Cumulative frequency graphs

ANSWERS

1

The times 30 people took to solve a puzzle. Complete the table.
How many are 30 seconds or less?

Time, t (seconds)	Frequency	Cumulative frequency
$0 < t \leq 10$	5	**5**
$10 < t \leq 20$	8	**13**
$20 < t \leq 30$	11	*24*
$30 < t \leq 40$	6	*30*

Answer *24*

2

The lengths of 32 leaves.
Complete the table. How many are 8 cm or less?

Length, l (cm)	Frequency	Cumulative frequency
$4 < l \leq 6$	6	**6**
$6 < l \leq 8$	10	*16*
$8 < l \leq 10$	12	*28*
$10 < l \leq 12$	4	*32*

Answer *16*

3

The ages of 36 people at a gig.
Complete the table. How many are 40 years old or less?

Age (years)	Frequency	Cumulative frequency
$20 < a \leq 30$	9	*9*
$30 < a \leq 40$	14	*23*
$40 < a \leq 50$	8	*31*
$50 < a \leq 60$	5	*36*

Answer *23*

4

The masses of 40 apples.
Complete the table. How many are 160 g or less?

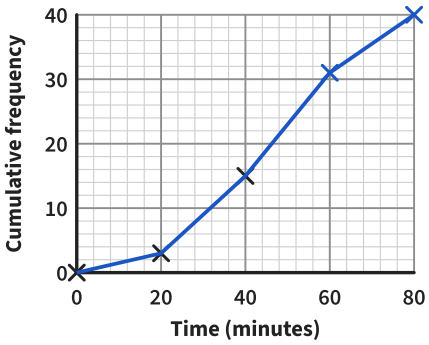
Mass, m (g)	Frequency	Cumulative frequency
$100 < m \leq 120$	4	*4*
$120 < m \leq 140$	7	*11*
$140 < m \leq 160$	13	*24*
$160 < m \leq 180$	10	*34*
$180 < m \leq 200$	6	*40*

Answer *24*

5

The time 40 students spent on homework.
Complete the table. Draw the cumulative frequency graph.

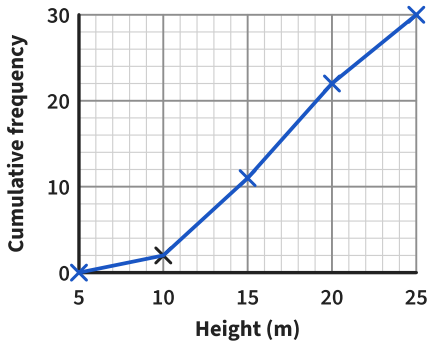
Time, t (minutes)	Cumulative frequency	Point
$0 < t \leq 20$	3	**(20, 3)**
$20 < t \leq 40$	15	**(40, 15)**
$40 < t \leq 60$	31	*(60, 31)*
$60 < t \leq 80$	40	*(80, 40)*



6

The heights of 30 trees.
Complete the table. Draw the cumulative frequency graph.

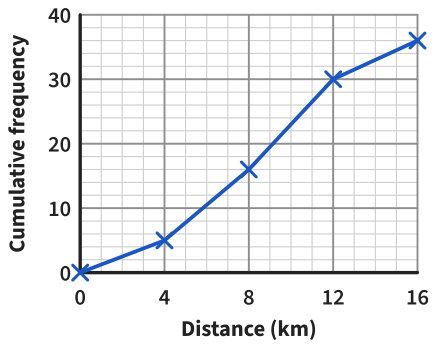
Height, h (m)	Cumulative frequency	Point
$5 < h \leq 10$	2	**(10, 2)**
$10 < h \leq 15$	11	*(15, 11)*
$15 < h \leq 20$	22	*(20, 22)*
$20 < h \leq 25$	30	*(25, 30)*



7 *Notice the change!*

How far 36 people live from school.
Complete the table. Draw the cumulative frequency graph.

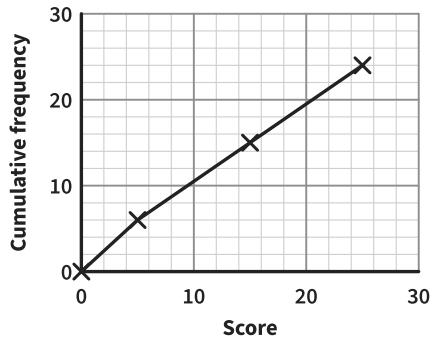
Distance, d (km)	Freq.	Cumulative frequency	Point
$0 < d \leq 4$	5	*5*	*(4, 5)*
$4 < d \leq 8$	11	*16*	*(8, 16)*
$8 < d \leq 12$	14	*30*	*(12, 30)*
$12 < d \leq 16$	6	*36*	*(16, 36)*



8

Leo draws this graph for the table.
Explain his mistake.

Score, s	Frequency	Cumulative frequency
$0 < s \leq 10$	6	**6**
$10 < s \leq 20$	9	**15**
$20 < s \leq 30$	9	**24**



plotted at the middle of each class

(10, 6), (20, 15), (30, 24)

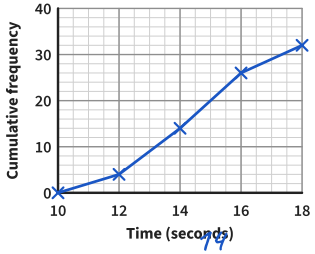
Cumulative frequency graphs *further practice*

ANSWERS

9

32 runners. Complete the table and draw the graph. How many took 14 seconds or less?

Time, t (s)	Frequency	Cumulative frequency
$10 < t \leq 12$	4	4
$12 < t \leq 14$	10	14
$14 < t \leq 16$	12	26
$16 < t \leq 18$	6	32

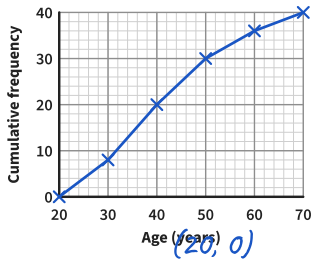


Answer 14

10

The ages of 40 people at a concert.
Draw the graph. Where does it start?

Age (years)	Frequency	Cumulative frequency
$20 < a \leq 30$	8	8
$30 < a \leq 40$	12	20
$40 < a \leq 50$	10	30
$50 < a \leq 60$	6	36
$60 < a \leq 70$	4	40



Answer (20, 0)

11

The cumulative frequencies are given. Work out the frequency of each class.

Mark	Cumulative frequency	Frequency
$0 < m \leq 10$	6	6
$10 < m \leq 20$	15	9
$20 < m \leq 30$	27	12
$30 < m \leq 40$	32	5

15 − 6 = 9, 27 − 15 = 12, 32 − 27 = 5

Answer 6, 9, 12, 5

12

The class $40 < m \leq 50$ has a cumulative frequency of 31.
Which point is plotted? Explain why it is not (45, 31).

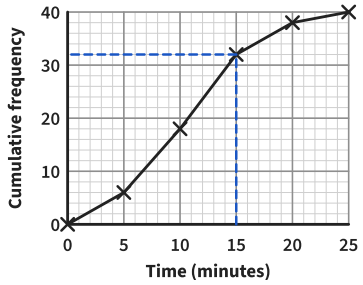
all 31 values are 50 or less

some are between 45 and 50

Point (50, 31)

13

40 people waited for a bus.
How many waited 15 minutes or less?
How many waited more?



read up from 15: 32

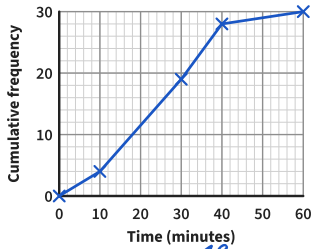
40 − 32 = 8

Answer 32; 8

14

30 shoppers. Draw the graph.
How many spent 30 minutes or less?

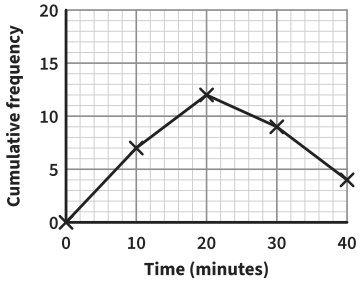
Time, t (min)	Frequency	Cumulative frequency
$0 < t \leq 10$	4	4
$10 < t \leq 30$	15	19
$30 < t \leq 40$	9	28
$40 < t \leq 60$	2	30



Answer 19

15

Max says this is a cumulative frequency graph. Explain how you know he is wrong.



a running total never goes down

he plotted the frequencies

Reason it goes down

16

Fill in the gaps in the table.

Score	Frequency	Cumulative frequency
$0 < s \leq 5$	5	5
$5 < s \leq 10$	12	17
$10 < s \leq 15$	14	31
$15 < s \leq 20$	6	37

17 − 5 = 12

17 + 14 = 31, 31 + 6 = 37

Answer 12; 31; 37