

- 7 Rose and Emma each wear a device that records the number of steps they take in a day. All the results for a 7-day period are given in Fig. 7.

| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------|--------|--------|--------|--------|--------|------|--------|
| Rose | 10 014 | 11 262 | 10 149 | 9361 | 9708 | 9921 | 10 369 |
| Emma | 9204 | 9913 | 8741 | 10 015 | 10 261 | 7391 | 10 856 |

Fig. 7

The 7-day mean is the mean number of steps taken in the last 7 days. The 7-day mean for Rose is 10 112.

- (i) Calculate the 7-day mean for Emma. [1]

At the end of day 8 a new 7-day mean is calculated by including the number of steps taken on day 8 and omitting the number of steps taken on day 1. On day 8 Rose takes 10 259 steps.

- (ii) Determine the number of steps Emma must take on day 8 so that her 7-day mean at the end of day 8 is the same as for Rose. [4]

In fact, over a long period of time, the mean of the number of steps per day that Emma takes is 10 341 and the standard deviation is 948.

- (iii) Determine whether the number of steps Emma needs to take on day 8 so that her 7-day mean is the same as that for Rose in part (ii) is unusually high. [3]