

## Tuesday 14 June 2022 – Afternoon

### A Level Mathematics A

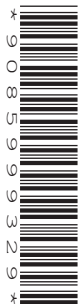
#### H240/02 Pure Mathematics and Statistics

#### Printed Answer Booklet

**Time allowed: 2 hours**

**You must have:**

- Question Paper H240/02 (inside this document)
- a scientific or graphical calculator



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

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Last name

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#### INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided in the **Printed Answer Booklet**. If you need extra space use the lined pages at the end of the Printed Answer Booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.
- Give non-exact numerical answers correct to **3** significant figures unless a different degree of accuracy is specified in the question.
- The acceleration due to gravity is denoted by  $g \text{ ms}^{-2}$ . When a numerical value is needed use  $g = 9.8$  unless a different value is specified in the question.

#### INFORMATION

- The total mark for this paper is **100**.
- The marks for each question are shown in brackets [ ].
- This document has **20** pages.

#### ADVICE

- Read each question carefully before you start your answer.

**Section A: Pure Mathematics**

<b>1(a)</b>	
<b>1(b)</b>	

<b>1(c)</b>	
<b>2(a)</b>	
<b>2(b)</b>	

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





5(a)


5(b)


6(a)	Graph	One-one function	Many-one function	A function that is its own inverse	Not a function
	Fig. 1.1				
	Fig. 1.2				
	Fig. 1.3				
	Fig. 1.4				
	Fig. 1.5				



7(a)


7(b)




**Section B: Statistics**

<b>9(a)</b>	
<b>9(b)(i)</b>	
<b>9(b)(ii)</b>	
<b>9(c)</b>	

<b>9(d)</b>	

<b>9(e)(i)</b>	$x$	Below 20	20 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 60	Above 60
	Probability obtained from histogram	0.027	0.147	0.153	0.187	0.193	0.147	0.133	0.013
	Probability obtained from Sam's model, $N(40, 100)$	0.023		0.150	0.191			0.136	0.023
	Probability obtained from Nina's model, $N(m, s^2)$	0.030		0.153	0.188			0.130	0.023

<b>9(e)(ii)</b>	

**DO NOT WRITE IN THIS SPACE**

<b>10(a)(i)</b>	
<b>10(a)(ii)</b>	
<b>10(a)(iii)</b>	
<b>10(b)(i)</b>	
<b>10(b)(ii)</b>	
<b>10(c)</b>	
<b>10(d)</b>	

<b>10(e)</b>	
<b>11</b>	





<b>12(b)</b>	

**DO NOT WRITE IN THIS SPACE**





**ADDITIONAL ANSWER SPACE**

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).




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