

**Edexcel GCE
Core Mathematics C1
Silver Level S4
(Question Paper)**

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Paper Reference(s)

6663/01

**Edexcel GCE
Core Mathematics C1
Silver Level S4**

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
67	59	51	43	35	27

1. (a) Write down the value of $125^{\frac{1}{3}}$. (1)

- (b) Find the value of $125^{-\frac{2}{3}}$. (2)

January 2009

2. Find $\frac{15}{\sqrt{3}} - \sqrt{27}$ in the form $k\sqrt{3}$, where k is an integer. (4)

May 2013 (R)

3. (i) Express $(5 - \sqrt{8})(1 + \sqrt{2})$ in the form $a + b\sqrt{2}$, where a and b are integers. (3)

- (ii) Express $\sqrt{80} + \frac{30}{\sqrt{5}}$ in the form $c\sqrt{5}$, where c is an integer. (3)

January 2013

4. Find the set of values of x for which
- (a) $4x - 3 > 7 - x$ (2)
- (b) $2x^2 - 5x - 12 < 0$ (4)
- (c) **both** $4x - 3 > 7 - x$ **and** $2x^2 - 5x - 12 < 0$ (1)

June 2009

5. Solve
- (a) $2^y = 8$, (1)
- (b) $2^x \times 4^{x+1} = 8$. (4)

May 2013 (R)

6. (a) By eliminating y from the equations

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

show that

$$x^2 + 4x - 8 = 0.$$

(2)

- (b) Hence, or otherwise, solve the simultaneous equations

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

giving your answers in the form $a \pm b\sqrt{3}$, where a and b are integers.

(5)

May 2007

7. The point $P(4, -1)$ lies on the curve C with equation $y = f(x)$, $x > 0$, and

$$f'(x) = \frac{1}{2}x - \frac{6}{\sqrt{x}} + 3.$$

- (a) Find the equation of the tangent to C at the point P , giving your answer in the form $y = mx + c$, where m and c are integers.

(4)

- (b) Find $f(x)$.

(4)

May 2012

8. The curve C_1 has equation

$$y = x^2(x + 2).$$

(a) Find $\frac{dy}{dx}$.

(2)

(b) Sketch C_1 , showing the coordinates of the points where C_1 meets the x -axis.

(3)

(c) Find the gradient of C_1 at each point where C_1 meets the x -axis.

(2)

The curve C_2 has equation

$$y = (x - k)^2(x - k + 2),$$

where k is a constant and $k > 2$.

(d) Sketch C_2 , showing the coordinates of the points where C_2 meets the x and y axes.

(3)

January 2012

9. The equation

$$(k + 3)x^2 + 6x + k = 5, \text{ where } k \text{ is a constant,}$$

has two distinct real solutions for x .

(a) Show that k satisfies

$$k^2 - 2k - 24 < 0.$$

(4)

(b) Hence find the set of possible values of k .

(3)

January 2013

10. The line l_1 passes through the point $A(2, 5)$ and has gradient $-\frac{1}{2}$.

(a) Find an equation of l_1 , giving your answer in the form $y = mx + c$.

(3)

The point B has coordinates $(-2, 7)$.

(b) Show that B lies on l_1 .

(1)

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

(3)

The point C lies on l_1 and has x -coordinate equal to p .

The length of AC is 5 units.

(d) Show that p satisfies

$$p^2 - 4p - 16 = 0.$$

(4)

January 2009

11. The first term of an arithmetic sequence is 30 and the common difference is -1.5 .

(a) Find the value of the 25th term.

(2)

The r th term of the sequence is 0.

(b) Find the value of r .

(2)

The sum of the first n terms of the sequence is S_n .

(c) Find the largest positive value of S_n .

(3)

January 2008

TOTAL FOR PAPER: 75 MARKS

END