Paper Reference (complete below)	Centre No.						Surname	Initial(s)
6 6 6 3 / 0 1	Candidate No.						**Signature**	

Paper Reference(s)

6663

Edexcel GCE

Core Mathematics C1

Advanced Subsidiary

Set A: Practice Paper 1

Time: 1 hour 30 minutes

Examiner's use only

Team Leader's use only

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
Total	

Materials required for examination
Mathematical Formulae

Items included with question papers
Nil

Calculators may NOT be used in this examination.

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. You must write your answer for each question in the space following the question. If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.
Full marks may be obtained for answers to ALL questions.
This paper has seven questions.

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.

1. (*a*) Find the sum of all the integers between 1 and 1000 which are divisible by 7.

(3)

(*b*) Hence, or otherwise, evaluate $\sum_{r=1}^{142}(7r+2)$.

(3)

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2. Solve the simultaneous equations

$$x - 3y + 1 = 0,$$

$$x^2 - 3xy + y^2 = 11.$$

(7)

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3. The first three terms of an arithmetic series are p, $5p - 8$, and $3p + 8$ respectively.

(*a*) Show that $p = 4$.

(2)

(*b*) Find the value of the 40th term of this series.

(3)

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4. $\mathrm{f}(x) = x^2 - kx + 9$, where k is a constant.

(*a*) Find the set of values of k for which the equation $\mathrm{f}(x) = 0$ has no real solutions.

(4)

Given that $k = 4$,

(*b*) express $\mathrm{f}(x)$ in the form $(x - p)^2 + q$, where p and q are constants to be found,

(3)

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5. $$\frac{\mathrm{d}y}{\mathrm{d}x} = 5 + \frac{1}{x^2}.$$

(*a*) Use integration to find y in terms of x.

(3)

(*b*) Given that $y = 7$ when $x = 1$, find the value of y at $x = 2$.

(4)

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6. A container made from thin metal is in the shape of a right circular cylinder with height h cm and base radius r cm. The container has no lid. When full of water, the container holds 500 cm^3 of water.

Show that the exterior surface area, A cm^2, of the container is given by

$$A = \pi r^2 + \frac{1000}{r}.$$

(4)

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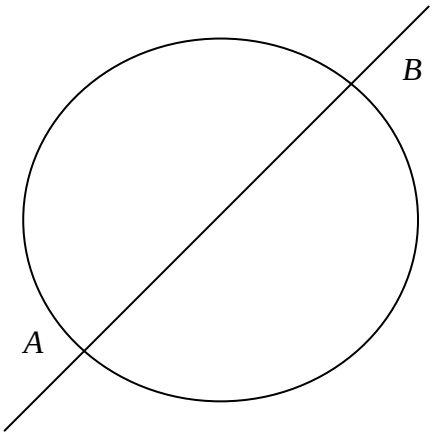
7. **Figure 1**



The points $A(-3, -2)$ and $B(8 , 4)$ are at the ends of a diameter of the circle shown in Fig. 1.

(a) Find the coordinates of the centre of the circle.

(2)

(b) Find an equation of the diameter AB, giving your answer in the form $ax + by + c = 0$, where a, b and c are integers.

(4)

(c) Find an equation of tangent to the circle at B.

(3)

The line l passes through A and the origin.

(d) Find the coordinates of the point at which l intersects the tangent to the circle at B, giving your answer as exact fractions.

(4)

END