Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

General Certificate of Secondary Education
November 2009

AQA

MATHEMATICS (MODULAR) (SPECIFICATION B) 43053/HA
Module 3 Higher Tier Section A

H

Friday 13 November 2009 9.00 am to 9.45 am

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

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

Time allowed for Section A: 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. Answers written in margins or on blank pages will not be marked.
- 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 (a) Factorise $6x - 8$

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

1 (b) Oscar multiplies out $3x(2x - 5)$
His answer is $6x - 8x$
He has made two mistakes.

Explain his **two** mistakes.

Mistake 1 .....

Mistake 2 .....

(2 marks)

2 Shampoo is on sale in three sizes of bottle.

Which size of bottle is best value?
You **must** show your working.

.....

.....

.....

.....

.....

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

3 Hernie has £35 in her purse, to the nearest £5.

3 (a) What is the least amount Hernie could have in her purse?

Answer £ ..... *(1 mark)*

3 (b) What is the greatest amount Hernie could have in her purse?

Answer £ ..... *(1 mark)*

4 In a sale, a settee is advertised with 60% off the original price of £800.
For one day only, the settee is offered with an extra 20% off the sale price.

Show that the total saving is the same as 68% off the original price.

.....

.....

.....

.....

.....

.....

.....

(3 marks)

Turn over for the next question

12

5 A race track is 4 kilometres long.
Rory drives around the track at an average speed of 160 kilometres per hour.

How long does Rory take to drive around the track?
Give your answer in seconds.

.....

.....

.....

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

6 Calculate $\sqrt{258^3 + 409^2}$

6 (a) Write down your full calculator display.

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

6 (b) Write your answer in standard form to two significant figures.

.....

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

7 You are given that

$$2 \times 3 \times 4 = 24$$

and

$$3 \times 4 \times 5 = 60$$

24 and 60 are both divisible by 12.

7 (a) Give an example of three consecutive integers with a product that is **not** divisible by 12.

.....

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

7 (b) Explain why the product of three consecutive integers is **always** divisible by 6.

.....

.....

.....

..... *(2 marks)*

8 (a) Expand and simplify $(x - 2)(x + 5)$

.....

.....

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

8 (b) Show that $\dfrac{x^2 - 49}{x - 7} = x + 7$

.....

.....

.....

(2 marks)

13

9 The tables show four different relationships between x and y.

Table A

x	1	2	3	4
y	1	4	9	16

Table B

x	1	4	9	16
y	1	0.5	0.333...	0.25

Table C

x	1	8	27	64
y	1	2	3	4

Table D

x	1	2	3	4
y	1	0.5	0.333...	0.25

9 (a) Calculate the value of y corresponding to the value $x = 50$ in Table A.

.....

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

9 (b) Calculate the value of y corresponding to the value $x = 50$ in Table C.

.....

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

9 (c) Here are four statements.

Statement 1 x is inversely proportional to y
Statement 2 x is directly proportional to the square root of y
Statement 3 x is inversely proportional to the square of y
Statement 4 x is directly proportional to the cube of y

Match these statements to the tables.

Answer Statement 1 matches Table .....

Statement 2 matches Table.....

Statement 3 matches Table.....

Statement 4 matches Table..... *(3 marks)*

10 At the end of 2005 the value of a house was £250 000.

The percentage change in value, to the nearest 1%, by the end of each of the next two years is given in the table.

End of Year	Percentage change (to nearest 1%)
2006	up 8% from the end of 2005
2007	down 2% from the end of 2006

Calculate the minimum possible value of the house at the end of 2007.
Give your answer to a suitable degree of accuracy.

.....

.....

.....

.....

.....

.....

.....

Answer £..... *(5 marks)*

END OF SECTION A

10

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED