Year 12 Mock Statistics Paper
21st April 2021

This exam has 4 questions, for a total of 30 marks.

- Print in "booklets" will allow all questions to be on the left hand side.

- If instead you print in 2-in-1 settings, print the second page up to the last page first, then print the first page separately.

Question	Marks	Score
1	4	
2	5	
3	7	
4	14	
Total:	30	

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Last updated: 10th February 2023

1. Indiana records the amount of rainfall, in mm, at her school, each day for a week. The results are given below.

$$2.8 \qquad 5.6 \qquad 2.3 \qquad 9.4 \qquad 0.0 \qquad 0.5 \qquad 1.8$$

Yasmin then records the amount of rainfall, x mm , at her school each day for the following 21 days. The results for the 21 days are summarised below.

$$\Sigma x = 84.6$$

(a) Calculate the mean amount of rainfall during the whole 28 days.

(2)

Indiana realises that she has transposed two of her figures. The number 9.4 should have been 4.9 and the number 0.5 should have been 5.0.
Indiana corrects these figures.

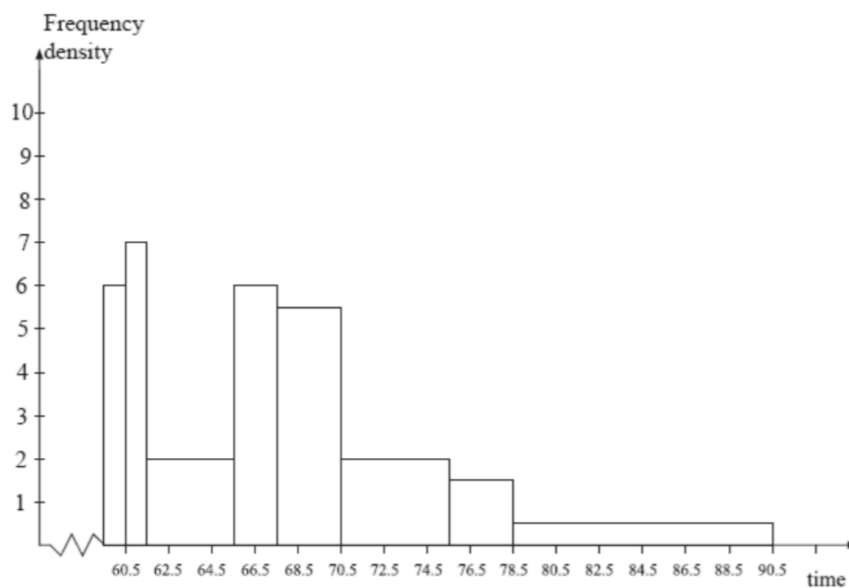(b) State, giving your reason, the effect this will have on the mean.

(2)

Question 1 continued

(Total for Question 1 is 4 marks)

2.

Frequency density

Figure 1

Figure 1 shows the histogram of the time taken, to the nearest minute, for 140 runners to complete a fun run.

Calculate the numbers of runners who took between 78.5 and 90.5 minutes to complete the fun run.

(5)

Question 2 continued

(Total for Question 2 is 5 marks)

3. In a game, a player can score 1, 2, 3, 4 or 5 points each time the game is played.

The random variable, X, representing the player's score, has the following probability distribution where a, b and c are constants.

x	1	2	3	4	5
$P(X = x)$	a	b	c	0.05	0.1

The probability of scoring less than 3 points is twice the probability of scoring at least 3 points.

Each game played is independent of previous games played.

Rayan plays the game twice and adds the two scores together to get a total.

Calculate the probability that the total is 8 points.

(7)

Question 3 continued

(Total for Question 3 is 7 marks)

4. Darya owns a drug company. He claims that 75% of patients suffering from depression recover when treated with a new drug.

A random sample of 10 patients with depression is taken from a doctor's records.

(a) Write down a suitable distribution to model the number of patients in this sample who recover when treated with the new drug.

(2)

Given that Darya's claim is correct,

(b) find the probability that the treatment will be successful for exactly 6 patients.

(2)

A doctor, Javeria, believes that the claim is incorrect and the percentage who will recover is lower.

From her records she took a random sample of 20 patients who had been treated with the new drug.

She found that 13 had recovered.

(c) Stating your hypothesis clearly, test, at the 5% level of significance, Javaria's belief.

(6)

(d) From a sample size of 20, find the greatest number of patients who need to recover from the test in part(c) to be significant at the 1% level.

(4)

(Total for Question 4 is 14 marks)

Total for paper is 30 marks