AQA

General Certificate of Secondary Education
Higher Tier
June 2010

Mathematics (Modular)　43053/HB
(Specification B)

Module 3 Section B

Monday 21 June 2010　9.50 am to 10.35 am

H

For this paper you must have:
● mathematical instruments
You must **not** use a calculator.

Time allowed for Section B
● 45 minutes

Instructions
● Use black ink or black ball-point pen. Draw diagrams in pencil.
● Fill in the boxes at the top of this page.
● Answer **all** questions.
● You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
● 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 marks for questions are shown in brackets.
● The maximum mark for Section B is 35.
● You may ask for more answer paper and graph paper. These 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.

10 (a)   Work out $\dfrac{-10 - 2}{-5 + 2}$

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Answer .... *(1 mark)*

10 (b)   You are given that $-2435 \div -5 = 487$

10 (b) (i)   Write down the value of $-2435 \div 5$

Answer .... *(1 mark)*

10 (b) (ii)   Work out 487×-50

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Answer .... *(2 marks)*

11   Estimate the value of $(3.97 + 2.08 \times 0.49)^3$

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Answer .... *(3 marks)*

12 (a) Expand $3(h - 4)$

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Answer .... *(1 mark)*

12 (b) Show that $x^2(x + 3) - x(x^2 - 3) \equiv 3x(x + 1)$

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(3 marks)

12 (c) Factorise $m^2 - m$

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Answer .... *(1 mark)*

13 (a) Work out $\dfrac{2}{5} - \dfrac{1}{3}$

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Answer .... *(2 marks)*

13 (b) Work out $1\dfrac{3}{4} \div \dfrac{5}{7}$

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Answer .... *(2 marks)*

16

Turn over ▶

14 After a storm the volume of water in a pond increases from $400 \, m^3$ to $450 \, m^3$.

Work out the percentage increase.

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

15 x, y and z are all different odd prime numbers.

15 (a) Write down the highest common factor (HCF) of x, y and z.

Answer ....   *(1 mark)*

15 (b) Hence, or otherwise, work out the highest common factor of $2x$, $4y$ and $8z$.

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Answer ....   *(1 mark)*

15 (c) Hence, or otherwise, work out the highest common factor of 26, 44 and 56.

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Answer ....   *(1 mark)*

16 (a) Work out $(3\frac{1}{3})^2$

Give your answer as a mixed number.

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Answer .... *(3 marks)*

16 (b) Given that $\sqrt{k} \times \sqrt{2}$ is an integer and $k > 0$, work out **two** possible values for k.

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

Turn over for the next question

Turn over ▶

17 (a) Evaluate $\dfrac{144^{\frac{1}{2}}}{27^{\frac{2}{3}}}$

Give your answer as a recurring decimal.

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Answer .... *(4 marks)*

17 (b) Work out $3.\dot{5}\dot{3} \times 10^{-1}$ as a fraction.

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Answer .... *(3 marks)*

END OF QUESTIONS

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