

1. The histogram in Figure 1 shows the time, to the nearest minute, that a random sample of 100 motorists were delayed by roadworks on a stretch of motorway.

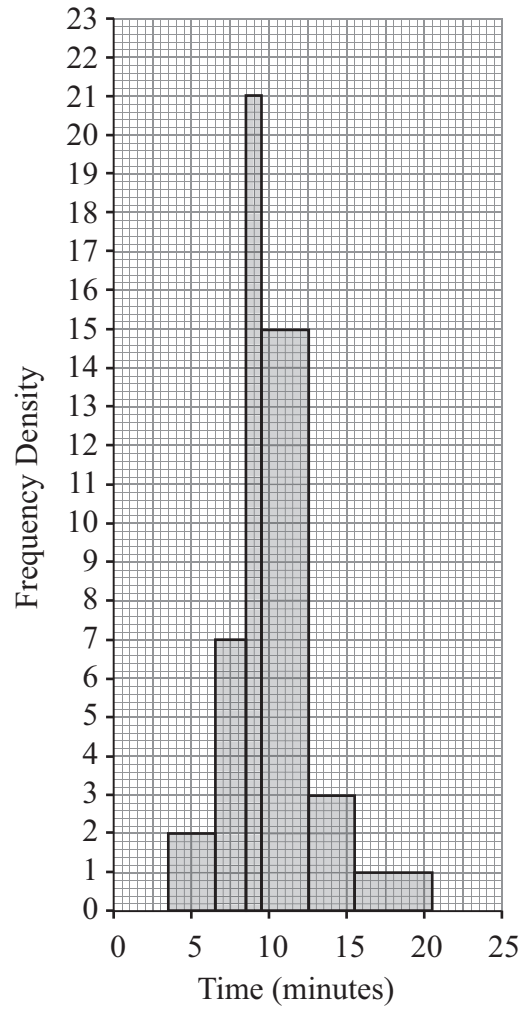


Figure 1

(a) Complete the table.

Delay (minutes)	Number of motorists
4 – 6	6
7 – 8	
9	21
10 – 12	45
13 – 15	9
16 – 20	

(2)

(b) Estimate the number of motorists who were delayed between 8.5 and 13.5 minutes by the roadworks.

(2)



(Total 4 marks)



Find

- $$(b) \quad P(B) \tag{4}$$

- $$(c) \quad P(A' \cap B) \tag{2}$$

- $$(d) \quad P(B'|A) \tag{2}$$

x	2	3	4	6
$P(X=x)$	$\frac{5}{21}$	$\frac{2k}{21}$	$\frac{7}{21}$	$\frac{k}{21}$

(a) Show that $k = 3$

(2)

(b) F(3)

(1)

(c) $E(X)$

(2)

(d) $E(X^2)$

(2)

(e) $\text{Var}(7X - 5)$

(4)



Mark	Totals	Key	(3 6 means 36)
3	6 9 9	(3)	
4	0 1 2 2 3 4	(6)	
4	5 6 6 6 8	(5)	
5	0 2 3 3 4 4	(6)	
5	5 5 6 7 7 9	(6)	
6	0 0 0 0 1 3 4 4 4	(9)	
6	5 5 6 7 8 9	(6)	
7	1 2 3 3	(4)	

- (a) Write down the modal mark of these students. (1)
- (b) Find the values of the lower quartile, the median and the upper quartile. (3)

For these students $\sum x = 2497$ and $\sum x^2 = 143\,369$

- (c) Find the mean and the standard deviation of the marks of these students. (3)
- (d) Describe the skewness of the marks of these students, giving a reason for your answer. (2)

The mean and standard deviation of the marks of all the students who sat the examination were 55 and 10 respectively. The examiners decided that the total mark of each student should be scaled by subtracting 5 marks and then reducing the mark by a further 10 %.

- (e) Find the mean and standard deviation of the scaled marks of all the students. (4)

65 run
48 swim
60 cycle
40 run and swim
30 swim and cycle
35 run and cycle
25 do all three

- Find the probability that a randomly selected person from the survey

- (c) swims but does not run, (2)

- (d) takes at least two of these types of exercise. (2)

Jason is one of the above group.

Given that Jason runs,

- (e) find the probability that he swims but does not cycle. (3)



(3)

(4)

(c) Find the probability that only one of the jars contains between 232 grams and w grams of coffee.

(3)

Question 7 continued

(Total 10 marks)

Q7

TOTAL FOR PAPER: 75 MARKS

END

