STATISTICS (Q 7, PAPER 2)

2009

7   (a) Find the median of the numbers
$$3, 9, 2, 1, 13, 5, 8.$$

(b) A car-park opens at 07:30. The number of cars entering the car-park during 15 minute intervals on a particular morning is recorded in the following table:

Time	07:30–07:45	07:45–08:00	08:00–08:15	08:15–08:30	08:30–08:45	08:45–09:00
No. of cars	20	40	100	165	105	50

[Note: 07:30 – 07:45 means 07:30 or later, but not including 07:45 etc.]

(i)   How many cars entered the car-park from 07:45 to 08:30?

(ii) What was the maximum number of cars that could have entered the car park by 08:20?

(iii) Copy and complete the following cumulative frequency table:

Time	Before 07:45	Before 08:00	Before 08:15	Before 08:30	Before 08:45	Before 09:00
No. of cars						

(iv) Draw the cumulative frequency curve (ogive).

Use your curve to estimate

(v) the median time

(vi) the number of cars that had entered the car-park by 08:10

(vii) the time by which 75% of the cars had entered the car-park.

SOLUTION

7 (a)

1, 2, 3, **5**, 8, 9, 13

Median = 5

The **MEDIAN** is the middle number when you line up all the numbers in increasing order.

7 (b) (i)

Time	07:30–07:45	07:45–08:00	08:00–08:15	08:15–08:30	08:30–08:45	08:45–09:00
No. of cars	20	40	100	165	105	50

No. of cars that entered the car-park from 07:45 to 08:30 = 40 + 100 + 165 = 305

7 (b) (ii)

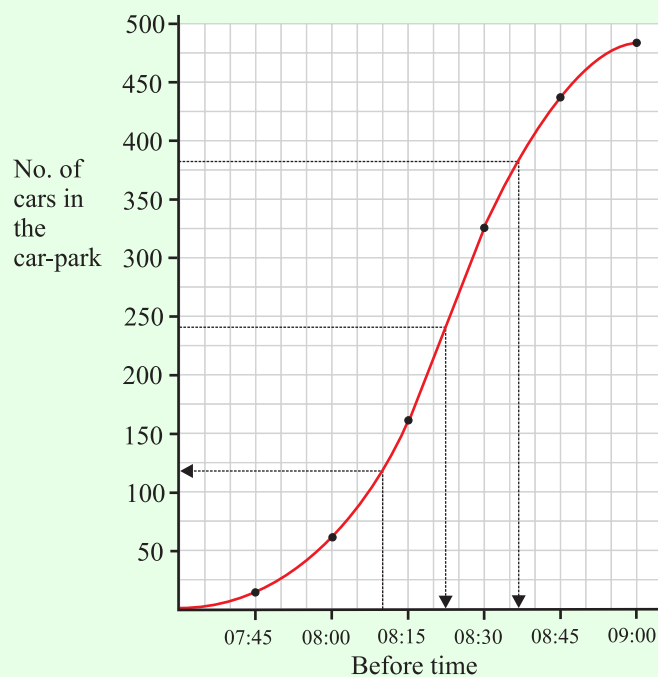| Time	07:30–07:45	07:45–08:00	08:00–08:15	08:15–08:30	08:30–08:45	08:45–09:00
No. of cars	20	40	100	165	105	50

The maximum number of cars that could have entered the car park by 08:20
= 20 + 40 + 100 + 165 = 325

7 (b) (iii)

Time	Before 07:45	Before 08:00	Before 08:15	Before 08:30	Before 08:45	Before 09:00
No. of cars	20	60	160	325	430	480

7 (b) (iv)

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The total number of cars that entered the car-park was 480.
Half of this number is 240. The median time is 08:22.

7 (b) (v)

120 cars entered the car-park before 08:10.

7 (b) (vi)

75% of 480 cars is 360 cars. 360 cars have entered the car-park by 08:36.