



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

--	--	--	--	--

CANDIDATE  
NUMBER

--	--	--	--

\* 6 6 3 4 7 8 3 4 9 8 \*

**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/02**

Paper 2 (Extended)

**May/June 2009**

**45 minutes**

Candidates answer on the Question Paper

Additional Materials: Geometrical Instruments

**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.

Do not use staples, paper clips, highlighters, glue or correction fluid.

You may use a pencil for any diagrams or graphs.

**DO NOT WRITE IN ANY BARCODES**

Answer **all** the questions.

**CALCULATORS MUST NOT BE USED IN THIS PAPER.**

All answers should be given in their simplest form.

You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.

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 40.

**For Examiner's Use**

--

This document consists of **8** printed pages.



## Formula List

For the equation  $ax^2 + bx + c = 0$   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area,  $A$ , of cylinder of radius  $r$ , height  $h$ .  $A = 2\pi rh$

Curved surface area,  $A$ , of cone of radius  $r$ , sloping edge  $l$ .  $A = \pi rl$

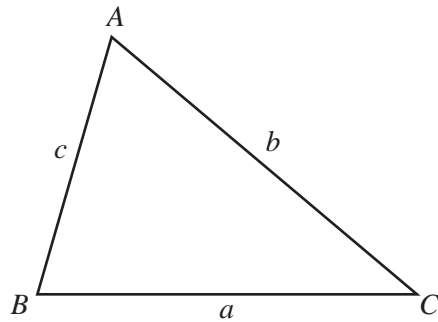
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

Volume,  $V$ , of pyramid, base area  $A$ , height  $h$ .  $V = \frac{1}{3}Ah$

Volume,  $V$ , of cylinder of radius  $r$ , height  $h$ .  $V = \pi r^2 h$

Volume,  $V$ , of cone of radius  $r$ , height  $h$ .  $V = \frac{1}{3}\pi r^2 h$

Volume,  $V$ , of sphere of radius  $r$ .  $V = \frac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{Area} = \frac{1}{2}bc \sin A$$

Answer **all** the questions.

For  
Examiner's  
Use

- 1 The distance from the Earth to the Moon is  $3.8 \times 10^5$  km.  
A spacecraft travels this distance four times.  
Calculate the total distance travelled.  
Give your answer in standard form.

Answer ..... km [2]

---

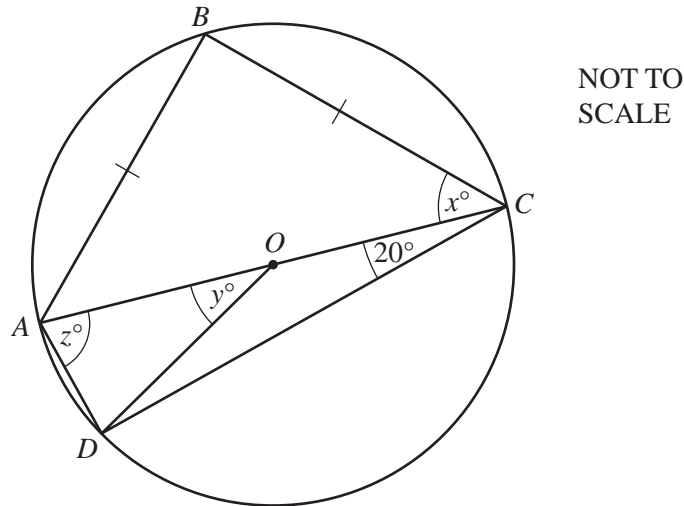
- 2 For the function  $f(x) = 2\sin 3x$  write down

(a) the amplitude, Answer (a) ..... [1]

(b) the period. Answer (b) ..... [1]

---

3



$A, B, C$  and  $D$  lie on a circle, centre  $O$ .  
 $AC$  is a diameter and angle  $ACD = 20^\circ$ .  $AB = BC$ .  
Find the values of  $x, y$  and  $z$ .

Answer  $x =$  ..... [1]

$y =$  ..... [1]

$z =$  ..... [1]

---

4 Write the following as algebraic expressions.

(a) One-third of the sum of  $p$  and  $q$ .

Answer (a) ..... [1]

(b) The square root of the product of  $x$  and  $y$ .

Answer (b) ..... [1]

---

5 List the elements of the following sets.

(a)  $A = \{x | x \in \mathbb{Z}, -4 < x \leq 1\}$

Answer (a) ..... [1]

(b)  $B = \{\text{prime numbers between 25 and 35}\}$

Answer (b) ..... [1]

(c)  $C = \{x | x \in \mathbb{R}, |x| = 4\}$

Answer (c) ..... [1]

---

6 (a) Write as a single logarithm.

$$\log 6 + \log 3 - \log 2$$

Answer (a) ..... [1]

(b) Simplify.

$$\sqrt{98} - \sqrt{50} + \sqrt{8}$$

Answer (b) ..... [2]

---

7 The first five terms of a sequence are 0, 3, 8, 15, 24.

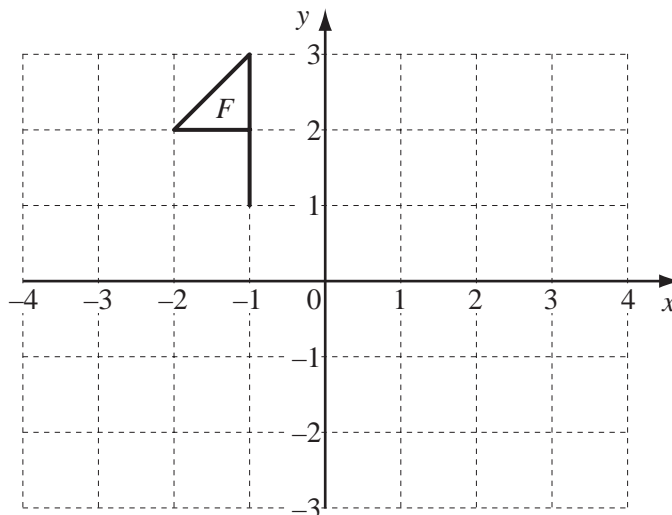
(a) Write down the next two terms of the sequence.

Answer (a) ..... , ..... [1]

(b) Find the  $n$ th term of the sequence.

Answer (b) ..... [2]

8



The diagram shows a flag  $F$ .

(a) Translate flag  $F$  by  $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$ . Label the image  $P$ . [2]

(b) Reflect flag  $F$  in the line  $x = 1$ . Label the image  $Q$ . [2]

9 Solve the simultaneous equations.

$$\begin{aligned}2x + 3y &= 7 \\5x - 4y &= -17\end{aligned}$$

*For  
Examiner's  
Use*

$$\begin{aligned}\text{Answer } x &= \text{.....} \\y &= \text{.....} \quad [4]\end{aligned}$$

---

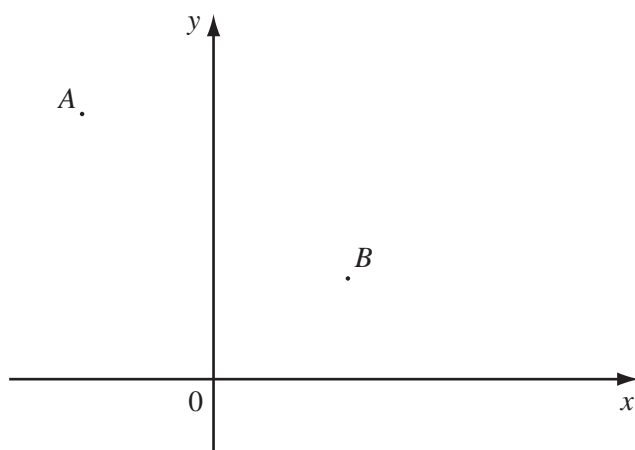
10 Make  $t$  the subject of the formula.

$$y = \frac{a}{t-2}$$

$$\text{Answer } t = \text{.....} \quad [3]$$

---

- 11 The points  $A(-3, 5)$  and  $B(3, 2)$  are shown on the diagram below.



NOT TO  
SCALE

For  
Examiner's  
Use

- (a) (i) Write down the vector  $\vec{AB}$  in component form.

Answer (a)(i)  $\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

- (ii) Find  $|\vec{AB}|$  leaving your answer in surd form.

Answer (a)(ii) ..... [2]

- (b) Calculate the gradient of the line  $AB$ .

Answer (b) ..... [2]

- (c) Calculate the co-ordinates of the midpoint of the line  $AB$ .

Answer (c) ( ..... , ..... ) [1]

- (d) Find the equation of the perpendicular bisector of the line  $AB$ .

Answer (d) ..... [2]

Question 12 is on the next page.

12 Find the value of the following.

(a)  $16^{\frac{3}{2}}$

Answer (a) ..... [1]

(b)  $(\cos 30^\circ)^2$

Answer (b) ..... [2]

---

For  
Examiner's  
Use

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.