

Write your name here

Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Core Mathematics C34

Advanced

Monday 16 June 2014 – Morning

Time: 2 hours 30 minutes

Paper Reference

WMA02/01**You must have:**

Mathematical Formulae and Statistical Tables (Blue)

Total Marks

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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 formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B). Coloured pencils and highlighter pens must not be used.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- When a calculator is used, the answer should be given to an appropriate degree of accuracy.

Information

- The total mark for this paper is 125.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Question 11 continued

Q11

(Total 12 marks)



13. (a) Express $2 \sin \theta + \cos \theta$ in the form $R \sin(\theta + \alpha)$, where R and α are constants, $R > 0$ and $0 < \alpha < 90^\circ$. Give your value of α to 2 decimal places. (3)

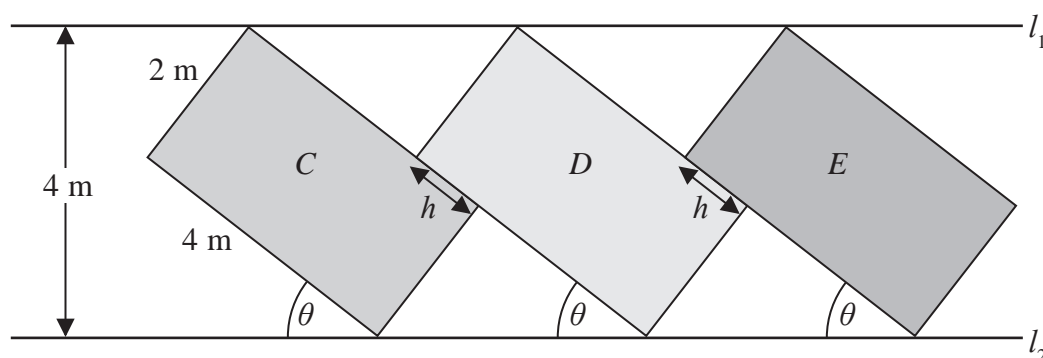


Figure 4

Figure 4 shows the design for a logo that is to be displayed on the side of a large building. The logo consists of three rectangles, C , D and E , each of which is in contact with two horizontal parallel lines l_1 and l_2 . Rectangle D touches rectangles C and E as shown in Figure 4.

Rectangles C , D and E each have length 4 m and width 2 m. The acute angle θ between the line l_2 and the longer edge of each rectangle is shown in Figure 4.

Given that l_1 and l_2 are 4 m apart,

- (b) show that

$$2 \sin \theta + \cos \theta = 2 \quad (2)$$

Given also that $0 < \theta < 45^\circ$,

- (c) solve the equation

$$2 \sin \theta + \cos \theta = 2$$

giving the value of θ to 1 decimal place. (3)

Rectangles C and D and rectangles D and E touch for a distance h m as shown in Figure 4.

Using your answer to part (c), or otherwise,

- (d) find the value of h , giving your answer to 2 significant figures. (3)



