

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education  
June 2006



**MATHEMATICS (MODULAR) (SPECIFICATION B)**  
**Module 3 Higher Tier Section B**

**43003/HB**

**H**

Practice Paper (Two-tier Specification) 2008

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• mathematical instruments</li> </ul> <p>You must <b>not</b> use a calculator.</p>	
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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 and graph paper. These must be tagged securely to this answer book.

**Advice**

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

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

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**9** You are given that  $56 \times 245 = 13\,720$

Use this to work out

(a)  $560 \times 2450$

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Answer ..... (1 mark)

(b)  $5.6 \times 0.245$

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Answer ..... (1 mark)

**10** A canal boat travels 6 miles in 1 hour 30 minutes.

Calculate the average speed of the boat.

Give your answer in miles per hour.

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Answer ..... miles per hour (3 marks)

**11** A set of DVDs costs £110.  
Ahmed has saved 95% of the cost.

What is 95% of £110?

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Answer £ ..... (2 marks)

**12** Laura has two dogs, Bertie and Bromley.

Bertie eats  $\frac{1}{3}$  of a tin of dog food every day.

Bromley eats  $\frac{1}{2}$  of a tin of the same dog food every day.

What is the least number of tins of dog food needed to feed the dogs for seven days?

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Answer ..... (3 marks)

**Turn over for the next question**

- 13 (a) You are given that  $24 = 2^3 \times 3$

Write each of the following as the product of prime factors in index form.

- (i) 48

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Answer ..... (1 mark)

- (ii) 240

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Answer ..... (1 mark)

- (b) What is the least common multiple (LCM) of 24 and 32?

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Answer ..... (2 marks)

- (c) What is the highest common factor (HCF) of 24 and 32?

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Answer ..... (1 mark)

14 What number when multiplied by  $\frac{2}{5}$  gives an answer of 1?

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Answer ..... (1 mark)

15 Which **two** of the following fractions are recurring decimals?

$$\frac{1}{3} \quad \frac{4}{5} \quad \frac{3}{8} \quad \frac{3}{4} \quad \frac{5}{7}$$

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

**Turn over for the next question**

**16** A toy rabbit works using a single battery.  
When the battery is new, it has 250 units of power.  
After every hour of use the battery loses 20% of its remaining power.

(a) How many units of power remain in the battery after 2 hours?

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Answer ..... units (2 marks)

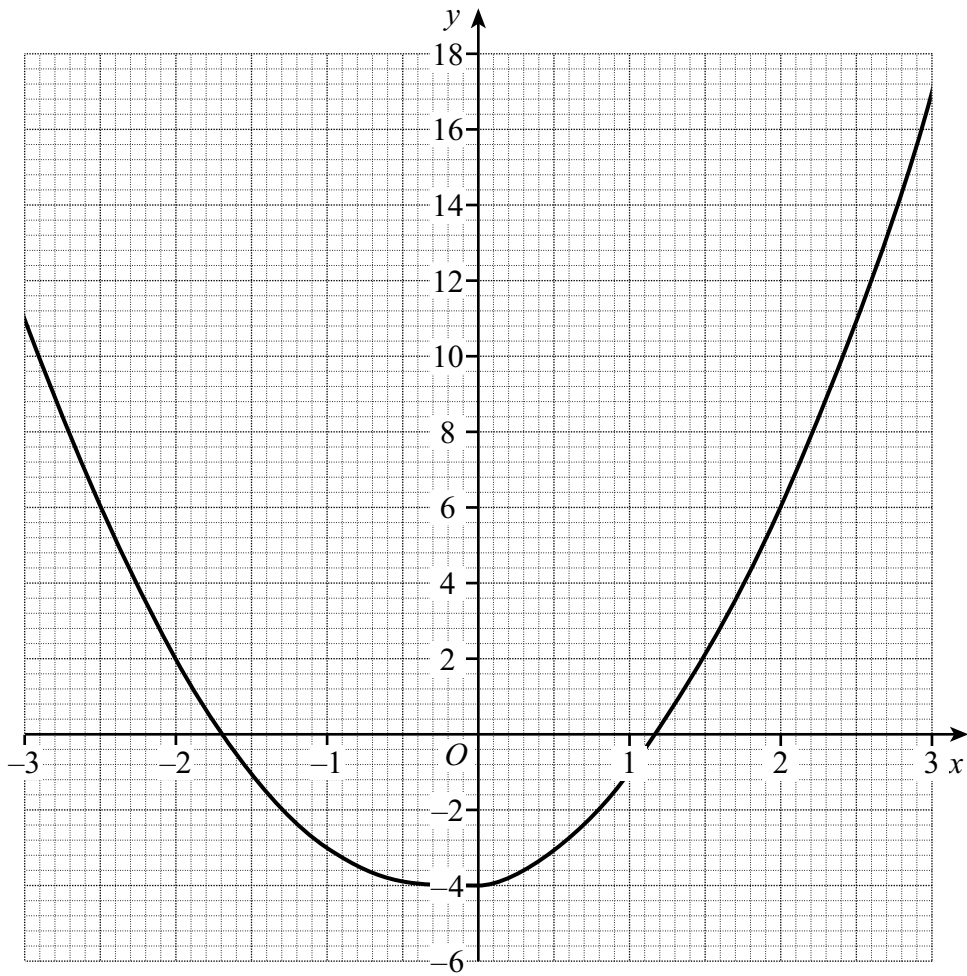
(b) The battery must have at least 100 units of power left for the toy rabbit to work.

Show that the toy rabbit will still be working after 4 hours.

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(3 marks)

17 The graph of  $y = 2x^2 + x - 4$  is shown.



(a) Use the graph to find the negative solution of the equation  $2x^2 + x = 4$

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Answer ..... (1 mark)

(b) By drawing a suitable straight line on the graph, find solutions to the equation  $2x^2 - x - 5 = 0$

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 .....  
 .....  
 .....

Answer ..... (3 marks)

Turn over for the next question

Turn over

18 Given that  $p = \sqrt{3}$      $q = \sqrt{12}$      $r = \sqrt{6}$

(a) find the value of  $(pq)^{-1}$

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Answer ..... (2 marks)

(b) show that  $(r - p)^2 = 9 - 6\sqrt{2}$

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(3 marks)

**END OF QUESTIONS**