

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Education  
Advanced Subsidiary Examination  
June 2009

# Mathematics

# MPC2

## Unit Pure Core 2

**Specimen paper for examinations in June 2010 onwards**

**For this paper you must have:**

- the blue AQA booklet of formulae and statistical tables.

You may use a graphics calculator.

### Time allowed

- 1 hour 30 minutes

### Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Write the question part reference (eg (a), (b)(i) etc) in the left-hand margin.
- You must answer the questions in the space provided. Do not write outside the box around each page.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 75.

### Advice

- Unless stated otherwise, you may quote formulae, without proof, from the booklet.

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
TOTAL	









**3** The  $n$ th term of a sequence is  $u_n$ .

The sequence is defined by

$$u_{n+1} = ku_n + 12$$

where  $k$  is a constant.

The first two terms of the sequence are given by

$$u_1 = 16 \quad u_2 = 24$$

- (a)** Show that  $k = 0.75$ . (2 marks)
- (b)** Find the value of  $u_3$  and the value of  $u_4$ . (2 marks)
- (c)** The limit of  $u_n$  as  $n$  tends to infinity is  $L$ .
- (i)** Write down an equation for  $L$ . (1 mark)
- (ii)** Hence find the value of  $L$ . (2 marks)

QUESTION  
PART  
REFERENCE









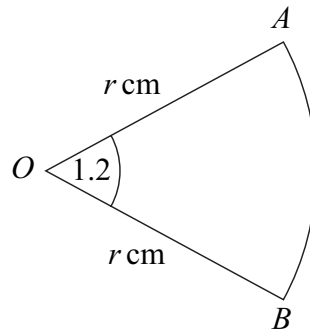






6

The diagram shows a sector  $OAB$  of a circle with centre  $O$  and radius  $r$  cm.



The angle  $AOB$  is  $1.2$  radians. The area of the sector is  $33.75 \text{ cm}^2$ .

Find the perimeter of the sector.

(6 marks)

QUESTION  
PART  
REFERENCE



















**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**

