

**Edexcel GCE
Core Mathematics C1
Silver Level S3
(Question Paper)**

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Paper Reference(s)

6663/01

**Edexcel GCE
Core Mathematics C1
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Time: 1 hour 30 minutes

Materials required for examination papers

Mathematical Formulae (Green)

Items included with question

Nil

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Core Mathematics C1), the paper reference (6663), your surname, initials and signature.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

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 75.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
68	60	52	44	37	30

1. Write

$$\sqrt{(75)} - \sqrt{(27)}$$

in the form $k\sqrt{x}$, where k and x are integers.

(2)

May 2010

2. (a) Simplify

$$\sqrt{32} + \sqrt{18},$$

giving your answer in the form $a\sqrt{2}$, where a is an integer.

(2)

(b) Simplify

$$\frac{\sqrt{32} + \sqrt{18}}{3 + \sqrt{2}},$$

giving your answer in the form $b\sqrt{2} + c$, where b and c are integers.

(4)

January 2012

3. Find

$$\int \left(3x^2 - \frac{4}{x^2} \right) dx,$$

giving each term in its simplest form.

(4)

May 2013 (R)

4. The point $A(-6, 4)$ and the point $B(8, -3)$ lie on the line L .

(a) Find an equation for L in the form $ax + by + c = 0$, where a , b and c are integers.

(4)

(b) Find the distance AB , giving your answer in the form $k\sqrt{5}$, where k is an integer.

(3)

January 2008

5. The line l_1 has equation $y = -2x + 3$.

The line l_2 is perpendicular to l_1 and passes through the point $(5, 6)$.

- (a) Find an equation for l_2 in the form $ax + by + c = 0$, where a, b and c are integers. (3)

The line l_2 crosses the x -axis at the point A and the y -axis at the point B .

- (b) Find the x -coordinate of A and the y -coordinate of B . (2)

Given that O is the origin,

- (c) find the area of the triangle OAB . (2)

January 2013

6. The curve C has equation

$$y = \frac{(x+3)(x-8)}{x}, \quad x > 0.$$

- (a) Find $\frac{dy}{dx}$ in its simplest form. (4)

- (b) Find an equation of the tangent to C at the point where $x = 2$. (4)

January 2010

7. A sequence is given by

$$x_1 = 1,$$

$$x_{n+1} = x_n(p + x_n),$$

where p is a constant ($p \neq 0$).

- (a) Find x_2 in terms of p . (1)

- (b) Show that $x_3 = 1 + 3p + 2p^2$. (2)

Given that $x_3 = 1$,

- (c) find the value of p , (3)

- (d) write down the value of x_{2008} . (2)

January 2008

8.

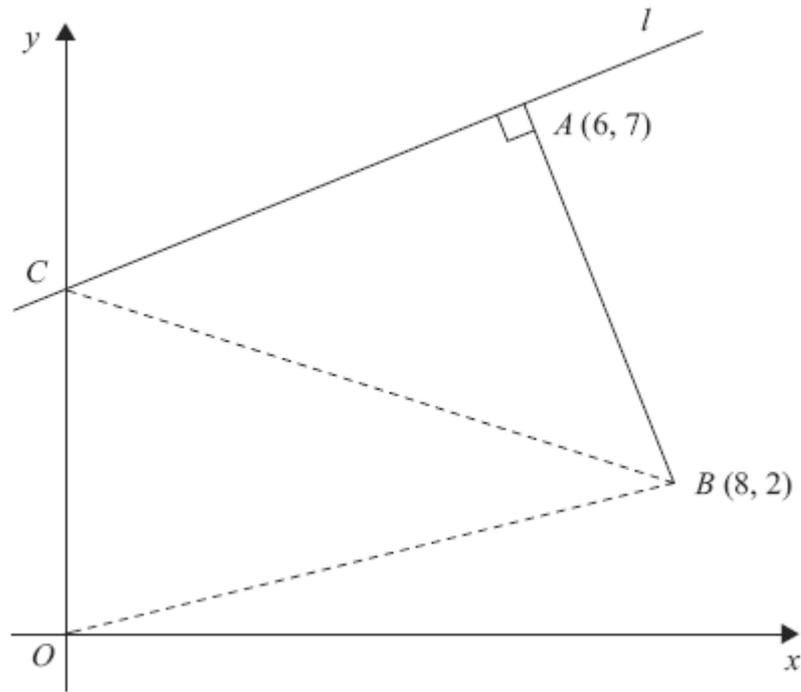


Figure 1

The points A and B have coordinates $(6, 7)$ and $(8, 2)$ respectively.

The line l passes through the point A and is perpendicular to the line AB , as shown in Figure 1.

(a) Find an equation for l in the form $ax + by + c = 0$, where a , b and c are integers. (4)

Given that l intersects the y -axis at the point C , find

(b) the coordinates of C , (2)

(c) the area of $\triangle OCB$, where O is the origin. (2)

June 2009

9. A company offers two salary schemes for a 10-year period, Year 1 to Year 10 inclusive.

Scheme 1: Salary in Year 1 is $\pounds P$.

Salary increases by $\pounds(2T)$ each year, forming an arithmetic sequence.

Scheme 2: Salary in Year 1 is $\pounds(P + 1800)$.

Salary increases by $\pounds T$ each year, forming an arithmetic sequence.

- (a) Show that the total earned under Salary Scheme 1 for the 10-year period is

$$\pounds(10P + 90T). \quad (2)$$

For the 10-year period, the total earned is the same for both salary schemes.

- (b) Find the value of T . (4)

For this value of T , the salary in Year 10 under Salary Scheme 2 is $\pounds 29\,850$.

- (c) Find the value of P . (3)

January 2012

10. $4x^2 + 8x + 3 \equiv a(x + b)^2 + c.$

- (a) Find the values of the constants a , b and c . (3)

- (b) Sketch the curve with equation $y = 4x^2 + 8x + 3$, showing clearly the coordinates of any points where the curve crosses the coordinate axes. (4)

January 2013

11. The line l_1 has equation $y = 3x + 2$ and the line l_2 has equation $3x + 2y - 8 = 0$.

(a) Find the gradient of the line l_2 .

(2)

The point of intersection of l_1 and l_2 is P .

(b) Find the coordinates of P .

(3)

The lines l_1 and l_2 cross the line $y = 1$ at the points A and B respectively.

(c) Find the area of triangle ABP .

(4)

May 2007

TOTAL FOR PAPER: 75 MARKS

END