Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

General Certificate of Secondary Education
November 2007

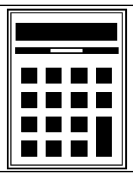
ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) **43053/HA**
Module 3 Higher Tier Section A
Non-coursework Specification

H

Monday 12 November 2007 9.00 am to 9.45 am

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



Time allowed for Section A: 45 minutes

For Examiner's Use			
Section A		**Section B**	
Pages	Mark	Pages	Mark
2–3		2–3	
4–5		4–5	
6		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.
- Use a calculator where appropriate.
- Do all rough work in this book.
- This paper is divided into two sections: Section A and Section B.
- After the 45 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 35.
- The marks for questions are shown in brackets.
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

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

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

1 Calculate $\dfrac{2.8 + 6.1}{9.7 - 1.8}$

(a) Write down your full calculator display.

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

(b) Write your answer to part (a) to the nearest thousandth.

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

2 A watch in England costs £60.
The same watch in France costs €100.
The exchange rate is £1 = €1.65

In which country is the watch cheaper and by how much?
You **must** show your working.
State the units of your answer.

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Answer ..... *(4 marks)*

3 Decrease 800 by 39%.

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

4 (a) An empty flower pot weighs 600 g.
The weight of the flower pot increases to 1.9 kg when filled with soil.

Calculate the percentage increase in the weight of the flower pot.
Give your answer to one significant figure.

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Answer ..... % *(4 marks)*

(b) A different flower pot is 12% heavier when empty but holds 10% less soil.

Calculate the weight of this flower pot when it is full of soil.

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Answer ..... g *(4 marks)*

5 The Least Common Multiple (LCM) of two numbers is 36.

Find one possible pair for the two numbers.

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

19

6 (a) Factorise $10x + 15$

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

(b) Factorise $y^2 - 2y$

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

(c) Multiply out $2(3x - 4)$

.....

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

7 Find the largest number and the smallest number from this list.

3×10^{-2} 82 000 9×10^{3} 0.114

.....

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Largest .....

Smallest ..... *(2 marks)*

8 Show that the product of two consecutive integers is always even.

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(2 marks)

9 A leaking water tank loses 36% of its contents each day.
Isobel says the tank will have lost over 90% of its original contents by the end of the fifth day.

Is Isobel correct?
You **must** explain your answer.

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(3 marks)

10 Rationalise the denominator to show that

$$\frac{18}{\sqrt{6}} = 3\sqrt{6}$$

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(2 marks)

Turn over for the next question

12

11 After a reduction of 9% in the original price, a car is sold for £8000.
Both these values are correct to one significant figure.

Calculate the greatest possible original price before the reduction was applied.

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Answer £ ..... *(4 marks)*

END OF SECTION A

4

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General Certificate of Secondary Education
November 2007

ASSESSMENT and QUALIFICATIONS ALLIANCE

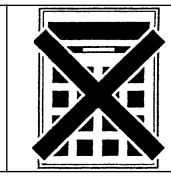
MATHEMATICS (MODULAR) (SPECIFICATION B) 43053/HB
Module 3 Higher Tier Section B
Non-coursework Specification

H

Monday 12 November 2007 9.50 am to 10.35 am

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.



Time allowed for Section B: 45 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 35.
- The marks for questions are shown in brackets.
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

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

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

12 The table shows information about the number of people watching a firework display.

	Men	**Women**	**Children**
Fraction of people	$\frac{3}{10}$	$\frac{1}{10}$	
Number of people		50	

(a) Complete the table.

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(5 marks)

(b) Write down the ratio of men to women.

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

13 Roger needs $1\frac{2}{3}$ balls of wool to knit one jumper.

(a) He wants to knit two jumpers.

How many balls of wool does he need to buy?

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

(b) A different type of jumper needs $1\frac{1}{4}$ balls of wool.

Bethany says that she can knit one of each type of jumper using less than three balls of wool.

Is Bethany correct?
You **must** show your working.

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(3 marks)

Turn over for the next question

11

14 Work out

(a) $\frac{2}{5}$ of $\frac{3}{11}$

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

(b) $\frac{3}{8} \div 4$

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

15 (a) A number when written as a product of prime factors in index form is $2^4 \times 3^2$.

Work out the number.

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

(b) What is the Highest Common Factor (HCF) of 32 and 144?

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

16 Match each statement to a table.

Statement 1 y is inversely proportional to x^2.

Statement 2 y is proportional to x.

Statement 3 y is proportional to x^2.

Table A

x	1	2	3	4
y	1	4	9	16

Table B

x	1	2	3	4
y	2	$\frac{1}{2}$	$\frac{2}{9}$	$\frac{1}{8}$

Table C

x	1	2	3	4
y	3	6	9	12

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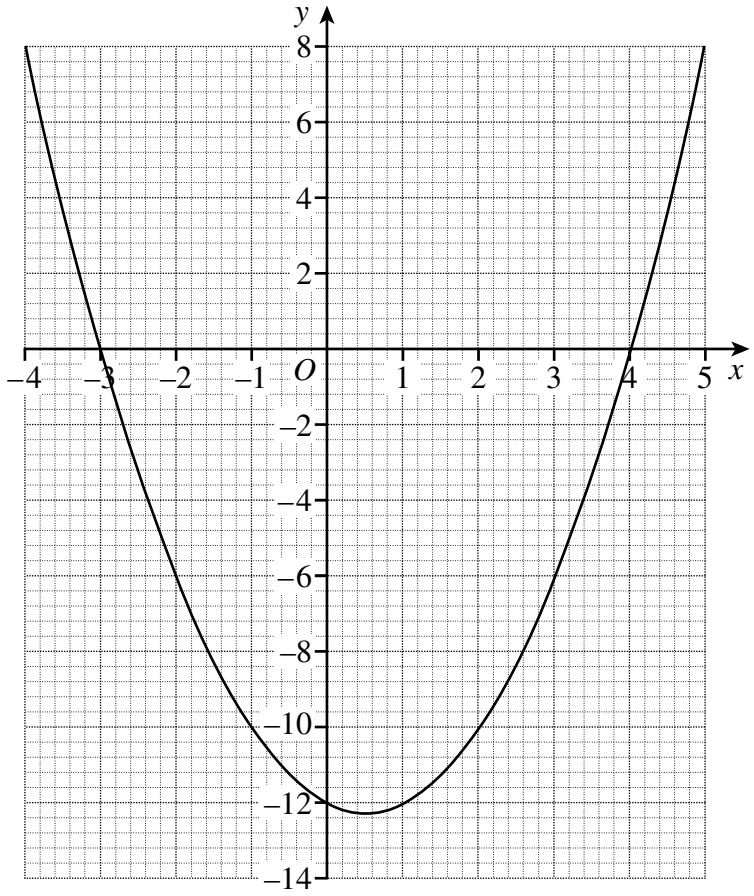
Answer Statement 1 matches Table .....

Statement 2 matches Table .....

Statement 3 matches Table ..... *(2 marks)*

10

17 (a) The grid shows the graph of $y = x^2 - x - 12$ for values of x from -4 to 5.



Write down the coordinates of the minimum point of $y = x^2 - x - 12$

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

(b) (i) Factorise $x^2 - x - 12$

.....

.....

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

(ii) Hence show that $\dfrac{(x^2 - x - 12)(x - 5)}{(x + 3)} \equiv x^2 - 9x + 20$

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(2 marks)

18 Find $0.\dot{2} \times 0.45$

Give your answer as a fraction.

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

Turn over for the next question

9

19 If $a = 5$ and $b = \sqrt{5}$ find the value of

(a) b^{-2}

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

(b) $\left(\frac{b\sqrt{45}}{a}\right)^{\frac{1}{2}}$

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

END OF QUESTIONS

5