Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

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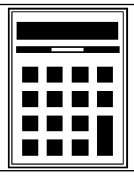
General Certificate of Secondary Education
March 2006

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33003/IA
Module 3 Intermediate Tier Section A

Monday 6 March 2006 9.00 am to 9.40 am

For this paper you must have:
- a calculator
- mathematical instruments
- a treasury tag



Time allowed for Section A: 40 minutes

For Examiner's Use			
Section A		Section B	
Pages	Mark	Pages	Mark
2 – 3		2 – 3	
4 – 5		4 – 5	
6 – 7		6 – 7	
8			
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Do all rough work in this book.
- This paper is divided into two sections: Section A and Section B.
- After the 40 minutes allowed for Section A, you must put your calculator on the floor under your seat. You will then be given Section B.
- When you have answered Section B you may work again on Section A but you may **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information
- The maximum mark for Section A is 32.
- The marks for questions are shown in brackets.
- You may ask for more answer paper. This must be tagged securely to this answer book.
- You are expected to use a calculator where appropriate.

Advice
- In all calculations, show clearly how you work out your answer.

LEAVE MARGIN BLANK

Answer **all** questions in the spaces provided.

1 In France a supermarket bill is €77.
The exchange rate is €1.4 = £1

Work out the cost of the bill in pounds.

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Answer £ ..... *(2 marks)*

2 (a) Work out 38% of £146.

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Answer £ ..... *(2 marks)*

(b) What percentage is £108 of £150?

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Answer ..... % *(2 marks)*

LEAVE MARGIN BLANK

3 Season ticket prices for a football club are shown in the table.

	Adult	**Child**
Main Stand	£480	£170
Family Enclosure	£420	£140

Mr Matthews buys tickets for the Main Stand.
He buys tickets for himself and all of his children.
He pays a total of £1330.

How many children's tickets does he buy?

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Answer ..... *(3 marks)*

4 Sue drives a distance of 11 miles.

She drives for $\frac{1}{4}$ of an hour.

Calculate Sue's average speed.
Give your answer in miles per hour.

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.....

.....

Answer ..... miles per hour *(2 marks)*

11

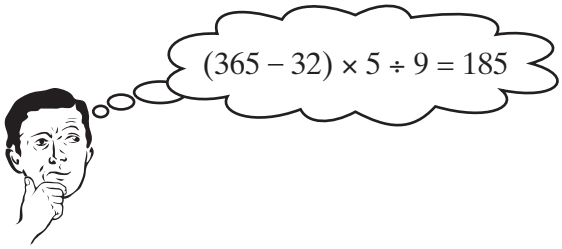
Turn over ▶

LEAVE MARGIN BLANK

5 Dave uses this method to convert degrees Fahrenheit (°F) to degrees Celsius (°C).

Step 1: Subtract 32
Step 2: Multiply by 5
Step 3: Divide by 9

For example, 365 °F converts to 185 °C.



Use this method to convert 77 °F to °C.

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Answer ..... °C *(2 marks)*

6 Use your calculator to work out $\dfrac{9.8 - 0.95}{4.2 \times 1.6}$

(a) Write down the full calculator display.

.....

.....

Answer ..... *(1 mark)*

(b) Write your answer to 1 decimal place.

Answer ..... *(1 mark)*

LEAVE MARGIN BLANK

7 (a) Find the cube root of 125.

Answer ..... *(1 mark)*

(b) Find the value of $\dfrac{2}{3.6^3}$

(i) Write down the full calculator display.

Answer ..... *(1 mark)*

(ii) Write your answer to 3 significant figures.

Answer ..... *(1 mark)*

8 The ratio of girls to boys in a school is 13:12
There are 572 girls in the school.

(a) How many pupils are there in the school altogether?

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Answer ..... *(3 marks)*

(b) Harry is a Year 10 pupil at the school.
He says that the ratio of girls to boys in Year 10 will also be 13:12

Explain why Harry may **not** be correct to say this.

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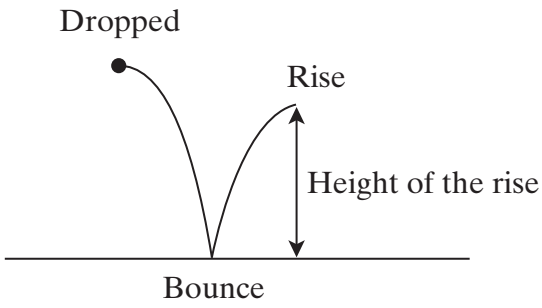
(1 mark)

11

Turn over ▶

LEAVE MARGIN BLANK

9 When a ball is dropped onto the floor, it bounces and then rises.
This is shown in the diagram.



The ball rises to 80% of the height from which it is dropped.
The ball is dropped from a height of 4 metres.

(a) Calculate the height of the rise after the first bounce.

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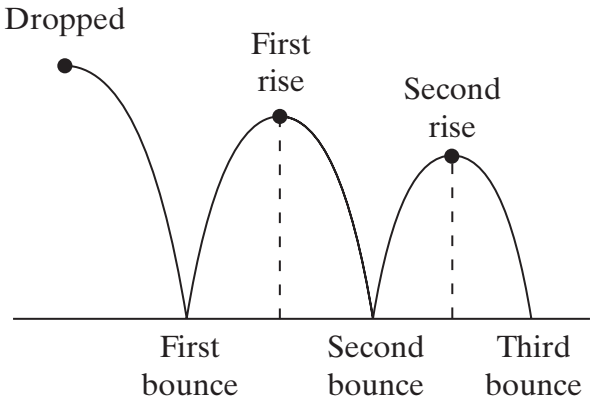
Answer ..... metres *(1 mark)*

(b) The ball bounces a second time.
It rises to 80% of the height of the first rise.



(i) Calculate the height of the second rise.

.....

.....

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Answer ..... metres *(1 mark)*

LEAVE MARGIN BLANK

(ii) The ball carries on bouncing in this way.
Each time it rises to 80% of the last rise.

For how many bounces does it rise to a height greater than 1.75 metres?
You **must** show your working.

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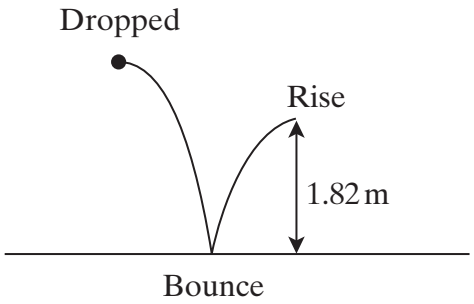
Answer ..... *(2 marks)*

(c) A different ball is dropped onto the floor.
This ball rises to 70% of the height from which it is dropped.
The height of the rise after the first bounce is 1.82 metres.



Calculate the height from which the ball is dropped.

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Answer ..... metres *(3 marks)*

Turn over for the next question

7

Turn over ▶

LEAVE MARGIN BLANK

10 In 2002 the number of visitors to four tourist attractions is shown in the table.

Blackpool Pleasure Beach	6.2 million
Edinburgh Castle	1 153 000
Giant's Causeway	4.07×10^5
Tate Modern	4.6 million

(a) Write the number of visitors to Edinburgh Castle in standard form.

.....

Answer ..... *(1 mark)*

(b) Blackpool Pleasure Beach claimed that it had more visitors than the other three added together.

Is this claim true?
You **must** show your working.

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(2 marks)

END OF SECTION A

3

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General Certificate of Secondary Education
March 2006

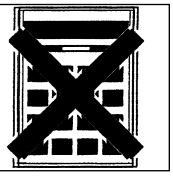
ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33003/IB
Module 3 Intermediate Tier Section B

Monday 6 March 2006 9.45 am to 10.25 am

For this paper you must have:
- mathematical instruments

You must **not** use a calculator.



Time allowed for Section B: 40 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Do all rough work in this book.
- You may **not** use your calculator in Section B. Your calculator must remain on the floor under your seat.
- When you have answered Section B you may work again on Section A but you may **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information
- The maximum mark for Section B is 32.
- The marks for questions are shown in brackets.
- You may ask for more answer paper. This must be tagged securely to this answer book.

Advice
- In all calculations, show clearly how you work out your answer.

LEAVE MARGIN BLANK

Answer **all** questions in the spaces provided.

11 Anthony wants to travel from Liverpool to London by train.

He obtains the following timetable from the internet.

Liverpool Lime Street	09:24	10:24	11:24
Crewe	10:15	11:15	12:15
Nuneaton	10:59		12:59
London Euston	12:26	13:19	14:26

Assume that all the trains will keep to their correct times.

(a) Anthony needs to arrive at London Euston by 14:00

(i) Which is the latest train that he can take from Liverpool Lime Street?

Answer ..... *(1 mark)*

(ii) How long will this train take to travel from Liverpool Lime Street to Crewe?

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Answer ..... minutes *(2 marks)*

(b) Anthony notices that one of the boxes in the timetable is empty.

Explain why this box is empty.

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(1 mark)

LEAVE MARGIN BLANK

12 Calculate

(a) 7.4 – 2.56

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Answer ..... *(1 mark)*

(b) 6^3

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Answer ..... *(2 marks)*

(c) $\frac{3}{7} \times \frac{2}{5}$

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Answer ..... *(1 mark)*

(d) $\frac{3}{4} - \frac{1}{5}$

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Answer ..... *(2 marks)*

10

Turn over ▶

LEAVE MARGIN BLANK

13 Estimate the value of $\dfrac{9.8 \times 20.1}{8.2 - 2.9}$

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Answer ..... *(2 marks)*

14 Shalina has two cats and has asked a neighbour to feed them while she is away on holiday.

Each cat will eat $\frac{3}{4}$ of a tin of food every day.
Shalina is going to be away for seven days.

What is the least number of tins of food needed to feed **both** cats?

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Answer ..... *(3 marks)*

LEAVE MARGIN BLANK

15 (a) You are given that $96 \times 6.43 = 617.28$

Write down the answer to 9600×0.643

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Answer ..... *(1 mark)*

(b) You are given that $\frac{1.06}{4} = 0.265$

Write down the answer to $\frac{10.6}{0.4}$

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Answer ..... *(1 mark)*

16 Jules invested £400 for 2 years at 5% compound interest, paid yearly.

How much will his investment be worth at the end of the 2 years?

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Answer £ ..... *(3 marks)*

10

Turn over ▶

LEAVE MARGIN BLANK

17 (a) What is the least common multiple (LCM) of 9 and 12?

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Answer ..... *(2 marks)*

(b) Write 108 as the product of its prime factors.

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Answer ..... *(2 marks)*

18 (a) Write 0.000 000 397 in standard form.

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Answer ..... *(1 mark)*

(b) Evaluate $\dfrac{6 \times 10^7}{8 \times 10^{11}}$

Give your answer in standard form.

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Answer ..... *(2 marks)*

LEAVE MARGIN BLANK

19 Work out $1\frac{3}{4} \div 1\frac{4}{11}$

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Answer ..... *(3 marks)*

20 A packet of crisps weighs 34 grams to the nearest gram.
A multipack of crisps contains 10 packets.

Work out the least and greatest weights of the multipack.
(You can ignore the weight of the multipack wrapper.)

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Answer Least ..... grams

Greatest ..... grams *(2 marks)*

END OF QUESTIONS

12

There are no questions printed on this page

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