



# FREE-STANDING MATHEMATICS QUALIFICATION ADVANCED LEVEL

## Additional Mathematics

# 6993

### PRINTED ANSWER BOOK

Candidates answer on this printed answer book.

**OCR supplied materials:**

- Question paper 6993 (inserted)

**Other materials required:**

- Scientific or graphical calculator

**Monday 13 June 2011  
Morning**

**Duration: 2 hours**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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### INSTRUCTIONS TO CANDIDATES

These instructions are the same on the printed answer book and the question paper.

- The question paper will be found in the centre of the printed answer book.
- Write your name, centre number and candidate number in the spaces provided on the printed answer book. Please write clearly and in capital letters.
- **Write your answer to each question in the space provided in the printed answer book.** Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- You are permitted to use a scientific or graphical calculator in this paper.
- Final answers should be given correct to three significant figures where appropriate.

### INFORMATION FOR CANDIDATES

This information is the same on the printed answer book and the question paper.

- The number of marks is given in brackets [ ] at the end of each question or part question on the question paper.
- You are advised that an answer may receive **no marks** unless you show sufficient detail of the working to indicate that a correct method is being used.
- The total number of marks for this paper is **100**.
- The printed answer book consists of **20** pages. The question paper consists of **8** pages. Any blank pages are indicated.

Section A

1	
2	

<b>3(i)</b>	
	<b>3(ii)</b>

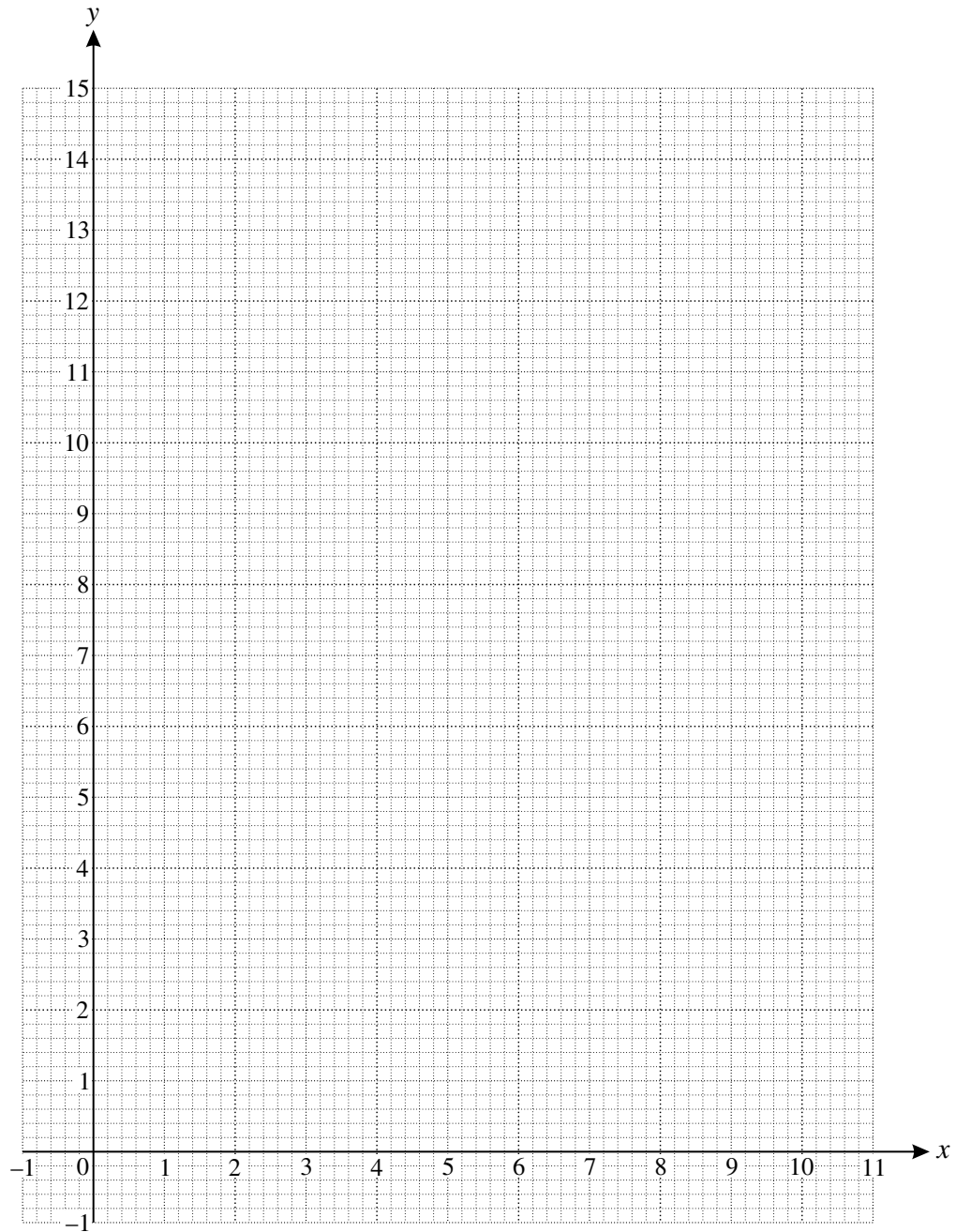
<b>4</b>	
	<b>5(a)</b>

<b>5(b)</b>	
<b>5(c)(i)</b>	
<b>5(c)(ii)</b>	

<b>6</b>	
	<b>7(a)(i)</b>

<b>7(a)(ii)</b>	
<b>7(b)(i)</b>	
<b>7(b)(ii)</b>	

8(i)



*There is a spare copy of this grid on page 18. If you wish any work on page 18 to be marked then you must cross through any work on this grid.*

8(ii)



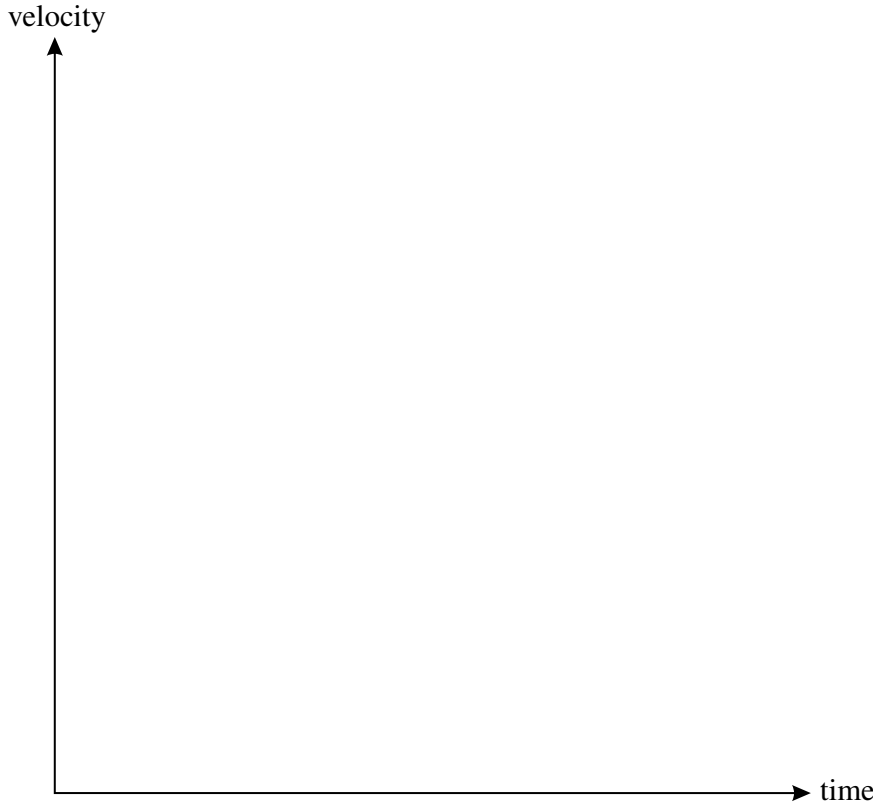

<b>9</b>	
<b>10</b>	

Section B

<b>11(i)</b>	
	<b>11(ii)</b>

**11(iii)**

<b>12(a)</b>	
<b>12(b)</b>	

<b>12(c)(i)</b>	
<b>12(c)(ii)</b>	
<b>12(d)</b>	 <p><i>There is a spare copy of these axes on page 19. If you wish any work on page 19 to be marked then you must cross through any work on these axes.</i></p>

<b>13(i)</b>	
<b>13(ii)</b>	

<b>13(iii)</b>	
<b>13(iv)</b>	
<b>13(v)</b>	

<b>14(a)(i)</b>	
<b>14(a)(ii)</b>	
<b>14(b)</b>	

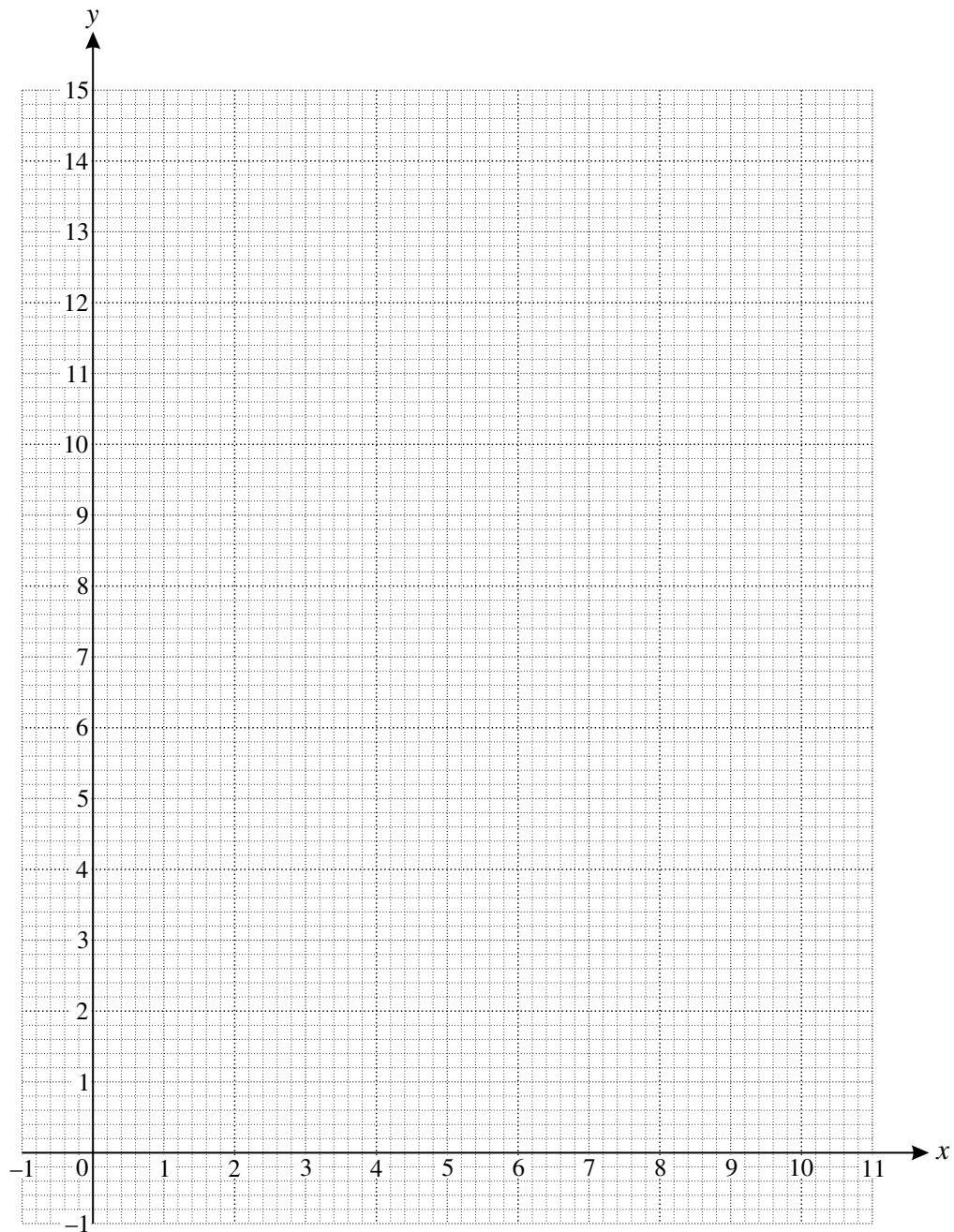


**14(c)**

*This is a spare copy of the grid for Question 8 (i).*

*Only write on this page if you want to replace your work on the grid on page 8.*

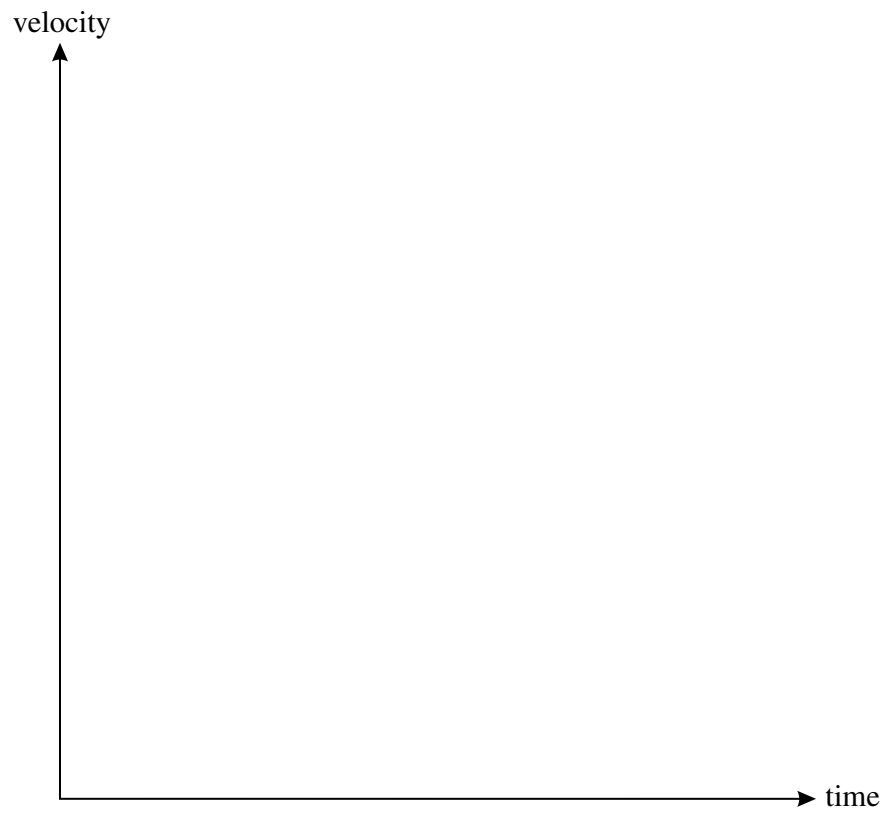
*If you do so, then you must cross through the work on the grid on page 8.*



*This is a spare copy of the axes for Question 12 (d).*

*Only write on this page if you want to replace your work on the axes on page 13.*

*If you do so, then you must cross through the work on the axes on page 13.*



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