4. The table shows information about the time, t minutes, taken by 250 people to complete a 10 km race.

Time (t)	Frequency (f)
$33 \leqslant t < 35$	3
$35 \leqslant t < 39$	16
$39 \leqslant t < 43$	49
$43 \leqslant t < 45$	40
$45 \leqslant t < 47$	50
$47 \leqslant t < 50$	92

A histogram is drawn (not shown) to represent these data.
The bar representing the class $35 \leqslant t < 39$ is 6 cm wide and 1.12 cm high.

(a) Calculate the width and the height of the bar representing the class $43 \leqslant t < 45$

(3)

(b) Use linear interpolation to estimate the median of t

(2)

For these data $\sum ft = 11\,225$ and $\sum ft^2 = 507\,388$

(c) Calculate an estimate of

(i) the mean of t

(ii) the standard deviation of t

(3)

Two of these 250 people are chosen at random.

(d) Estimate the probability that **both** of their times are between 38 minutes and 44 minutes.

(3)

It was found that the fastest time had been incorrectly recorded. The actual finishing time of the fastest person was 32.4 minutes.

(e) State what effect, if any, this would have on

(i) the median of t

(ii) the interquartile range of t

(2)

(Total for Question 4 is 13 marks)