11.2 Solutions (Revision Exercise)

GCSE Mathematics
Statistics II : Handelling and Processing Data

Answer 1

(a) Put the data in order.

12	15	18	18	19	21	21	22	23	23
23	24	25	25	27	28	28	30	30	

[2 marks]

(b) $\frac{19 + 1}{4} = 5^{th}$

(i) LQ is 5^{th} from left which is 19

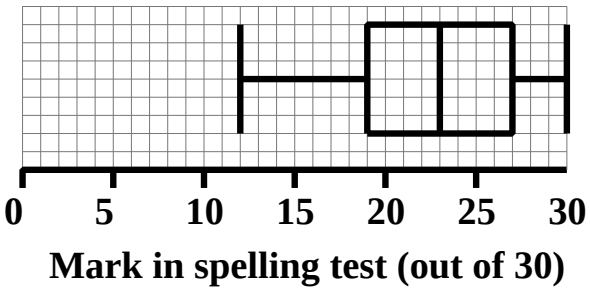
(ii) Median is 10^{th} from either end which is 23

(iii) UQ is 5^{th} from right which is 27

(iv) $\therefore$ IQR = 8

[4 marks]

(c)



[5 marks]

Answer 2

(a)

Number of stars	*	**	***	****	*****
Frequency	1	2	8	4	5
Contribution to Total	1	4	24	16	25

[3 marks]

(b) $\text{mean} = \frac{1 + 4 + 24 + 16 + 25}{20}$

$= 3.5\ stars$

[3 marks]

Answer 3

(a) $\frac{29}{35} \times 100 = 83\%$ pass

[2 marks]

(b) $\frac{35 + 1}{2} = 18^{th}$ piece of data which is 2 minor errors

[2 marks]

Answer 4

(a) The modal class is $60 < w \leqslant 70$

[1 mark]

(b)

Weight (w grams)	Number of peaches	Mid Interval	Contribution to Total
$40 < w \leqslant 50$	23	45	1035
$50 < w \leqslant 60$	41	55	2255
$60 < w \leqslant 70$	50	65	3250
$70 < w \leqslant 80$	20	75	1500
$80 < w \leqslant 90$	16	85	1360

$$mean = \frac{1035 + 2255 + 3250 + 1500 + 1360}{150}$$

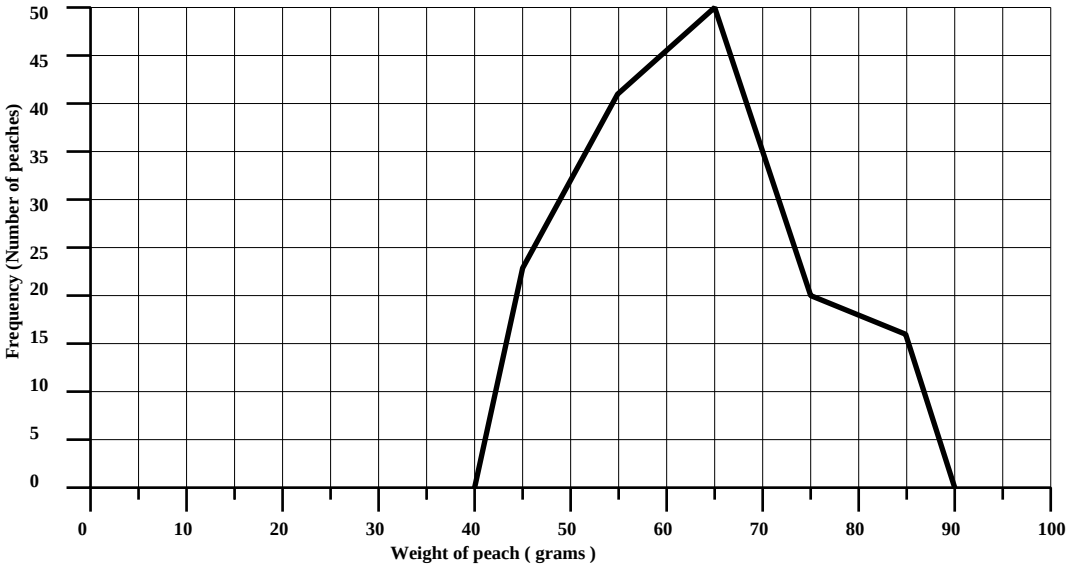
$$= \frac{9400}{150}$$

$$= 63 \text{ grams}$$

[4 marks]

(c)

A frequency polygon to show to distribution of the weights of 150 peaches



[4 marks]

Answer 5

(a)

Mark (*m* percent)	Frequency	Cumulative Frequency
$1 \leqslant m \leqslant 10$	0	0
$11 \leqslant m \leqslant 20$	7	7
$21 \leqslant m \leqslant 30$	14	21
$31 \leqslant m \leqslant 40$	18	39
$41 \leqslant m \leqslant 50$	33	72
$51 \leqslant m \leqslant 60$	36	108
$61 \leqslant m \leqslant 70$	43	151
$71 \leqslant m \leqslant 80$	28	179
$81 \leqslant m \leqslant 90$	8	187
$91 \leqslant m \leqslant 100$	5	192

[3 marks]

(b) 192 candidates

[1 mark]

(c) 72 scored 50% or less

[1 mark]

(d) 84 scored more than 60%

[2 marks]

(e) See graph on the following page

[3 marks]

(f) ***From the graph,***

(i) LQ is 43

[1 mark]

(ii) Median is 57

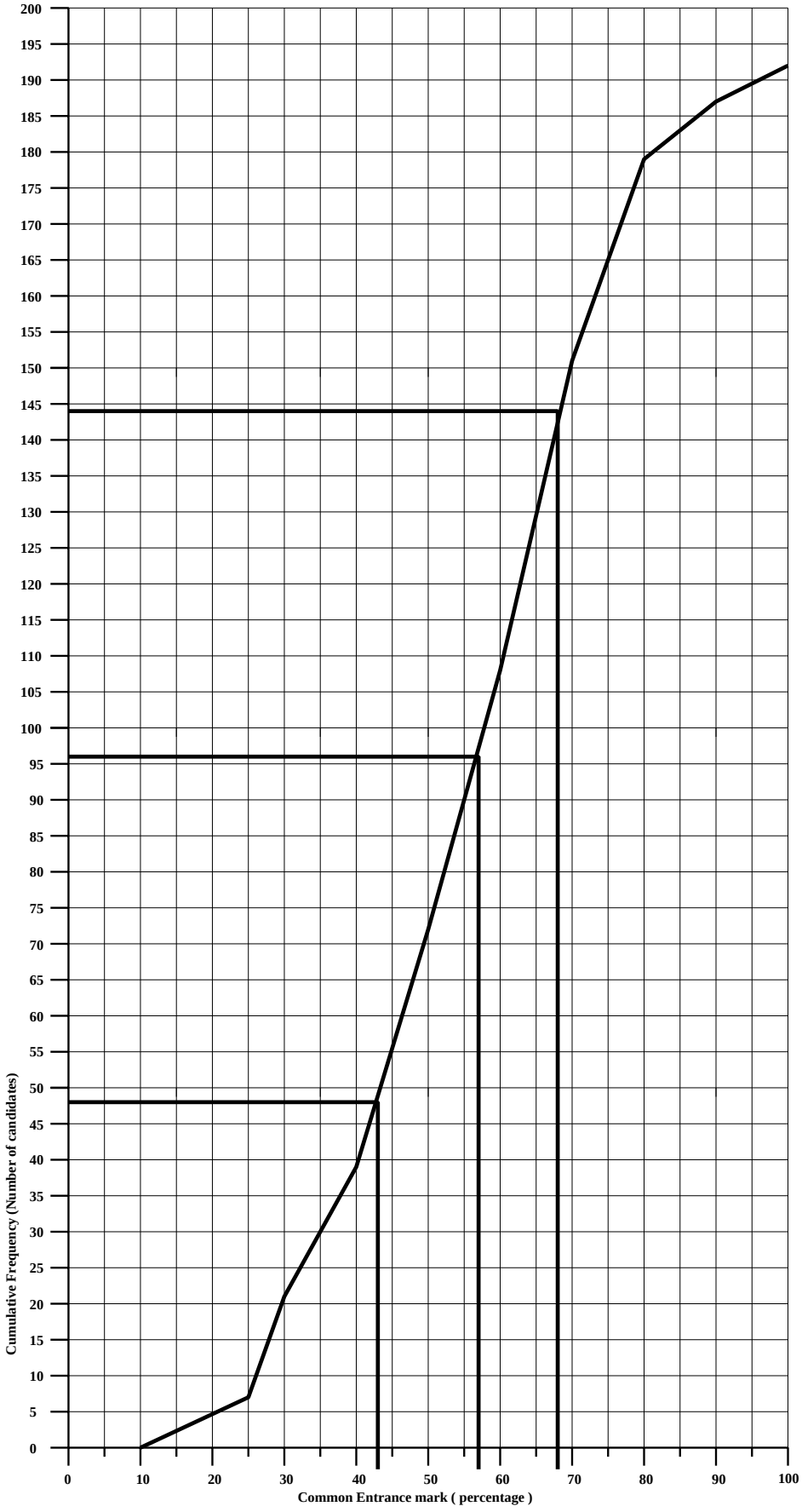
[1 mark]

(iii) UQ is 72

[1 mark]

(iv) IQR is 28

[1 mark]


Cumulative Frequency (Number of candidates)
200
195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
0
10
20
30
40
50
60
70
80
90
100
Common Entrance mark (percentage)

Answer 6

(a)

Number of hours	Frequency	Mid Interval	Contribution to Total
$5 \leqslant h < 10$	3	7.5	22.5
$10 \leqslant h < 15$	2	12.5	25.0
$15 \leqslant h < 20$	5	17.5	87.5
$20 \leqslant h < 25$	9	22.5	202.5
$25 \leqslant h < 30$	8	27.5	220.0
$30 \leqslant h < 35$	4	32.5	130.0
$35 \leqslant h < 40$	3	37.5	112.5

[2 marks]

(b)

$$\text{mean} = \frac{22.5 + 25 + 87.5 + 202.5 + 220 + 130 + 112.5}{3 + 2 + 5 + 9 + 8 + 4 + 3}$$

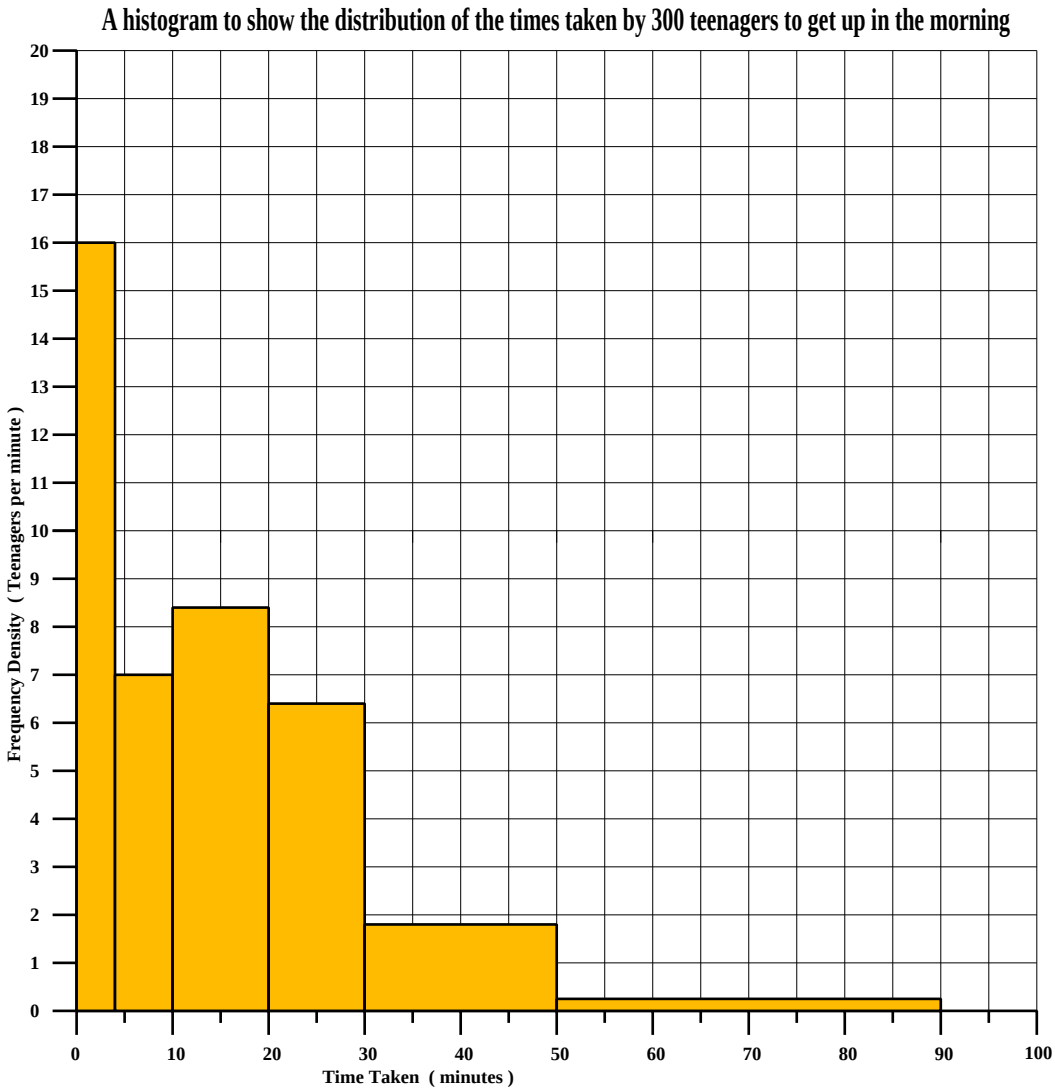
$$= \frac{800}{34}$$

$$= 23.5 \text{ hours}$$

[4 marks]

Answer 7

Time Taken (t minutes)	Frequency	Width	Height
$0 < t \leqslant 4$	64	4	16
$4 < t \leqslant 10$	42	6	7
$10 < t \leqslant 20$	84	10	8.4
$20 < t \leqslant 30$	64	10	6.4
$30 < t \leqslant 50$	36	20	1.8
$50 < t \leqslant 90$	10	40	0.25



[10 marks]