WESTMINSTER
International University in Tashkent

An Accredited Institution of
the University of Westminster (UK)

CAMBRIDGE AS&A LEVEL ENTRANCE EXAMINATION MATHEMATICS

Date: 06 August 2024

Time allowed: 1 hour 30 minutes

You will need: Geometrical instruments, calculator

INSTRUCTIONS

● Answer all questions.

● Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.

● Write your answer to each question in the space provided.

● Do not use an erasable pen or correction fluid.

● You must show all necessary working clearly.

● Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

● The total mark for this paper is 50

ID number and name & surname:	
Signature:	
Do you have IELTS or CEFR certificate?	**If YES, your score?**

FOR OFFICE USE ONLY

1	2	3	4	5	Total

Staff name and signature: _____

PLEASE DO NOT TURN OVER THIS PAGE UNTIL TOLD TO DO SO

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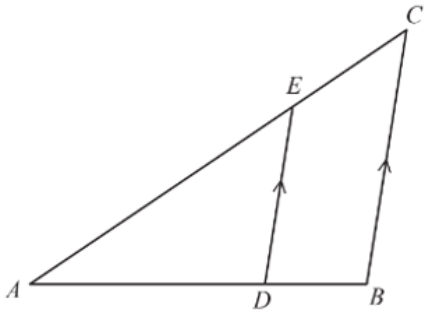

NOT TO SCALE

In the diagram, *DE* is parallel to *BC*.

(a) Complete the statement.

Triangle *ADE* is …… To triangle *ABC*. [1]

(b) *AE* = 6 cm, *EC* = 3 cm and *DB* = 2 cm.

Calculate the length of *AD*.

AD = …… cm [5]

(c) The area of triangle *ADE* is $9cm^2$.

Calculate the area of triangle *ABC*.

…… cm^2 [4]

2 **(a)** Farida has a birthday party. The party starts at 19:30 and ends at 23:45.

(i) Find how long the party lasts.

…….hours ……minutes [1]

(ii) The cost of hiring a band for the party is a total of $150.

The cost of hiring a hall is $50 per hour.

Farida hires the hall for 6 hours.

Find the **total** cost of hiring the hall and the band.

$..... [2]

(b) Farida received $650 for her birthday.

(i) She invests half of this in a bank at a rate of 3.1% per year compound interest.

Work out the value of her investment at the end of 3 years.

$..... [3]

(ii) Farida invests the other half of her birthday money in a different bank at a rate of 3.5% per year simple interest.

Work out the value of this investment at the end of 3 years.

$..... [4]

3 **(a)** Eight children of different ages stand in a random order in a line. Find the number of different ways this can be done if none of the three youngest children stand next to each other. [2]

(b) Damir chooses 5 chocolates from 6 different dark chocolates, 4 different white chocolates and 1 milk chocolate. He must choose at least one of each type. Find the number of different selections he can make. [4]

(c) A password for Mardon's computer consists of 4 characters in a particular order. The characters are chosen from the following.

- The 26 capital letters A to Z
- The 9 digits 1 to 9
- The 5 symbols # ~ * ? !

The password must include at least one capital letter, at least one digit and at least one symbol. No character can be repeated. Find the number of different passwords that Chelsea can make. [4]

4 The common ratio of an infinitely descending geometric progression is r. The first term of the progression is $(r^2 - 3r + 2)$ and the sum to infinity is S.

(i) Express S in terms of r. [5]

(ii) Find the set of possible values that S can take. [5]

5 **(a)** Solve the inequality $2|3x-1| < |x+1|$. [5]

(b) Solve the equation $|x+5| - |3-2x| = 3$. [5]