Name		Class
		Doto
	<u> </u>	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.

## Information

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

## **Advice**

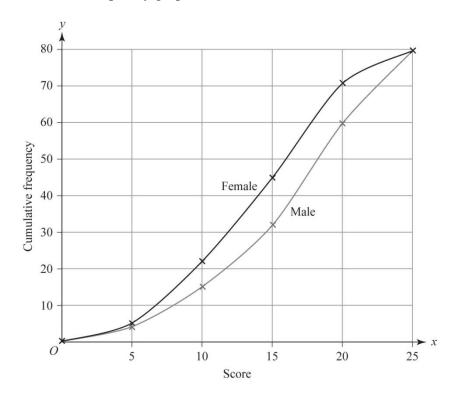
- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily have to use all the space provided.

Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total	

	A	Answer <b>all</b>	questions		tion A our answer	s in the spaces	provided.	
1	The Daily Maximum Gust (knots) in Cambourne for the 31 days of May 2015 is shown below.							
	31 20 28 12 38 14	29 21 23 17 29	23 33 28 21 22	17 37 29 29 28	25 21 17 43 23	38 22 16 30 21		
a	Find							
	ii The interq	uartile ran	ge.					[3 marks]

The values 12 and 43 this would affect the	are later considered to be outliers, and removed. Describe how median and the interquartile range calculated in part <b>a</b> .	[2 mai
	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
$16 \le m < 17$	7
$17 \le m < 18$	21
$18 \le m < 19$	46
$19 \le m < 20$	30
$20 \le m < 21$	16

Find estimates for		
The mean mass,		[2
<b>ii</b> The standard devia	ation of masses. You may use $\sum fx^2 = 42212$	[2
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A field mouse is chosen at random from the sample. Estimate the probability that he mouse has a mass greater than 19.5 g	[2
standard deviation of 1.2 g. Compare the masses of field mice to those of	[2
A survey of common house mice suggests their mean mass is 19.2 g with standard deviation of 1.2 g. Compare the masses of field mice to those of ommon house mice.	[2
standard deviation of 1.2 g. Compare the masses of field mice to those of	[2
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4 The number of members of a sports club taking part in various activities are given in the two-way table below.

	Cricket	Not cricket	Total
Hockey	10	30	40
Not Hockey	35	25	60
Total	45	55	100

a	Write down P(Just hockey)	[1 mark]
b	Write down P(Hockey or cricket)	[1 mark]

Are the events 'take part in cricket' a show your working.	 		[2

5	A researcher is asking people in a shopping centre whether they are likely to support a particular candidate in the local election. She asks the first 10 men and the first 10 women that pass by.	
a	What sampling method is the researcher using?	[1 mark]
	This particular candidate claims that he has 40% support in the town.	
b	If 5 of the people asked by the researcher said they would support the candidate, test at the 5% significance level the claim that the candidate has less than 40% support in the town.	[5 marks]

End of section A

	Section B	
	Answer all questions. Write your answers in the spaces provided.	
A a	A particle travelling at 144 km h <sup>-1</sup> is brought uniformly to rest over distance of 200 m.	
V	Vork out the acceleration of the particle as it is brought to rest.	[3 marks]
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b	Work out the time it takes for the particle to stop.	[2 marks]

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	

In this question, use  $g = 10 \text{ ms}^{-2}$  and give your final answer to an appropriate degree of accuracy.

A bulldozer of mass 500 kg is hoisted, inside a lift, to the second floor of a building site by a crane.

The lift is rising vertically.

The lift decelerates at a rate of 1.2 m s<sup>-2</sup>

Given that the lift has a mass of 50 kg, find the tension in the hoisting cable. [3 marks]



	en that the boat is moving in a straight line, find an expression for the	[2 max
velo	city, $v$ , of the boat at time $t$	[2 mar
Writ	te down the initial velocity of the boat in $km h^{-1}$	[1 ma
Writ		

Find the maximum distance from the boat to the	ne port.	[6

**10** A particle, P, rests on a smooth table and is connected by a light, inextensible string to a second particle, Q, which hangs down from a smooth pulley, as shown in the diagram. The mass of particle P is 2 kg and the mass of particle Q is w kg A horizontal force of 74.8 N is applied to P so that P accelerates horizontally, away from the edge of the table. In this question, use  $g = 9.8 \text{ m s}^{-2}$ Given that the acceleration of P is 2 m s<sup>-2</sup>, find w [4 marks]

b	Given that Q is initially 6 m below the pulley, find the time taken for Q to reach the pulley.	[3 marl
	State the significance of the table being smooth in this pulley system.	[1 ma
	End of section B	