Cumulative Frequency Mastery

Practice Worksheet

I DO

The grouped frequency table shows information about the weekly wages of 80 workers.

(a) Complete the cumulative frequency table.

Weekly wage (£x)	Frequency
$100 < x \leq 200$	8
$200 < x \leq 300$	15
$300 < x \leq 400$	37
$400 < x \leq 500$	10
$500 < x \leq 600$	7
$600 < x \leq 700$	3

Weekly wage (£x)	Cumulative Freq.
$100 < x \leq 200$	
$100 < x \leq 300$	
$100 < x \leq 400$	
$100 < x \leq 500$	
$100 < x \leq 600$	
$100 < x \leq 700$	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median wage.

.....

(1)

(d) Use your graph to find an estimate for the interquartile range.

.....

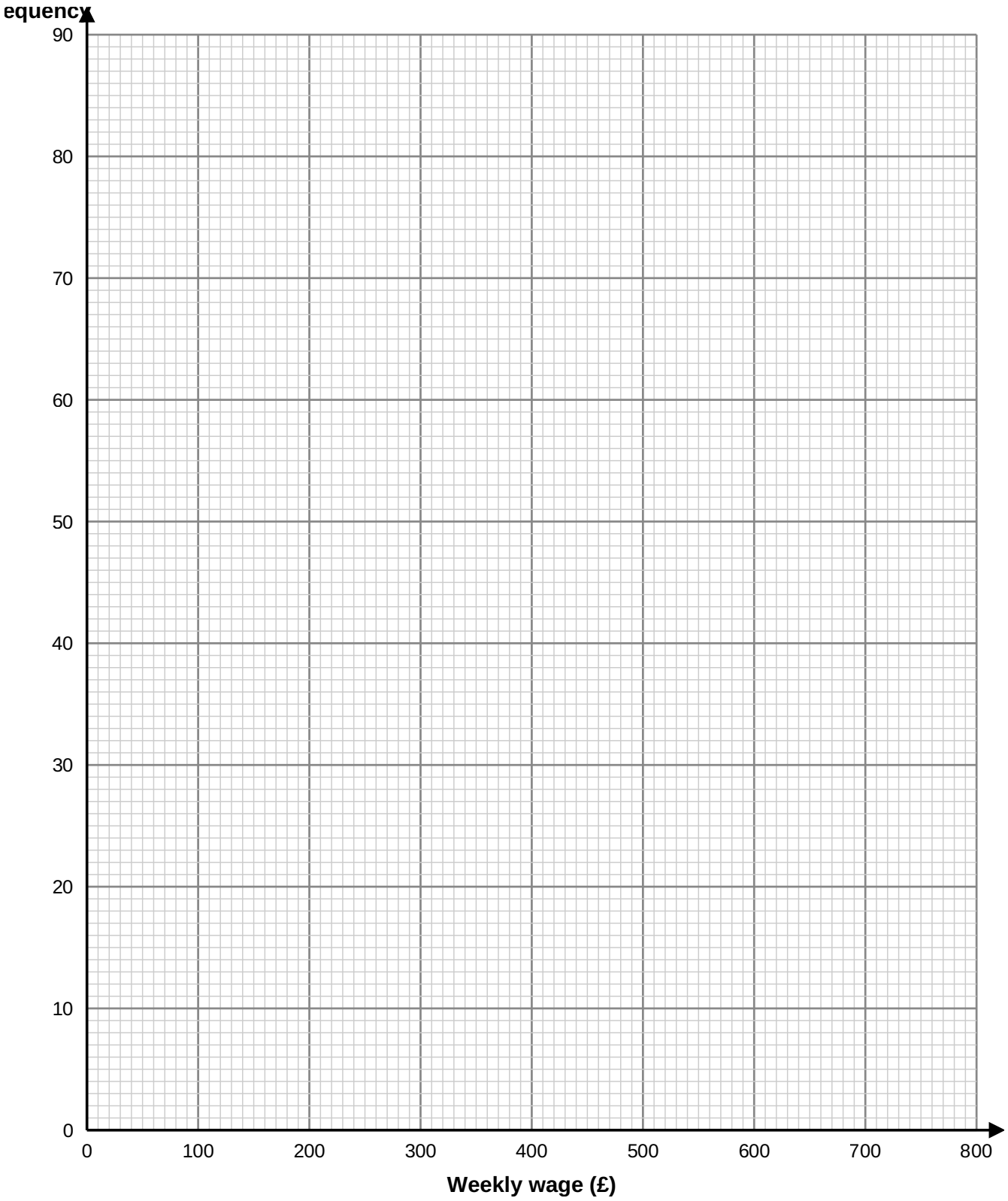
(2)

(e) Use your graph to find an estimate for the number of workers with a weekly wage of more than £430

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(2)

I DO GRAPH


equency
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
Weekly wage (£)

Cumulative Frequency Mastery

Practice Worksheet

WE DO

The grouped frequency table shows information about the weekly rent of 80 holiday flats in Dawlish.

(a) Complete the cumulative frequency table.

Weekly rent (£r)	Frequency
300 < r ≤ 400	6
400 < r ≤ 500	18
500 < r ≤ 600	30
600 < r ≤ 700	14
700 < r ≤ 800	8
800 < r ≤ 900	4

Weekly rent (£r)	Cumulative Freq.
300 < r ≤ 400	
300 < r ≤ 500	
300 < r ≤ 600	
300 < r ≤ 700	
300 < r ≤ 800	
300 < r ≤ 900	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median rent.

.....

(1)

(d) Use your graph to find an estimate for the interquartile range.

.....

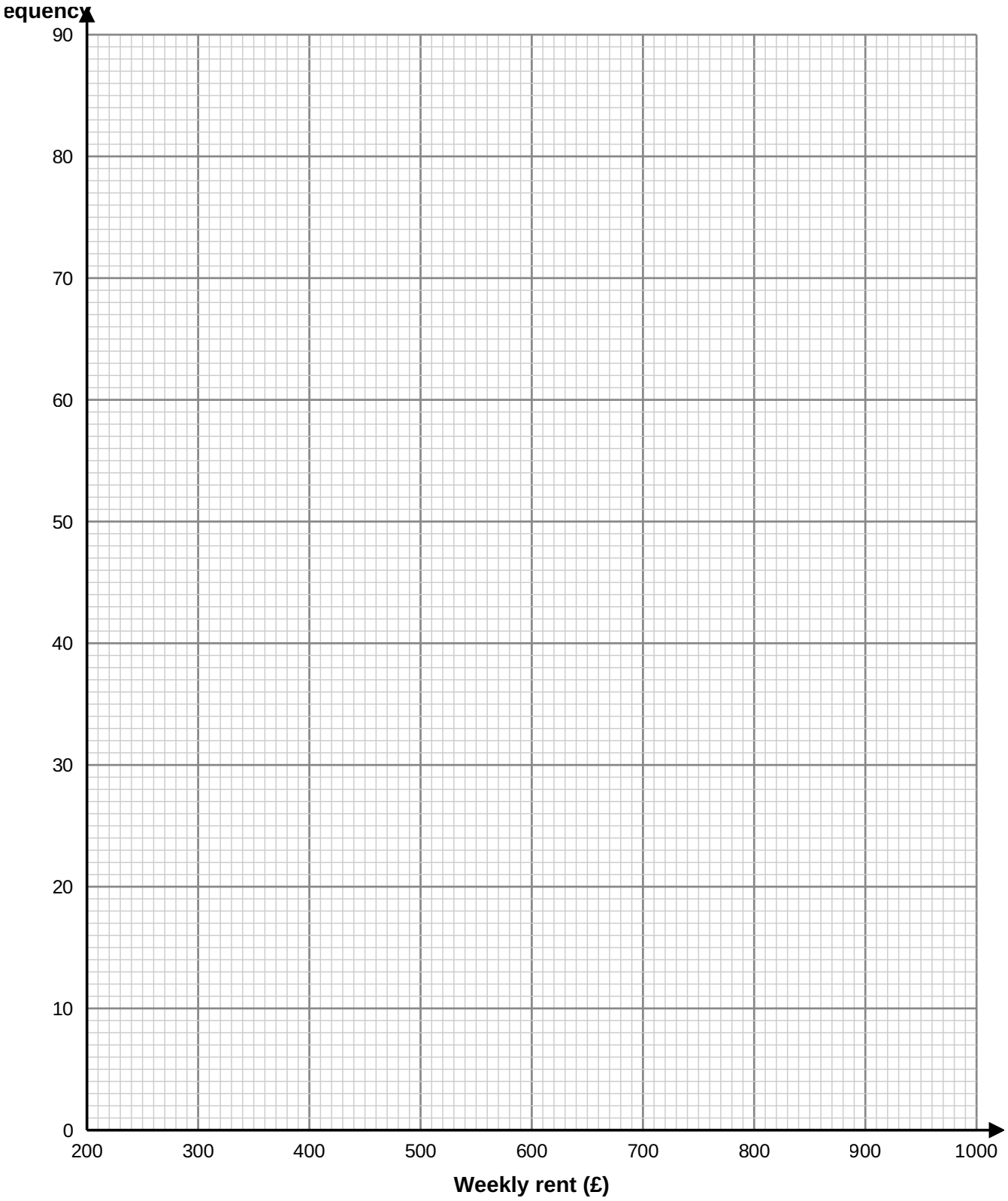
(2)

(e) Use your graph to find an estimate for the number of flats with a weekly rent of more than £650

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(2)

WE DO GRAPH


equency
90
80
70
60
50
40
30
20
10
0
200
300
400
500
600
700
800
900
1000
Weekly rent (£)

Cumulative Frequency Mastery

Practice Worksheet

YOU DO 1

The grouped frequency table shows information about the time taken by 100 runners to complete a 10k race.

(a) Complete the cumulative frequency table.

Time (t minutes)	**Frequency**
$30 < t \leq 40$	5
$40 < t \leq 50$	15
$50 < t \leq 60$	45
$60 < t \leq 70$	20
$70 < t \leq 80$	10
$80 < t \leq 90$	5

Time (t minutes)	**Cumulative Freq.**
$30 < t \leq 40$	
$30 < t \leq 50$	
$30 < t \leq 60$	
$30 < t \leq 70$	
$30 < t \leq 80$	
$30 < t \leq 90$	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median time.

.....

(1)

(d) Use your graph to find an estimate for the interquartile range.

.....

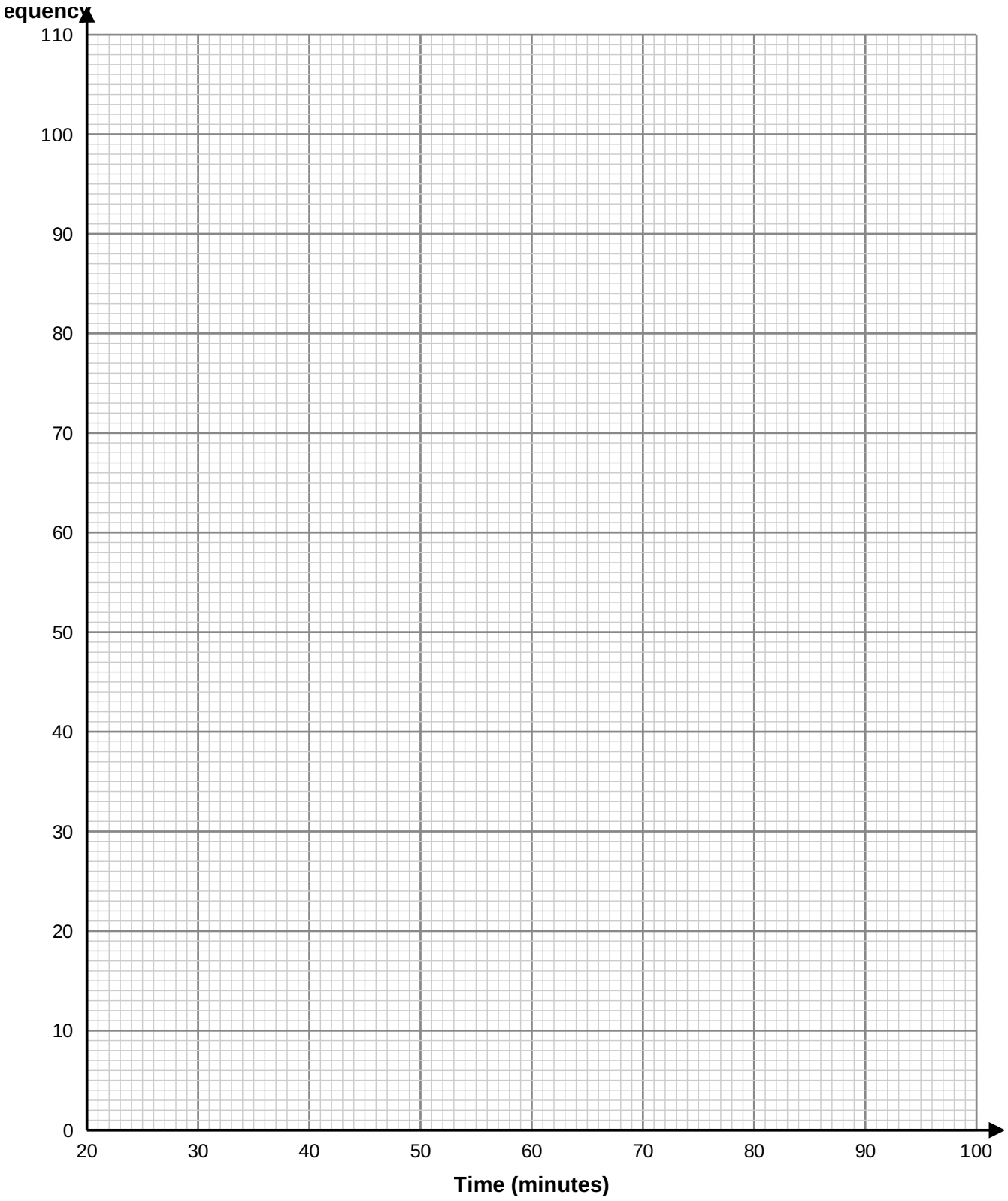
(2)

(e) Use your graph to find an estimate for the number of runners who took more than 65 minutes.

.....

(2)

YOU DO 1 GRAPH



Cumulative Frequency Mastery

Practice Worksheet

YOU DO 2

The grouped frequency table shows information about the mass of 120 apples picked from an orchard.

(a) Complete the cumulative frequency table.

Mass (*m* grams)	**Frequency**
$60 < m \leq 80$	8
$80 < m \leq 100$	22
$100 < m \leq 120$	50
$120 < m \leq 140$	24
$140 < m \leq 160$	12
$160 < m \leq 180$	4

Mass (*m* grams)	**Cumulative Freq.**
$60 < m \leq 80$	
$60 < m \leq 100$	
$60 < m \leq 120$	
$60 < m \leq 140$	
$60 < m \leq 160$	
$60 < m \leq 180$	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median mass.

.....

(1)

(d) Use your graph to find an estimate for the interquartile range.

.....

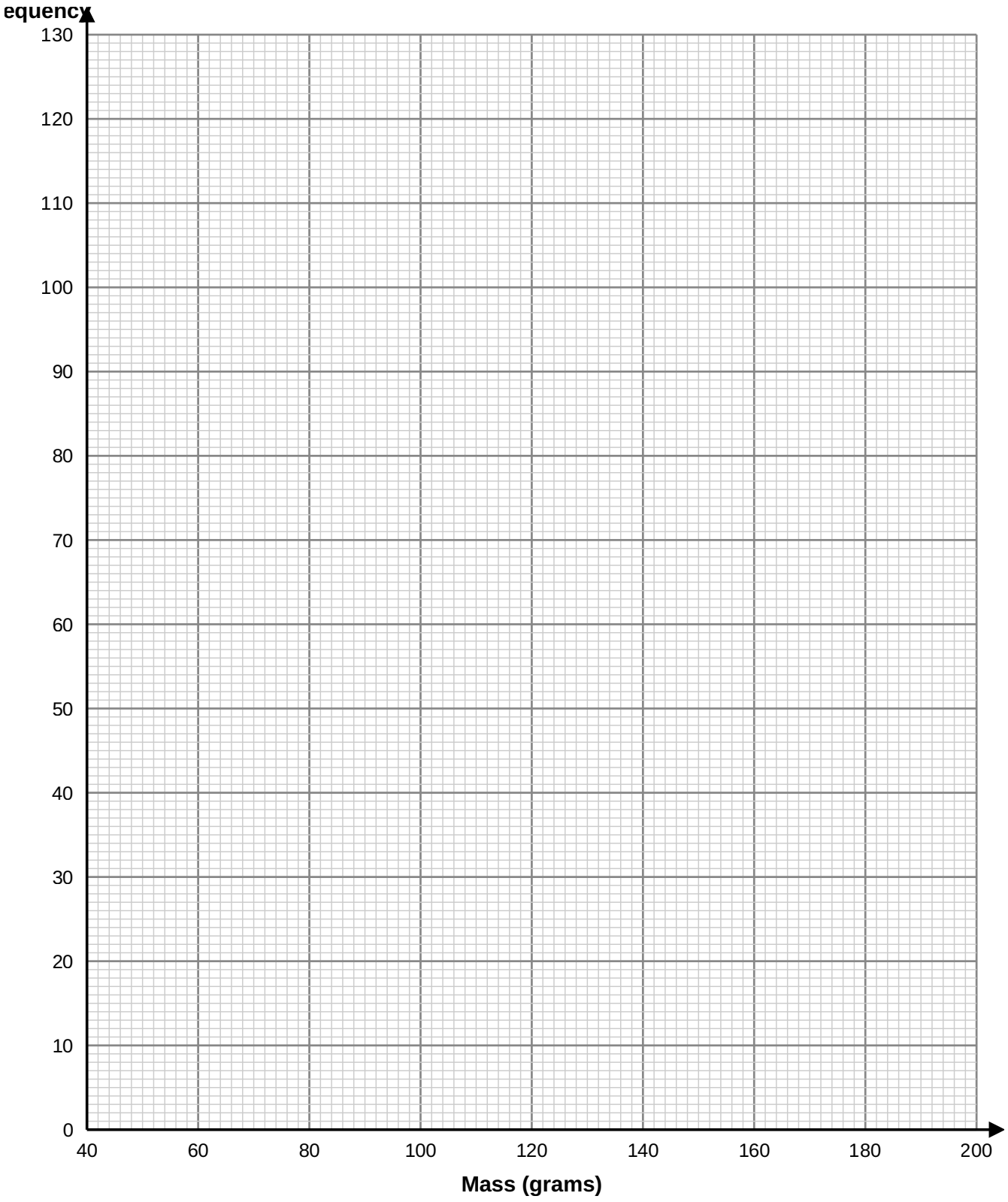
(2)

(e) Use your graph to find an estimate for the number of apples with a mass of more than 135g.

.....

(2)

YOU DO 2 GRAPH



Cumulative Frequency Mastery

Practice Worksheet

YOU DO 3

The grouped frequency table shows information about the distance travelled by 80 sales representatives in one week.

(a) Complete the cumulative frequency table.

Distance (d miles)	**Frequency**
$0 < d \leq 100$	6
$100 < d \leq 200$	14
$200 < d \leq 300$	30
$300 < d \leq 400$	18
$400 < d \leq 500$	8
$500 < d \leq 600$	4

Distance (d miles)	**Cumulative Freq.**
$0 < d \leq 100$	
$0 < d \leq 200$	
$0 < d \leq 300$	
$0 < d \leq 400$	
$0 < d \leq 500$	
$0 < d \leq 600$	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median distance.

.....

(1)

(d) Use your graph to find an estimate for the interquartile range.

.....

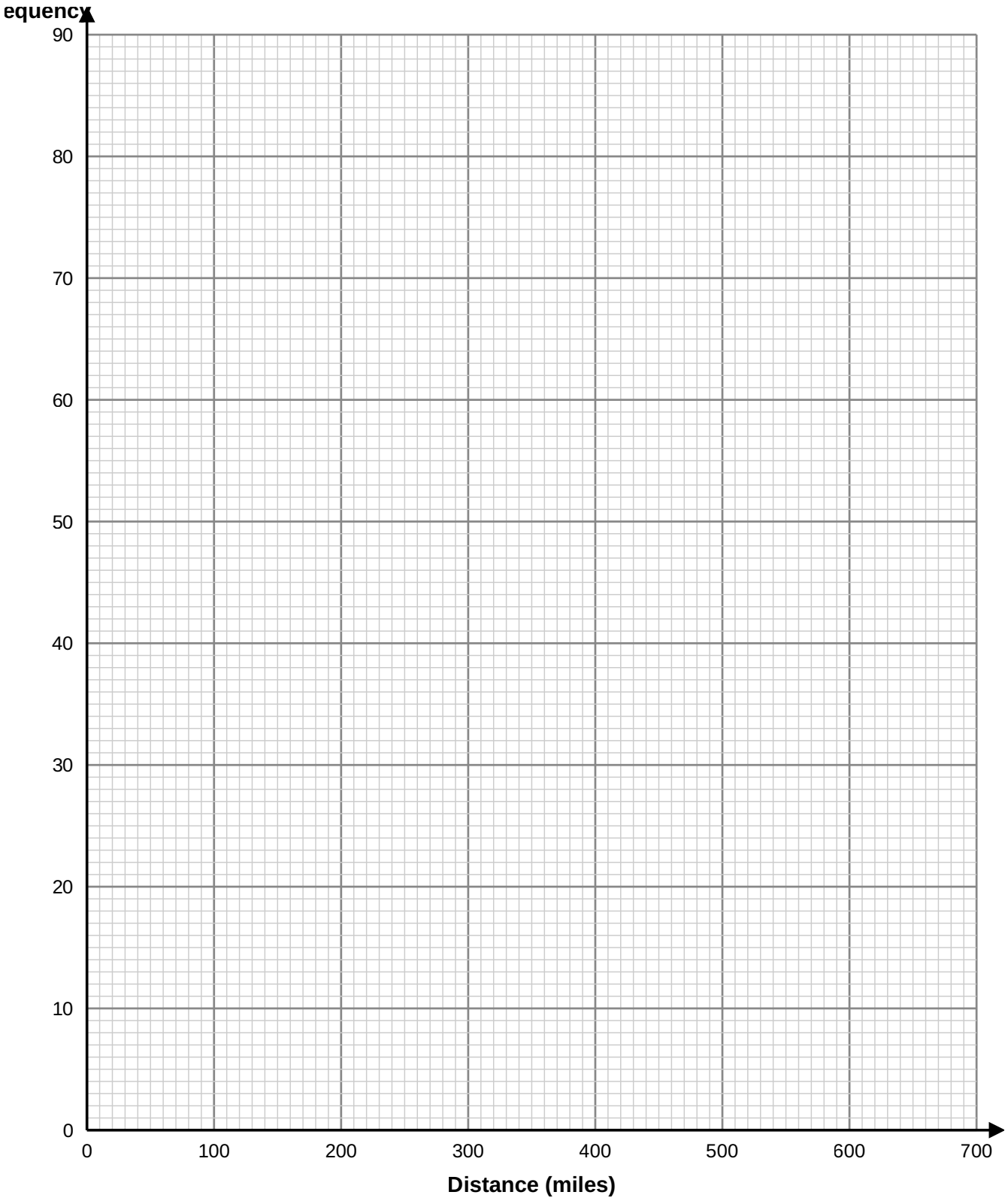
(2)

(e) Use your graph to find an estimate for the number of representatives who travelled more than 350 miles.

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(2)

YOU DO 3 GRAPH



Answers & Worked Solutions

I DO - ANSWERS

(a) Cumulative Frequencies: 8, 23, 60, 70, 77, 80

(b) Plot points at the **upper bound** of each class: (200, 8), (300, 23), (400, 60), (500, 70), (600, 77), (700, 80). Join with a smooth curve or line segments.

(c) Median (50% of 80 = 40.0th value): Draw line across from 40.0 on y-axis, down to x-axis. Approx **£346**.

(d) IQR: Upper Quartile (60.0th value) − Lower Quartile (20.0th value). Approx **£400 − £280 = £120**.

(e) Draw line up from threshold on x-axis, across to y-axis. Subtract this CF from total (80). Approx **17 workers**.

WE DO - ANSWERS

(a) Cumulative Frequencies: 6, 24, 54, 68, 76, 80

(b) Plot points at the **upper bound** of each class: (400, 6), (500, 24), (600, 54), (700, 68), (800, 76), (900, 80). Join with a smooth curve or line segments.

(c) Median (50% of 80 = 40.0th value): Draw line across from 40.0 on y-axis, down to x-axis. Approx **£553**.

(d) IQR: Upper Quartile (60.0th value) − Lower Quartile (20.0th value). Approx **£643 − £478 = £165**.

(e) Draw line up from threshold on x-axis, across to y-axis. Subtract this CF from total (80). Approx **19 flats**.

YOU DO 1 - ANSWERS

(a) Cumulative Frequencies: 5, 20, 65, 85, 95, 100

(b) Plot points at the **upper bound** of each class: (40, 5), (50, 20), (60, 65), (70, 85), (80, 95), (90, 100). Join with a smooth curve or line segments.

(c) Median (50% of 100 = 50.0th value): Draw line across from 50.0 on y-axis, down to x-axis. Approx **56.7 mins**.

(d) IQR: Upper Quartile (75.0th value) − Lower Quartile (25.0th value). Approx **65 − 48.9 = 16.1 mins**.

(e) Draw line up from threshold on x-axis, across to y-axis. Subtract this CF from total (100). Approx **25 runners**.

YOU DO 2 - ANSWERS

(a) Cumulative Frequencies: 8, 30, 80, 104, 116, 120

(b) Plot points at the **upper bound** of each class: (80, 8), (100, 30), (120, 80), (140, 104), (160, 116), (180, 120). Join with a smooth curve or line segments.

(c) Median (50% of 120 = 60.0th value): Draw line across from 60.0 on y-axis, down to x-axis. Approx **112 g**.

(d) IQR: Upper Quartile (90.0th value) − Lower Quartile (30.0th value). Approx **128.3 − 98.2 = 30.1 g**.

(e) Draw line up from threshold on x-axis, across to y-axis. Subtract this CF from total (120). Approx **22 apples**.

YOU DO 3 - ANSWERS

(a) Cumulative Frequencies: 6, 20, 50, 68, 76, 80

(b) Plot points at the **upper bound** of each class: (100, 6), (200, 20), (300, 50), (400, 68), (500, 76), (600, 80). Join with a smooth curve or line segments.

(c) Median (50% of 80 = 40.0th value): Draw line across from 40.0 on y-axis, down to x-axis. Approx **267 miles**.

(d) IQR: Upper Quartile (60.0th value) − Lower Quartile (20.0th value). Approx **356 − 171 = 185 miles**.

(e) Draw line up from threshold on x-axis, across to y-axis. Subtract this CF from total (80). Approx **21 reps**.