

Cambridge International Examinations

Cambridge International General Certificate of Secondary Education

CANDIDATE NAME			
CENTRE NUMBER		CANDIDATE NUMBER	
MATHEMATICS			0580/23
Paper 2 (Extended)			May/June 2015
			1 hour 30 minutes
Candidates answer or	the Question Paper.		
Additional Materials:	Electronic calculator Tracing paper (optional)	Geometrical instruments	3

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 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

CAMBRIDGE
International Examinations

This document consists of 12 printed pages.



[Turn over

1	Ahmed and Ba	bar share 240 g	of sweets	in the	ratio 7	:3.
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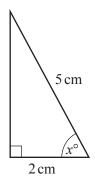
Calculate the amount Ahmed receives.

Answer	 g	[2]
	0	L -

2 Factorise completely.

$$9x^2 - 6x$$

3



NOT TO SCALE

Calculate the value of *x*.

$$Answer x = \dots [2]$$

4 An equilateral triangle has sides of length 6.2 cm, correct to the nearest millimetre.

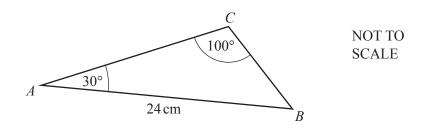
Complete the statement about the perimeter, P cm, of the triangle.

Answer
$$\leq P <$$
 [2]

Factorise $2x^2 - 5x - 3$.							
			An	swer		•••••	[2]
and the 2	< 2 matrix that represen	ts a rotation thro	ugh 90° clockwi	se about (0, 0).			
				Answer			[2
mes buys	a drink for 2 euros (€)						
			£1 = €1.252 .				
ır.	nes buys	nes buys a drink for 2 euros (€).	mes buys a drink for 2 euros (€).	and the 2×2 matrix that represents a rotation through 90° clockwi mes buys a drink for 2 euros (\mathfrak{E}).	and the 2×2 matrix that represents a rotation through 90° clockwise about $(0, 0)$. Answer the answer is a drink for 2 euros (\mathfrak{E}). The proof of the drink in pounds (\mathfrak{E}) when $\mathfrak{E}1 = \mathfrak{E}1.252$.	and the 2×2 matrix that represents a rotation through 90° clockwise about $(0, 0)$. Answer the shape of the drink in pounds (£) when £1 = £1.252.	Answer $\begin{pmatrix} & & \\ & & \end{pmatrix}$ mes buys a drink for 2 euros (€). Ork out the cost of the drink in pounds (£) when £1 = €1.252 .

	4
8	Without using a calculator, work out $1\frac{7}{8} \div \frac{5}{9}$.
	Show all your working and give your answer as a fraction in its lowest terms.
	<i>Answer</i> [3]
9	Solve the equation.
	3(x+4) = 2(4x-1)
	$Answer x = \dots [3]$
10	In a sale, the cost of a coat is reduced from \$85 to \$67.50.
	Calculate the percentage reduction in the cost of the coat.

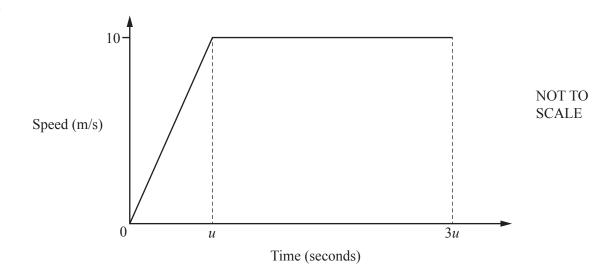
Answer % [3]



Use the sine rule to calculate BC.

Answer $BC = \dots$ cm [3]

12



A car starts from rest and accelerates for *u* seconds until it reaches a speed of 10 m/s.

The car then travels at $10 \,\mathrm{m/s}$ for 2u seconds.

The diagram shows the speed-time graph for this journey.

The distance travelled by the car in the first 3u seconds is $125 \,\mathrm{m}$.

(a) Find the value of u.

Answer(a) u = [3]

(b) Find the acceleration in the first u seconds.

Answer(b) m/s² [1]

13	Simp	olify.
----	------	--------

(a) $12x^{12}$	$2 \div 3x^3$
----------------	---------------

4	F 4 7
Answer(a)	 -121

(b)
$$(256y^{256})^{\frac{1}{8}}$$

14 Solve the equation.

$$2x^2 + x - 2 = 0$$

Show your working and give your answers correct to 2 decimal places.

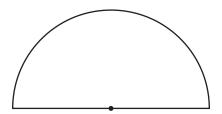
Answer
$$x =$$
 or $x =$ [4]

15	The circu	ımference	ofo	oirol	a ic 2	nom.
כו	I ne circi	ımterence	у от а	circi	e 18-5	u cm

(a) Calculate the radius of the circle.

Answer(a) cm [2]

(b)

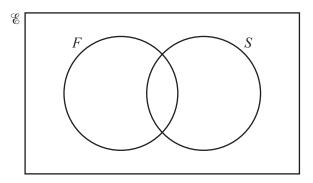


The length of the arc of the semi-circle is 15 cm.

Calculate the area of the semi-circle.

Answer(b) cm² [2]

16 (a) In this part, you may use this Venn diagram to help you answer the questions.



In a class of 30 students, 25 study French (*F*), 18 study Spanish (*S*). One student does not study French or Spanish.

(i) Find the number of students who study French and Spanish.

<i>Answer(a)</i> (i)	12)	1
<i>answer</i> (<i>a</i>)(1)	L-	٠.	J

(ii) One of the 30 students is chosen at random.

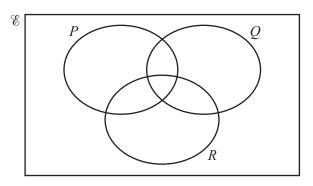
Find the probability that this student studies French but not Spanish.

(iii) A student who does not study Spanish is chosen at random.

Find the probability that this student studies French.

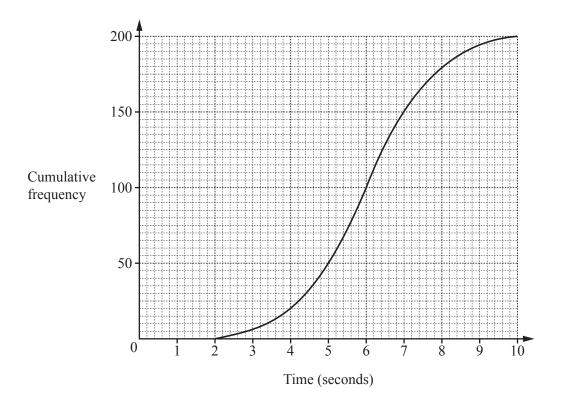


(b)



On this Venn diagram, shade the region $R \cap (P \cup Q)'$.

[1]



200 students take a reaction time test.

The cumulative frequency diagram shows the results.

Find

(a) the median,

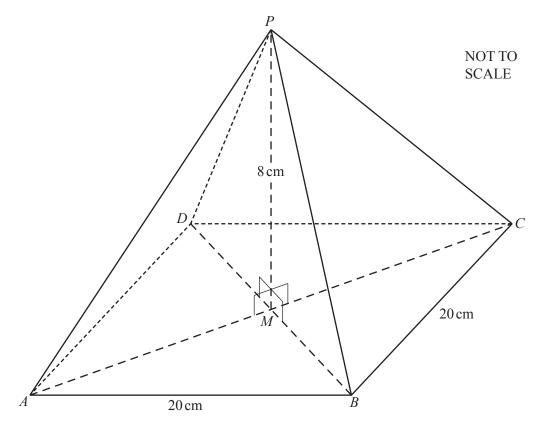
Answer(a) s [1]

(b) the inter-quartile range,

Answer(b) s [2]

(c) the number of students with a reaction time of more than 4 seconds.

Answer(c) [2]



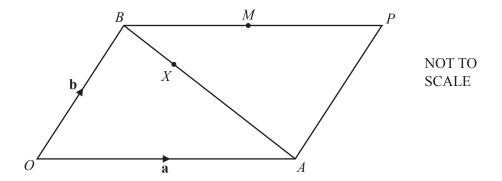
The diagram shows a solid pyramid on a square horizontal base ABCD.

The diagonals AC and BD intersect at M.

P is vertically above M.

 $AB = 20 \,\mathrm{cm}$ and $PM = 8 \,\mathrm{cm}$.

Calculate the total surface area of the pyramid.



OAPB is a parallelogram.

O is the origin, $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

M is the midpoint of BP.

- (a) Find, in terms of a and b, giving your answer in its simplest form,
 - (i) \overrightarrow{BA} ,

$$Answer(a)(i) \overrightarrow{BA} = \dots [1]$$

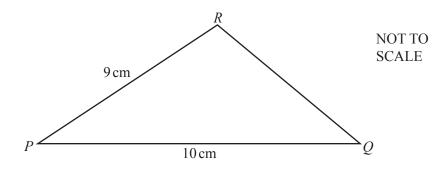
(ii) the position vector of M.

(b) X is on BA so that BX: XA = 1:2.

Show that X lies on OM.

Answer(b)

[4]



The area of triangle PQR is $38.5 \,\mathrm{cm}^2$.

Calculate the length *QR*.

Answer
$$QR = \dots$$
 cm [6]

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