1 = & 1.04. Calculate the difference between these prices. Give your answer in pounds ($\& £$).	
	Answer £	[2]
8	A large rectangular card measures 80 centimetres by 90 centimetres. Maria uses all this card to make small rectangular cards measuring 40 millimetres by 15 millimetres . Calculate the number of small cards.	

[2]

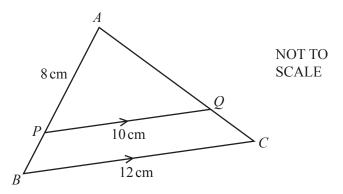
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Answer

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APB and AQC are straight lines. PQ is parallel to BC. AP = 8 cm, PQ = 10 cm and BC = 12 cm. Calculate the length of AB.

$Answer\ AB =$	 cm	[2]

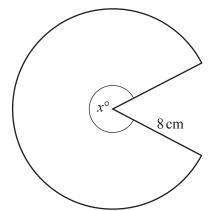
10 Nikhil invests \$200 for 2 years at 4% per year **compound** interest. Calculate the **exact** amount Nikhil has after 2 years.

11 In a group of 24 students, 21 like football and 15 like swimming. One student does **not** like football and does **not** like swimming. Find the number of students who like **both** football and swimming.

Answer [2]

12	The side of a square is 6.3 cm, correct to the nearest millimetre. The lower bound of the perimeter of the square is u cm and the upper bound of the perimeter is v cm. Calculate the value of				
	(a) u ,				
		Answer(a) u =	[1]		
	(b) $v - u$.				
		$Answer(b) \ v - u = $	[1]		
		12.13.7.6. (6)			
13	$a \times 10^7 + b \times 10^6 = c \times 10^6$				
	Find c in terms of a and b. Give your answer in its simplest form.				
		Answer c =	[2]		
14	Priyantha completes a 10 km run in 55 minute Calculate Priyantha's average speed in km/h.	es 20 seconds.			
		Answer km/h	[3]		

		6		
15	Find the equation of the straight line	e which passes through t	the points $(0, 8)$ and $(3, 2)$.	
		Answer		[3]
16	$\frac{g}{2} = \sqrt{\frac{h}{i}}$			
	Find i in terms of g and h .			
		Answer $i =$		[3]
17	Salva the simultaneous equations			
1/	Solve the simultaneous equations.	5x - y = -10		
		x + 2y = 9		
		Answer x =		
				[2]
		y =		[3]



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The diagram shows a sector of a circle of radius 8 cm. The angle of the sector is x° .

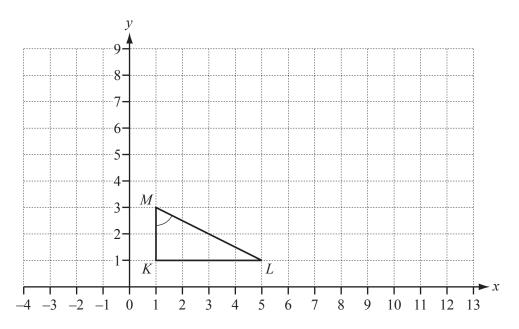
The perimeter of the sector is $(16 + 14\pi)$ cm.

Find the value of x.

Answer x =	[3]

19 A model of a car is made to a scale of 1:40. The volume of the model is 45 cm³. Calculate the volume of the car. Give your answer in m³.

Answer m³ [3]



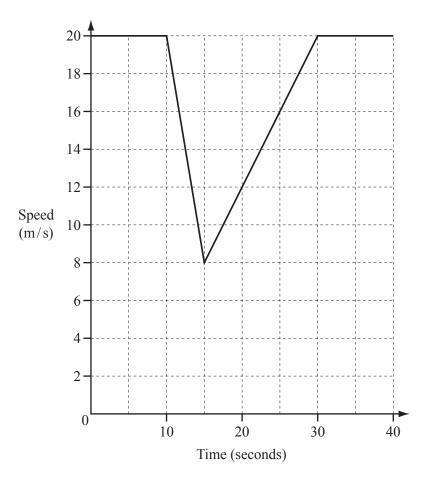
The triangle *KLM* is shown on the grid.

(a) Calculate angle *KML*.

Answer(a) Angle
$$KML =$$
 [2]

(b) On the grid, draw the shear of triangle *KLM*, with a shear factor of 3 and the *x*-axis invariant. [2]

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The graph shows 40 seconds of a car journey.

The car travelled at a constant speed of 20 m/s, decelerated to 8 m/s then accelerated back to 20 m/s.

Calculate

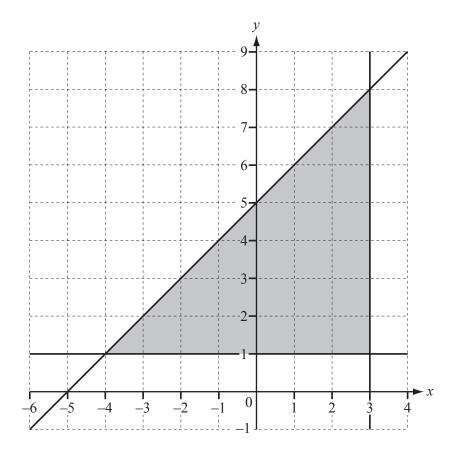
(a) the deceleration of the car,

Answer(a)
$$m/s^2$$
 [1]

(b) the total distance travelled by the car during the 40 seconds.

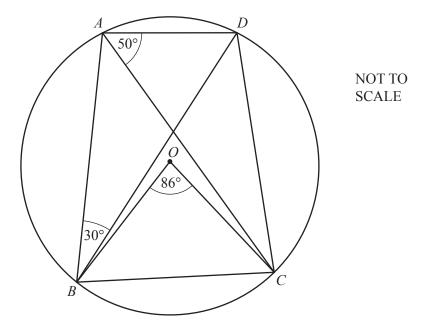
Answer(b) _____ m [3]

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Find the three inequalities which define the shaded triangle in the diagram.

Answer	
	[5]



The points A, B, C and D lie on the circumference of the circle, centre O.

Angle $ABD = 30^{\circ}$, angle $CAD = 50^{\circ}$ and angle $BOC = 86^{\circ}$.

(a) Give the reason why angle $DBC = 50^{\circ}$.

Answer(a) [1]

- (b) Find
 - (i) angle ADC,

$$Answer(b)(i) Angle ADC =$$
 [1]

(ii) angle BDC,

$$Answer(b)$$
(ii) Angle $BDC =$ [1]

(iii) angle OBD.

$$Answer(b)$$
(iii) Angle $OBD =$ [2]

Questions 24 and 25 are printed on the next page.

24 (a) Write
$$\frac{1}{y} - \frac{2}{x}$$
 as a single fraction in its lowest terms.

$$Answer(a) [2]$$

(b) Write
$$\frac{x^2 + x}{3x + 3}$$
 in its lowest terms.

$$Answer(b) ag{3}$$

25 f:
$$x \to 2x - 7$$
 g: $x \to \frac{1}{x}$

Find

(a)
$$fg\left(\frac{1}{2}\right)$$
,

(b) gf(x),

$$Answer(b) gf(x) = [1]$$

(c) $f^{-1}(x)$.

$$Answer(c) f^{-1}(x) =$$
 [2]

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