

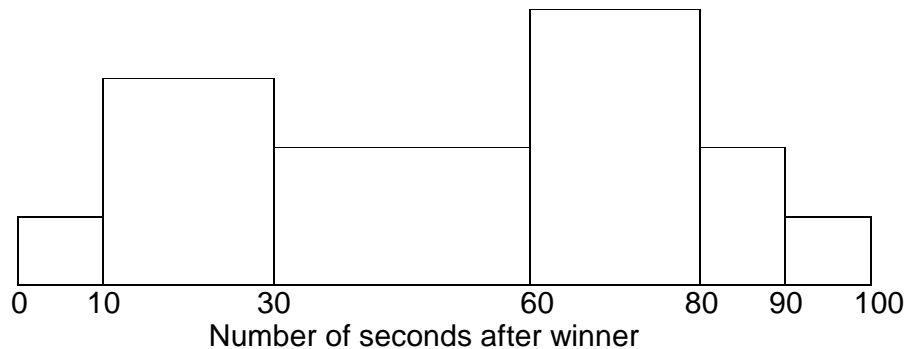
# 2005

## Question 6

Q6. (a) 6 is the mean of the numbers 3, 1, 9,  $x$ , 5.

Find the value of  $x$ .

- (b) The times taken by a number of athletes to finish a race after the winner crossed the finish line were recorded. The results are shown in the following histogram.



- (i) Given that there are 6 athletes in the 10 – 30 time interval, complete the following table.

Number of seconds after winner	0-10	10-30	30-60	60-80	80-90	90-100
Number of athletes		6				

[Note: 10 – 30 means 10 or more but less than 30, etc.]

- (ii) Taking mid-interval values, calculate the mean time taken to finish the race after the winner, correct to the nearest second.

- (c) The number of people voting in a polling station on election day was recorded every two hours. The following are the results.

Time	8:00 - 10:00	10:00- 12:00	12:00- 14:00	14:00- 16:00	16:00- 18:00	18:00- 20:00	20:00- 22:00
Number of people	200	300	250	350	800	550	350

[Note: 10:00 – 12:00 means 10:00 or later but before 12:00 etc.]

- Draw up a cumulative frequency table.
- On graph paper construct the ogive.
- Use your graph to estimate the number of people who cast their vote between 17:00 and 19:00.

**Solution**

Q6. (a) 6 is the mean of the numbers 3, 1, 9,  $x$ , 5.

Find the value of  $x$ .

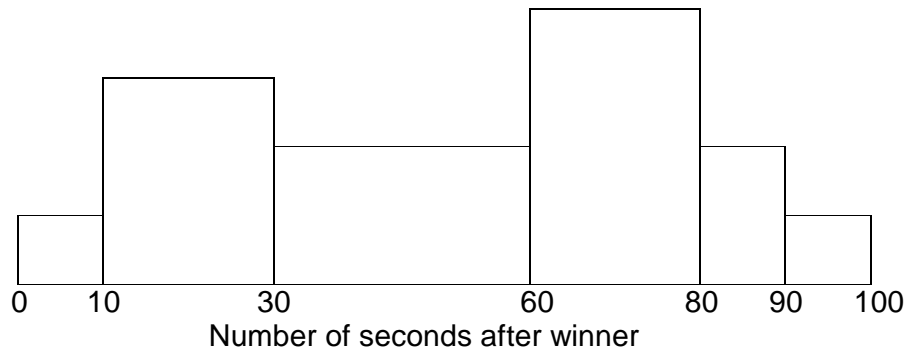
$$\frac{3+1+9+x+5}{5} = 6$$

$$\frac{18+x}{5} = \frac{6}{1}$$

$$x+18 = 30$$

$$x = 12$$

- (b) The times taken by a number of athletes to finish a race after the winner crossed the finish line were recorded. The results are shown in the following histogram.



- (i) Given that there are 6 athletes in the 10 – 30 time interval, complete the following table.

Number of seconds after winner	0-10	10-30	30-60	60-80	80-90	90-100
Number of athletes		6				

[Note: 10 – 30 means 10 or more but less than 30, etc.]

- (ii) Taking mid-interval values, calculate the mean time taken to finish the race after the winner, correct to the nearest second.

(i)

Number of seconds after winner	0-10	10-30	30-60	60-80	80-90	90-100
Number of athletes	1	6	6	8	2	1

(ii)

$$\begin{aligned} \text{Mean} &= \frac{(5 \times 1) + (20 \times 6) + (45 \times 6) + (70 \times 8) + (85 \times 2) + (95 \times 1)}{1 + 6 + 6 + 8 + 2 + 1} \\ &= \frac{5 + 120 + 270 + 560 + 170 + 95}{24} \\ &= \frac{1220}{24} = 50.8 = 51 \end{aligned}$$

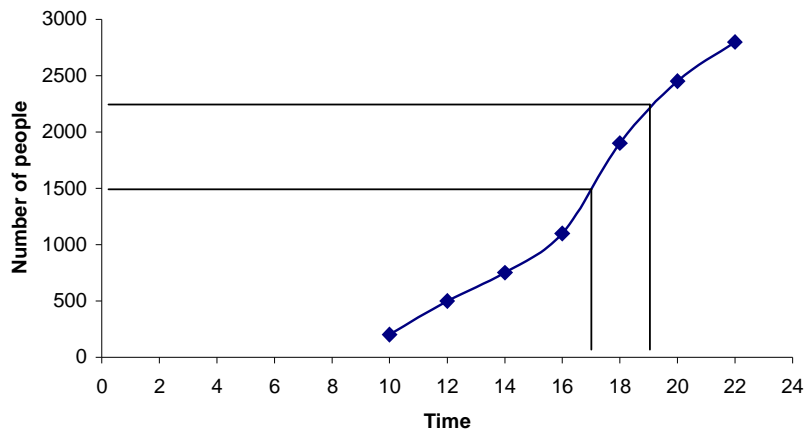
(c) The number of people voting in a polling station on election day was recorded every two hours. The following are the results.

Time	8:00 - 10:00	10:00- 12:00	12:00- 14:00	14:00- 16:00	16:00- 18:00	18:00- 20:00	20:00- 22:00
Number of people	200	300	250	350	800	550	350

[Note: 10:00 – 12:00 means 10:00 or later but before 12:00 etc.]

- (i) Draw up a cumulative frequency table.
- (ii) On graph paper construct the ogive.
- (iii) Use your graph to estimate the number of people who cast their vote between 17:00 and 19:00.

Time	<10	< 12	< 14	< 16	< 18	<20	< 22
Number of people	200	500	750	1100	1900	2450	2800



(iii)  $2250 - 1450 = 800$