

Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						7	3	6	1	/	0	2	Signature	

Paper Reference(s)

7361/02

London Examinations GCE
Mathematics Syllabus B
Ordinary Level

Paper 2

Tuesday 11 May 2010 – Afternoon

Time: 2 hours 30 minutes

Examiner's use only

--	--	--

Team Leader's use only

--	--	--

Materials required for examination

Nil

Items included with question papers

Nil

Candidates are expected to have an electronic calculator when answering this paper.

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper. Answer ALL the questions. Write your answers in the spaces provided in this question paper. If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). Full marks may be obtained for answers to ALL questions. There are 11 questions in this question paper. The total mark for this paper is 100. There are 28 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

Write your answers neatly and legibly.

This publication may be reproduced only in accordance with Edexcel Limited copyright policy. ©2010 Edexcel Limited.

Printer's Log. No.

N35378A

W850/U7361/57570 4/4/6



N 3 5 3 7 8 A 0 1 2 8

Turn over

edexcel
advancing learning, changing lives

Q1

(a) Write down the cost, in £, of 1 kg of apples.

(1)

(b) Calculate how many kg of apples can be bought for £2.34

(2)

(Total 3 marks)





2. $y = (3 - x)(2 + 5x)$

Find the value of $\frac{dy}{dx}$ when $x = -2$

Lined area for student response

Leave blank

Q2

Box for mark

(Total 4 marks)



Q3

Calculate the probability that

- (a) all three boys will remember to meet, (2)
- (b) at least two of the boys will remember to meet. (3)

(Total 5 marks)



Q4

The cost of making one statue is £8.25

(2)

(b) Calculate the % decrease in the cost of labour.

(4)

(Total 6 marks)



Leave
blank

5.

Diagram **NOT**
accurately drawn

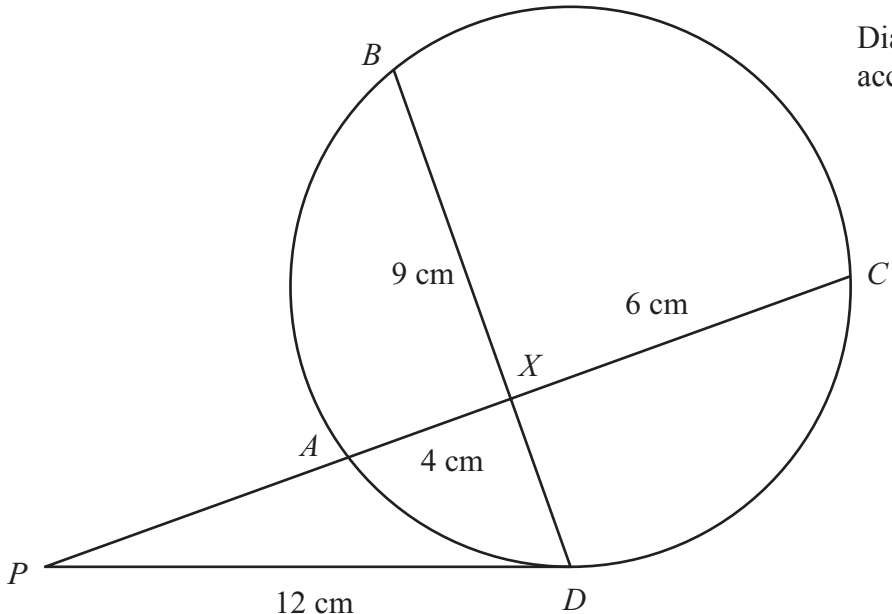


Figure 1

In Figure 1, DB and AC are chords of a circle $ABCD$ and X is the point of intersection of these chords. The point P is such that PD is the tangent to the circle at D and $PAXC$ is a straight line.

$PD = 12$ cm, $AX = 4$ cm, $BX = 9$ cm and $XC = 6$ cm.

- (a) Calculate the length, in cm, of XD .

(2)

- (b) Show that triangle PXD is isosceles.

(5)

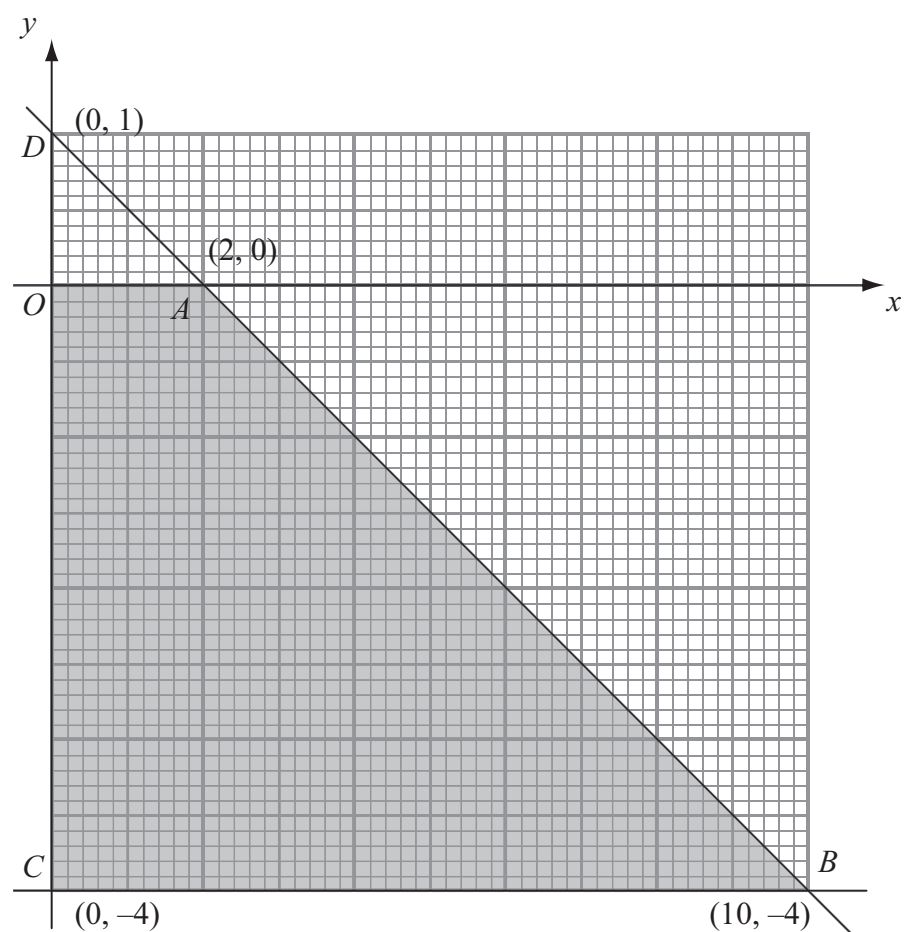


Q5

13



6.



On the graph, O is the origin and A , B and C are the points $(2, 0)$, $(10, -4)$ and $(0, -4)$ respectively. D is the point $(0, 1)$ and DAB is a straight line.

- (a) Find the gradient of DB . (2)
- (b) Find an equation of the straight line which passes through D and B . (2)
- (c) Write down the four inequalities which define the shaded region $OABC$. (4)



Q6

1041



7.

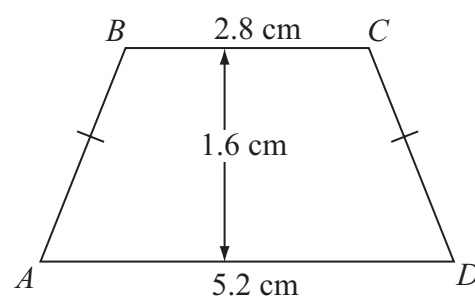


Diagram **NOT**
accurately drawn

Figure 2

Figure 2 shows a symmetrical trapezium with $BC = 2.8$ cm, $AD = 5.2$ cm, and $AB = CD$.

Given that the perpendicular distance between BC and AD is 1.6 cm,

(a) show that $CD = 2$ cm.

(3)

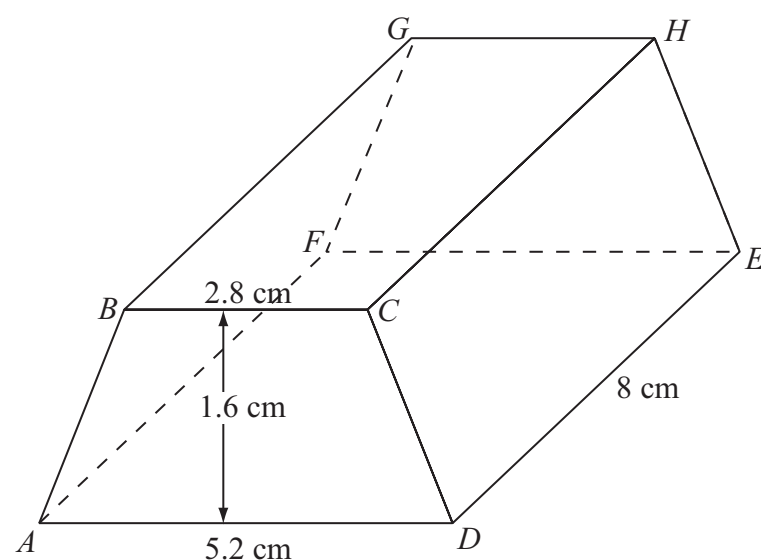


Diagram **NOT**
accurately drawn

Figure 3

Figure 3 represents a solid gold bar resting on a horizontal surface. The faces $ABCD$ and $EFGH$ are identical symmetrical trapezia and both faces are vertical.

The four remaining faces $ABGF$, $BGHC$, $HEDC$ and $DAFE$ are all rectangles with $DE = 8$ cm.

Calculate

(b) the total surface area, in cm^2 , of the gold bar,

(3)

(c) the volume, in cm^3 , of the gold bar.

(2)



Leave
blank

Given that the mass of the gold bar is 1 kg and the mass of each block is 50 g,

(d) calculate the length, in cm, of one of the gold blocks.

(3)

$$[\text{Area of a trapezium} = \frac{1}{2}(a + b)h]$$

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Question 7 continued

Leave blank



Q7

--	--



Leave
blank

- (a) Write down an expression, in terms of x , for the mean time, in minutes, to process one passport in queue A.

The passport of each person in queue B is processed electronically and $(x + 120)$ passports are processed each hour.

- (1)

(c) Express 27 seconds as a fraction of a minute, giving your fraction in its simplest form.

(d) Using your answers to parts (a), (b) and (c), form an equation in x .

(e) Show that your answer to part (d) simplifies to $x^2 + 120x - 16\,000 = 0$

(f) Solve this equation to find the value of x .

(g) Hence, find the mean time, in seconds, for a passport to be processed in queue B.

[Solutions of $ax^2 + bx + c = 0$ are $x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$]



Question 8 continued

Leave
blank

Lined area for writing the answer to Question 8.



Q8

--	--



9.

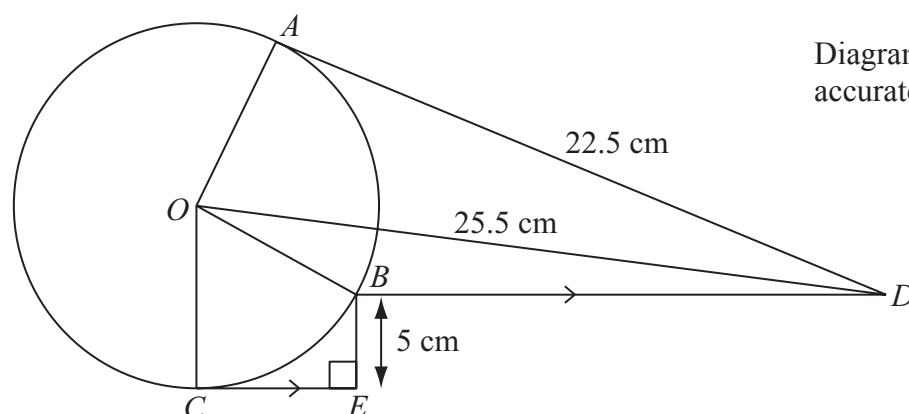


Diagram **NOT**
accurately drawn

Figure 4

Figure 4 shows a circle ABC with centre O .

CE is the tangent to the circle at C .

$\angle CEB = 90^\circ$ and $BE = 5\text{ cm}$.

The point D is such that BD is parallel to CE and AD is the tangent to the circle at A .

$OD = 25.5\text{ cm}$ and $AD = 22.5\text{ cm}$.

- Calculate the radius, in cm, of the circle. (2)
- Calculate the size in degrees, to 3 significant figures, of $\angle ADO$. (2)
- Show that, to 3 significant figures, the length of CE is 9.75 cm. (3)
- Calculate, to 3 significant figures, the size, in degrees, of $\angle COB$. (2)
- Calculate, to 3 significant figures, the size, in degrees, of $\angle ADB$. (4)





Leave
blank

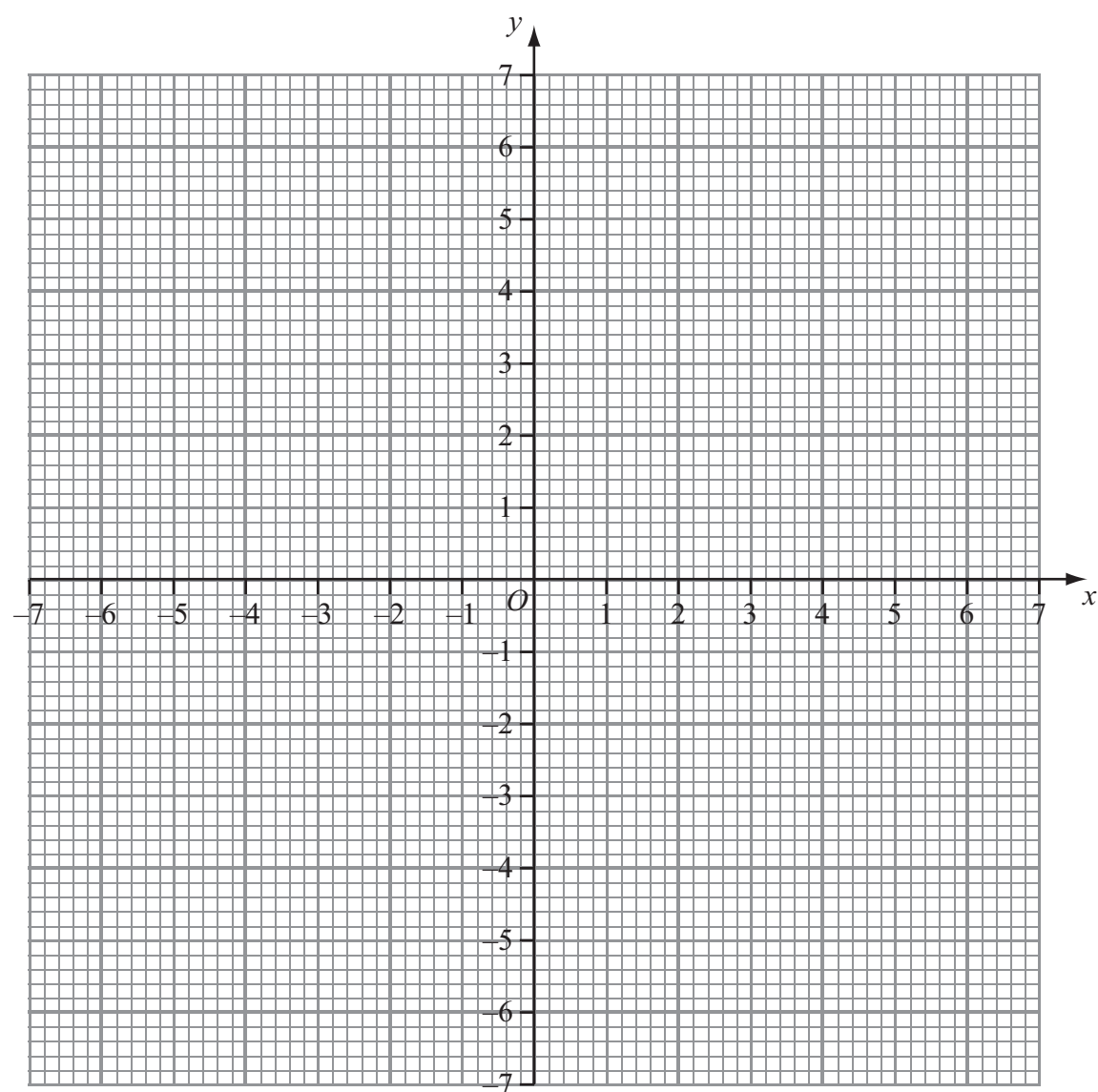
Q9

--	--

Turn over



10.



The points (2, 3), (5, 3) and (2, 5) are the vertices of triangle A.

(a) On the grid, draw and label triangle A.

(1)

Triangle B is the image of triangle A after an enlargement with scale factor -1 and centre $(-1, 2)$.

(b) On the grid, draw and label triangle B.

(3)

Triangle C is the image of triangle B after a rotation of 90° clockwise about the point $(-3, 1)$.

(c) On the grid, draw and label triangle C.

(2)

Leave
blank



Leave
blank

(1)

- (3)

- (2)

- (2)

- (2)

Q10



Leave
blank

11. (a) Given that $f(x) = 2x^3 - 5x^2 - 4x + 3$,
- (i) show that $(x - 3)$ is a factor of $f(x)$,
- (ii) factorise $f(x)$ completely. (6)

(b) Complete the following table for $y = \frac{1}{2}(1 + 4x - 3x^2)$.

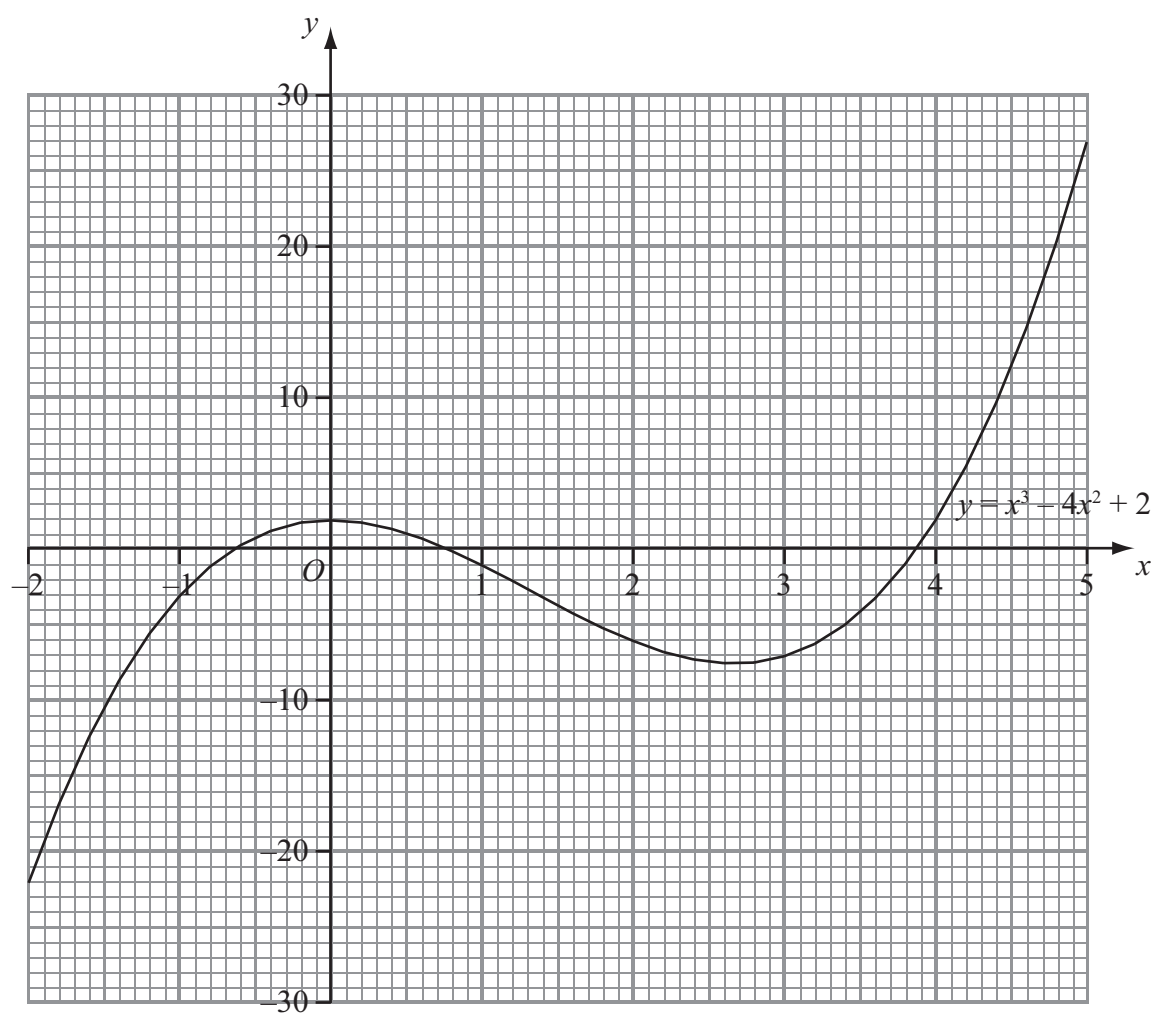
x	-2	-1	0	1	2	3	4	5
1	1		1	1	1			1
$4x$	-8		0	4	8			20
$-3x^2$	-12		0	-3	-12			-75
$\frac{1}{2}(1 + 4x - 3x^2)$	-9.5		0.5	1	-1.5			-27

(3)

The graph of $y = x^3 - 4x^2 + 2$ for $-2 \leq x \leq 5$ has been drawn on the grid on page 25.

- (c) On the same grid, plot the points from your completed table and join them to form a smooth curve. (3)
- (d) Show that $x^3 - 4x^2 + 2 = \frac{1}{2}(1 + 4x - 3x^2)$ can be written as $2x^3 - 5x^2 - 4x + 3 = 0$. (2)
- (e) Hence write down the exact values of x which are solutions of
- $2x^3 - 5x^2 - 4x + 3 = 0$ (2)



Leave
blank

Question 11 continued

Leave
blank

Lined area for writing the answer to Question 11.



Q11

END



BLANK PAGE

