

Name \_\_\_\_\_

Class \_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_

### Materials

For this paper you must have:

- The booklet of formulae and statistical tables.
- You may use a graphics calculator.

### Instructions

- Use black ink or black ball-point pen. Pencil should be used for drawing.
- Answer **all** questions.
- You must answer each question in the space provided for that question. If you require extra space, use a supplementary answer book; do **not** use the space provided for a different question.
- Do not write outside the box around each page.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- The final answer to questions requiring the use of tables or calculators should normally be given to three significant figures.

Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
<b>Total</b>	

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.

### Advice

- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily have to use all the space provided.



**b** The values 12 and 43 are later considered to be outliers, and removed. Describe how this would affect the median and the interquartile range calculated in part **a**. **[2 marks]**

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

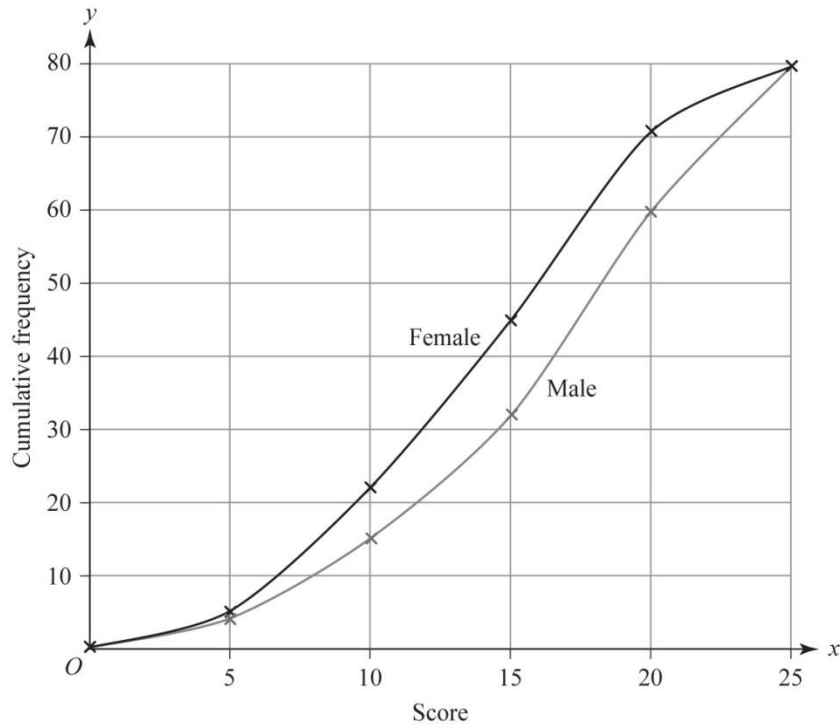
---

---

---

**Turn over for the next question**

2 The cumulative frequency graph shows the test scores of male and female students.



a Write down an estimate for the median score for females.

[1 mark]

---

b Calculate an estimate for the interquartile range for males.

[1 mark]

---

c Find an estimate for the score which 20% of males scored lower than.

[1 mark]

---

d Compare the scores of males and females in this test.

[2 marks]

---

---

---

---

3 The table shows the masses, in grams, of 120 field mice.

Mass, $m$ (g)	Frequency of mice
$16 \leq m < 17$	7
$17 \leq m < 18$	21
$18 \leq m < 19$	46
$19 \leq m < 20$	30
$20 \leq m < 21$	16

a Find estimates for

i The mean mass,

[2 marks]

---

---

---

---

---

---

---

---

---

---

ii The standard deviation of masses. You may use  $\sum fx^2 = 42\,212$

[2 marks]

---

---

---

---

---

---

---

---

---

---



- 4** The number of members of a sports club taking part in various activities are given in the two-way table below.

	<b>Cricket</b>	<b>Not cricket</b>	<b>Total</b>
<b>Hockey</b>	10	30	<b>40</b>
<b>Not Hockey</b>	35	25	<b>60</b>
<b>Total</b>	<b>45</b>	<b>55</b>	<b>100</b>

- a** Write down  $P(\text{Just hockey})$  **[1 mark]**

---

---

---

---

---

---

---

---

---

---

- b** Write down  $P(\text{Hockey or cricket})$  **[1 mark]**

---

---

---

---

---

---

---

---

---

---













7 Two forces,  $F_1 = 6\mathbf{i} + 5\mathbf{j}$  and  $F_2 = -4\mathbf{i} + \mathbf{j}$ , are applied to a particle A  
Find the magnitude and direction of the resultant force acting on A

**[5 marks]**

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

**Turn over for the next question**



A blank sheet of lined paper with horizontal ruling lines.

9 The distance,  $s$  km, of a small boat from a port at time  $t$  hours is given by

$$s = -2t^3 + t^2 + 6t, \text{ where } 0 \leq t \leq 2$$

a Given that the boat is moving in a straight line, find an expression for the velocity,  $v$ , of the boat at time  $t$

**[2 marks]**

---

---

---

---

---

---

---

---

---

---

---

---

b Write down the initial velocity of the boat in  $\text{km h}^{-1}$

**[1 mark]**

---

---

---

---

---

---







b Given that Q is initially 6 m below the pulley, find the time taken for Q to reach the pulley.

**[3 marks]**

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

c State the significance of the table being smooth in this pulley system.

**[1 mark]**

---

---

---

---

---

---

---

---

---

---

**End of section B**