Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

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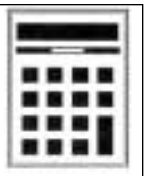
General Certificate of Secondary Education
March 2003

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33001/IA
MODULE 1 INTERMEDIATE TIER SECTION A

Monday 3 March 2003 9.00 am to 9.25 am

In addition to this paper you will require:
- a calculator
- mathematical instruments
- a treasury tag.



Time allowed for Section A: 25 minutes

Instructions
- Use blue or black ink or ball-point pen. Diagrams should be drawn in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- This paper is divided into **two** sections: Section A and Section B.
- After the 25 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, make sure that you hand in **both** Section A and Section B securely tagged together with Section A on top.

Information
- The maximum mark for Section A is 20.
- Mark allocations are shown in brackets.
- Additional answer paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

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

For Examiner's Use			
Section A		Section B	
Number	Mark	Number	Mark
1		6	
2		7	
3		8	
4		9	
5		10	
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

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

1 There are 240 houses on a housing estate.
The table shows the total number of each type of house.

Type of house	Frequency
Semi-detached	30
3 bedroom detached	60
4 bedroom detached	68
Terraced	82

Draw and label a pie chart to represent the information in the table.

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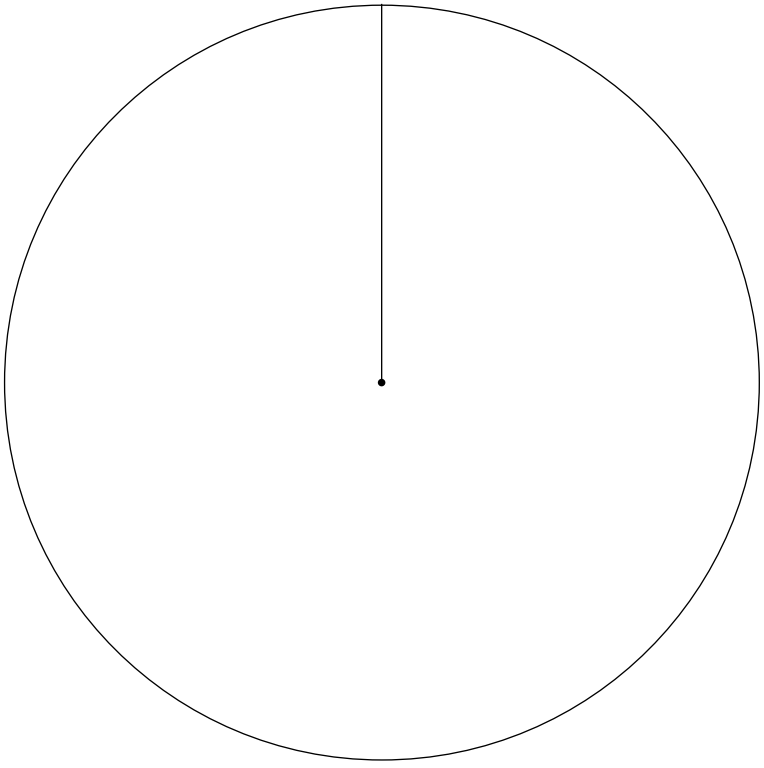


(4 marks)

4

2 The number of cars passing through a set of traffic lights each time they are on green is recorded.

12 15 23 20 18 16 27 9 10

19 22 26 14 11 8 4 12 23

(a) Complete the stem and leaf diagram, including the key, to represent the data.

.....

.....

.....

Key | ..... | ..... represents .....

0	.....
1	.....
2	.....

(3 marks)

(b) The number of lorries passing through a different set of traffic lights is shown in the ordered stem and leaf diagram below.

Key | 1 | 7 represents 17 lorries

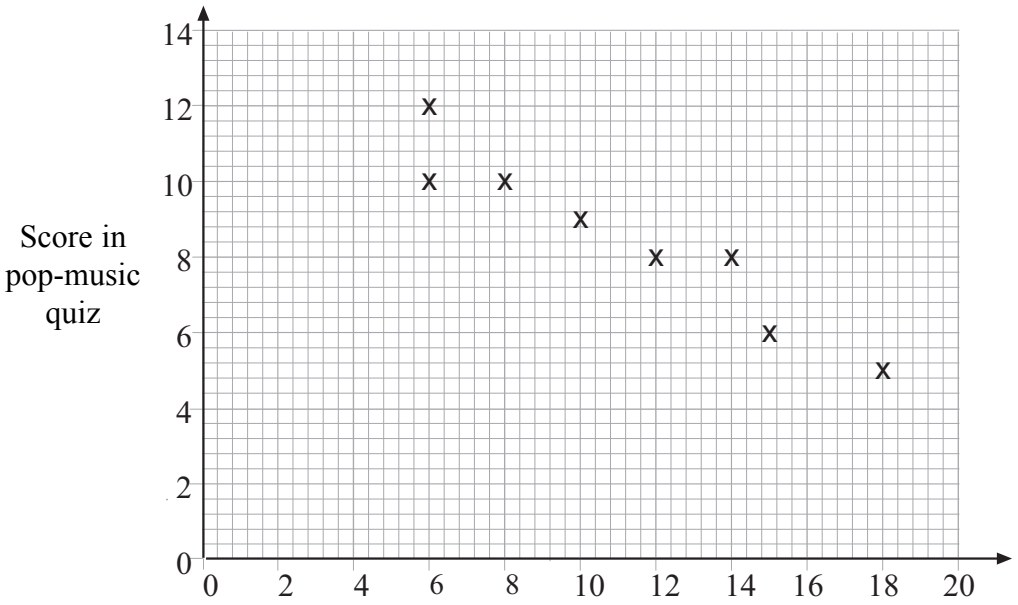
0	1	1	1	2	2	3	4	4	5	6	9
1	0	0	2	3	7						
2	2										

Use the ordered stem and leaf diagram to find the median number of lorries that passed through the traffic lights.

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

4

3 Eight teenagers took part in a general knowledge quiz and a pop-music quiz. The scatter graph shows their scores.



(a) Draw a line of best fit on the scatter graph. *(1 mark)*

(b) Describe the relationship shown in the scatter graph.

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(1 mark)

2

4 The table shows the amounts of Jenny's gas bills from September 2001 to December 2002.

Date	September 2001	December 2001	March 2002	June 2002	September 2002	December 2002
Amount of bill (£)	28.70	32.40	29.10	7.80	30.30	38.60

(a) Explain why a **four-point** moving average is appropriate for these data.

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(1 mark)

(b) Show that the first value of the four-point moving average is £24.50

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.....

.....

(2 marks)

(c) Calculate the second value of the four-point moving average for these data.

.....

.....

Answer £ ..... *(2 marks)*

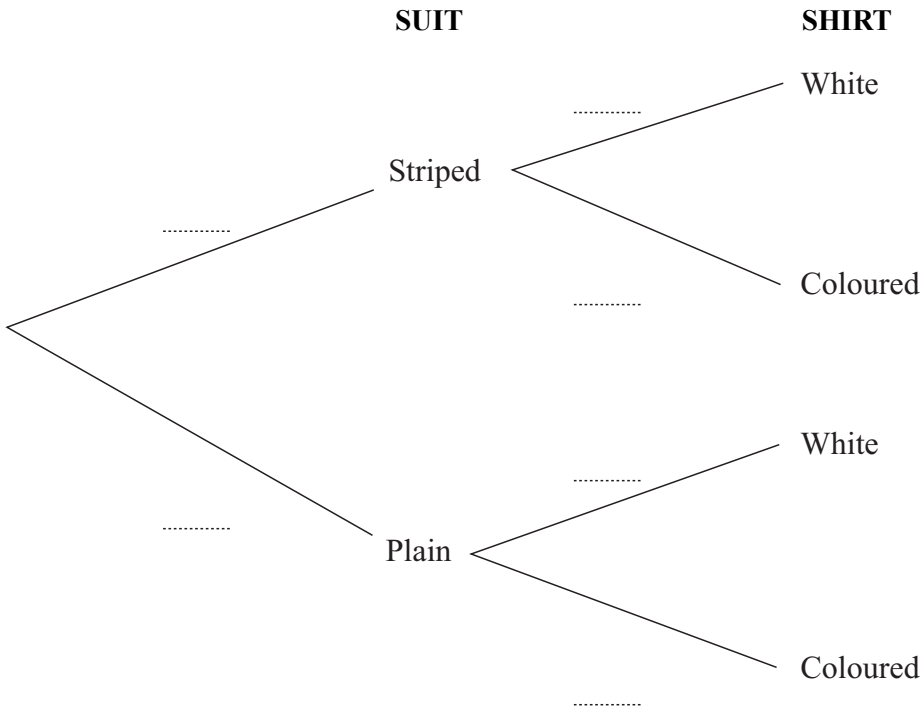
5

TURN OVER FOR THE NEXT QUESTION

5 Greg has four suits, one is striped and the other three are plain.
He also has ten shirts, four are white and the other six are coloured.

Greg chooses a suit at random and then chooses a shirt at random.

(a) Fill in the probabilities on the branches of the tree diagram.



(3 marks)

(b) Calculate the probability that Greg chooses a plain suit and a coloured shirt.

.....

.....

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

5

END OF SECTION A

Surname		Other Names	
Centre Number						Candidate Number				
Candidate Signature										

General Certificate of Secondary Education
March 2003

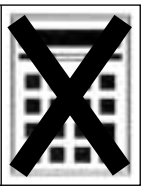
ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33001/IB
MODULE 1 INTERMEDIATE TIER SECTION B

Monday 3 March 2003 9.30 am to 9.55 am

In addition to this paper you will require:
mathematical instruments.

You must **not** use a calculator.



Time allowed for Section B: 25 minutes

Instructions
- Use blue or black ink or ball-point pen. Diagrams should be drawn in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- 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, make sure that you hand in **both** Section A and Section B securely tagged together with Section A on top.

Information
- The maximum mark for Section B is 20.
- Mark allocations are shown in brackets.
- Additional answer paper will be issued on request and must be tagged securely to this answer booklet.

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

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

6 The table shows the number of bunches of flowers bought by the customers of a florist's shop on the day before Mother's Day.

Number of bunches of flowers bought	Number of customers
1	24
2	10
3	5

(a) Calculate the total number of bunches of flowers bought from the shop that day.

.....

.....

.....

.....

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

(b) Explain why the total number of bunches of flowers bought from the shop that day may not be representative of the normal daily sales.

.....

.....

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(1 mark)

3

7 Imran is playing a game.
He has a blue bag containing four discs numbered 1, 2, 3 and 4.
He has a red bag containing four discs numbered 1, 2, 3 and 4.
He chooses, at random, a disc from each bag.
He adds the numbers on the two discs chosen to get his score.

(a) Complete the table to show the possible scores that Imran can get.

Number on the disc from the blue bag \ **Number on the disc from the red bag**	1	2	3	4
1				
2				
3				
4				

(2 marks)

(b) Write down the probability that Imran gets a score of 8.

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

3

TURN OVER FOR THE NEXT QUESTION

LEAVE MARGIN BLANK

8 A scout group organises a game to raise money.
200 people each pay £2 to play the game.

The probability that a person wins is $\frac{1}{10}$.

The winners each receive £5 and there are no other prizes.

Calculate how much profit the scout group makes from this game.

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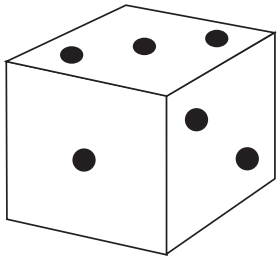
Answer £ ..... *(4 marks)*

4

9 A dice is suspected of bias.
Here are the results of 20 throws.



3	4	2	3	1	5	6	2	4	3
4	3	1	1	6	2	5	6	5	3

(a) Use these results to calculate the relative frequency of each score.

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.....

Score	1	2	3	4	5	6
Relative frequency						

(2 marks)

(b) Use the relative frequency to calculate how many times you would expect to score 3 in 60 throws of this dice.

.....

.....

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

(c) Compare your answer to part (b) with the number of times you would expect to score 3 in 60 throws of a **fair** dice.

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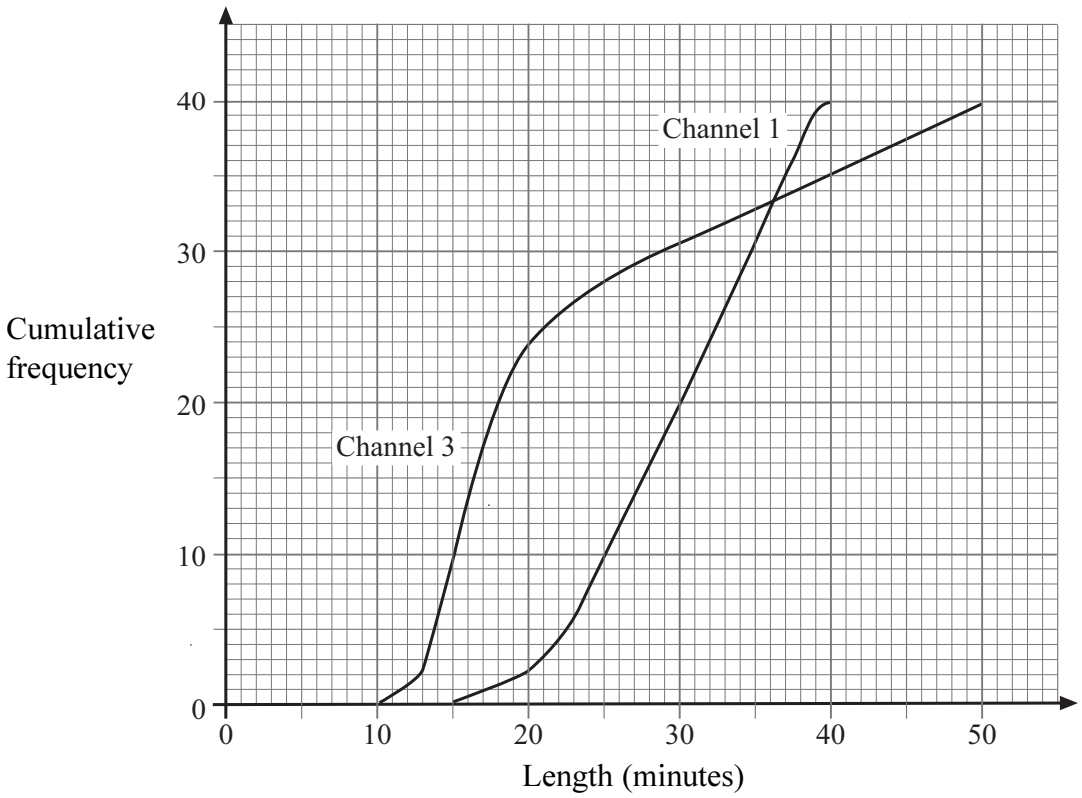
(1 mark)

5

10 The cumulative frequency graphs represent the lengths of 40 programmes on Channel 1 and 40 programmes on Channel 3.



(a) What is the difference between the median programme lengths for the two channels?

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

(b) How many programmes in total were more than 25 minutes long?

.....

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

5

END OF QUESTIONS