

10.5 Solutions (10.4 Exercise)

A-level Statistics : Year 1  
Partitioning Data

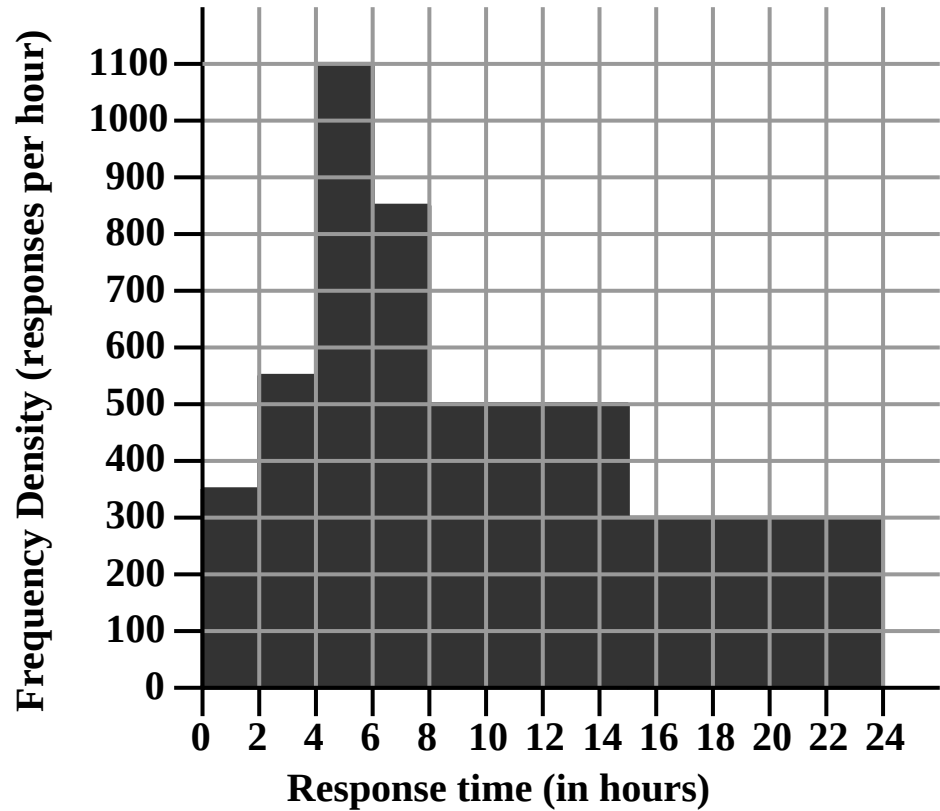
Answer 1

- ( i )     3100  
( ii )

| Response time<br>(hours) | Number of questionnaires<br>Frequency = Area | Width | Height |
|--------------------------|----------------------------------------------|-------|--------|
| $0 \leq h < 2$           | 700                                          | 2     | 350    |
| $2 \leq h < 4$           | 1100                                         | 2     | 550    |
| $4 \leq h < 6$           | 2200                                         | 2     | 1100   |
| $6 \leq h < 8$           | 1700                                         | 2     | 850    |
| $8 \leq h < 15$          | 3500                                         | 7     | 500    |
| $15 \leq h < 24$         | 2700                                         | 9     | 300    |

[ 2 marks ]

A histogram to show response times to an emailed survey questionnaire



- Suitable title [ 1 mark ]  
An x-axis that is numbered, labelled, and with the units clearly stated [ 1 mark ]  
A y-axis that is numbered, labelled, and with the units clearly stated [ 1 mark ]  
For each bar that is of the correct width and height. [ 3 marks]

Total : 8 marks

## Answer 2

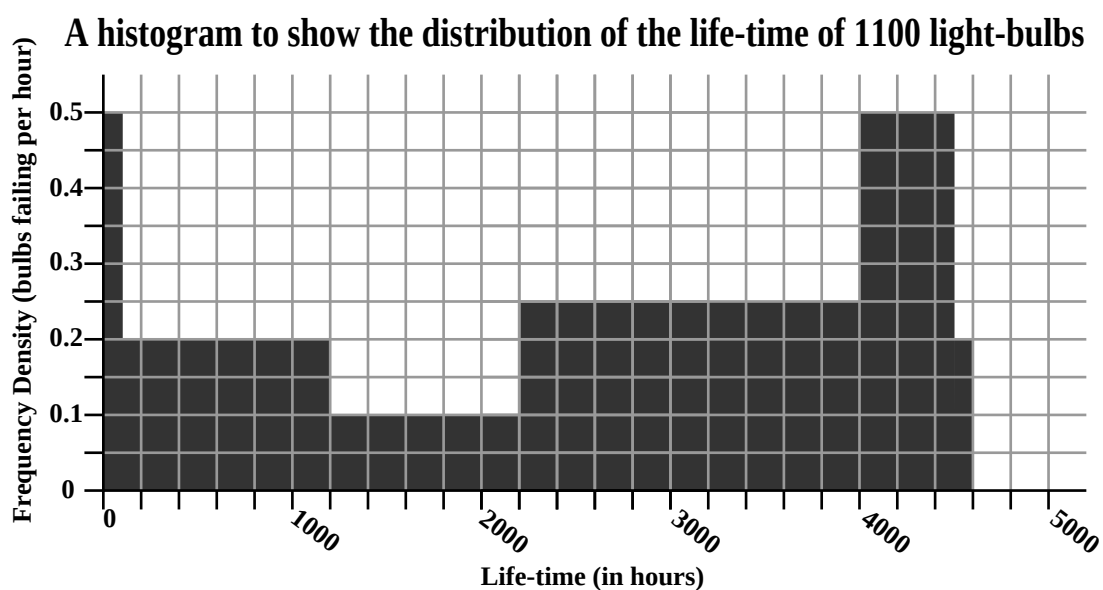
| Car speed<br>(miles per hour, mph) | Number of cars<br>Frequency = Area | Width | Height |
|------------------------------------|------------------------------------|-------|--------|
| $0 \leq m < 20$                    | 100                                | 20    | 5      |
| $20 \leq m < 28$                   | 160                                | 8     | 20     |
| $28 \leq m < 32$                   | 400                                | 4     | 100    |
| $32 \leq m < 36$                   | 160                                | 4     | 40     |
| $36 \leq m < 48$                   | 180                                | 12    | 15     |
| $48 \leq m < 56$                   | 40                                 | 8     | 5      |

(ii) 1040 cars

(iii)  $\frac{400}{1040} \times 100 = 38.5\%$

## Answer 3

| Bulb lifetime<br>(in hours) | Number of bulbs<br>Frequency | Width | Height |
|-----------------------------|------------------------------|-------|--------|
| $0 \leq t < 100$            | 50                           | 100   | 0.5    |
| $100 \leq t < 1000$         | 180                          | 900   | 0.2    |
| $1000 \leq t < 2000$        | 100                          | 1000  | 0.1    |
| $2000 \leq t < 4000$        | 500                          | 2000  | 0.25   |
| $4000 \leq t < 4500$        | 250                          | 500   | 0.5    |
| $4500 \leq t < 4600$        | 20                           | 100   | 0.2    |



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In October 2020, Shrewsbury School was voted “**Independent School of the Year 2020**”

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Teachers may obtain detailed worked solutions to the exercises by email from [mhh@shrewsbury.org.uk](mailto:mhh@shrewsbury.org.uk)