

**Calculators are permitted but working must be shown.**

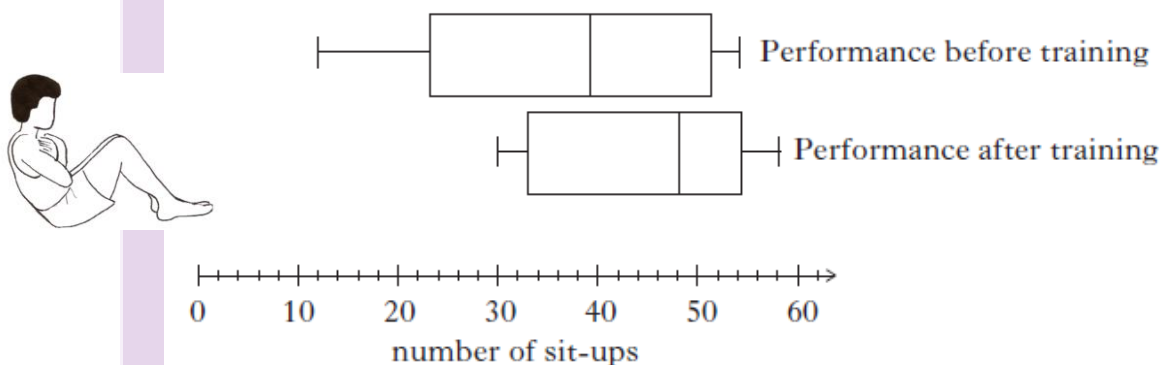
Standard deviation:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = \sqrt{\frac{\sum x^2 - (\sum x)^2 / n}{n - 1}}$$

, where n is the sample size.

**Unit level:**

1. At a training camp, athletes are tested on how many sit-ups they can do in one minute before and after a week's training.



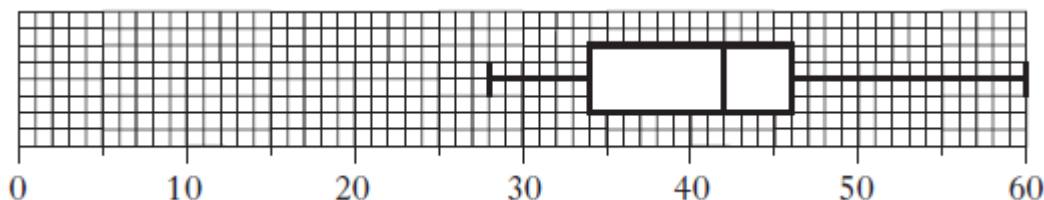
- (a) Calculate the interquartile range for before and after training.  
 (b) Make **two** valid statements to compare the performances.
2. The stem and leaf diagram shows the number of minutes on average spent on homework per night by a group of S1 pupils:

1	0	5	5	5					
2	0	1	2	2	3	5	5	8	9
3	0	5	5	6	6	7	8	9	9
4	2	4	4	5	6	7			
5	0								



n = 30      1 | 0 represents 10 minutes

- (a) Draw a boxplot to illustrate this data.  
 (b) The boxplot below illustrates the time spent on homework for a group of S4 pupils:



Compare the two boxplots and make a comment

3. During his lunch hour, Luke records the number of birds that visit his bird table. The numbers recorded last week were:

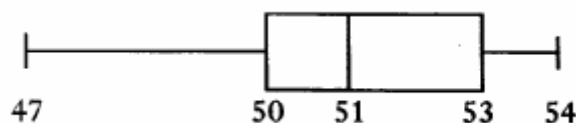
28 32 14 19 18 26 31



- (a) Find the mean and standard deviation for this data.
- (b) Over the same period, Erin also recorded the number of birds who visited her bird table. Erin's recordings had a mean of 25 birds and a standard deviation of 5 birds. Make **two** valid comparisons between these recordings.

### Assessment level:

4. A random check is carried out on the contents of matchboxes. A summary of the results is shown below.



What percentage of matchboxes had fewer than 50 matches?

5. A group of people attended a course to help them stop smoking. The table below shows the statistics both before and after the course.

	<i>Mean number of cigarettes smoked per person per day</i>	<i>Standard deviation</i>
Before	20.8	8.5
After	9.6	12.0

Make **two** valid comments about these results

6. A furniture maker investigates the delivery times, in days, of two local wood companies and obtains the following data.

<i>Company</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Lower Quartile</i>	<i>Median</i>	<i>Upper Quartile</i>
Timberplan	16	56	34	38	45
Allwoods	18	53	22	36	49

- (a) Draw an appropriate statistical diagram to illustrate these two sets of data.

- (b) Given that **consistency** of delivery is the most important factor, which company should the furniture maker use? Give a reason for your answer.

CUMBERNAULD



ACADEMY