Calculators are permitted but working must be shown.

Standard deviation:
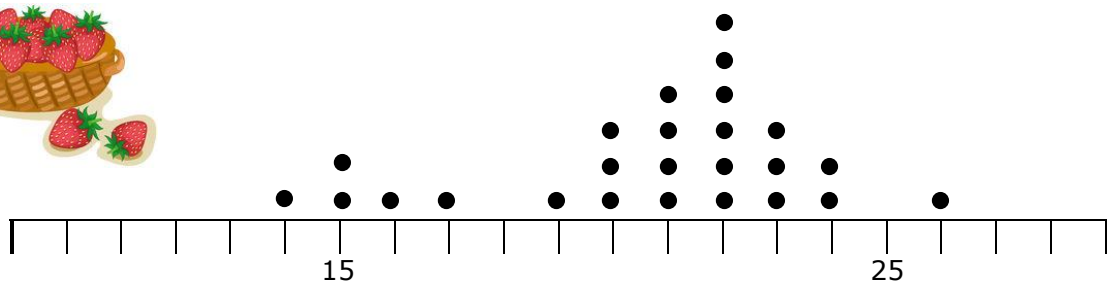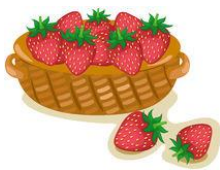
$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} = \sqrt{\frac{\sum x^2 - (\sum x)^2 / n}{n-1}}$$, where n is the sample size.

Essential knowledge:

1. Make a 5-figure summary for the following data:

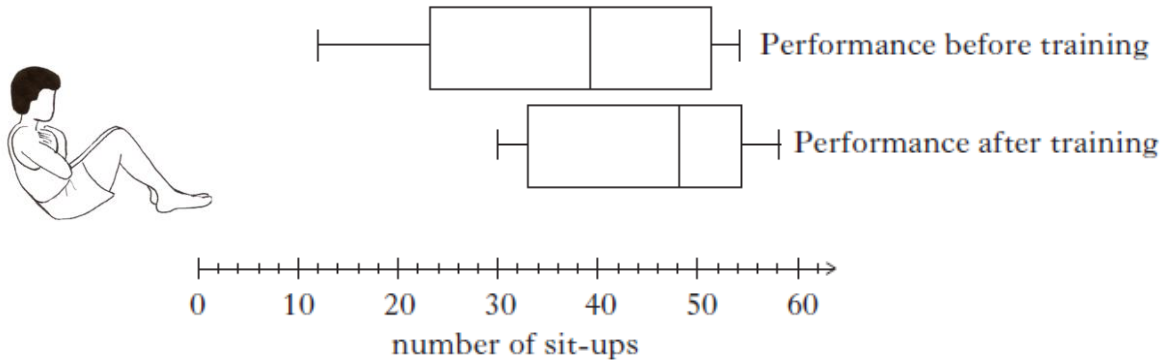   2   3   6   7   8   8   10   11   12   15   17

2. Construct a box-plot and calculate the range, interquartile range and semi-interquartile range for the data in question 1

3. Calculate the mean and standard deviation for question 1

4. A supermarket sells baskets of strawberries. A spot check was carried out. The results of the inspection are shown in the dot plot.

     15   25

   (a) What is the range of strawberries for this spot check?

   (b) What is the modal number of strawberries in a basket?

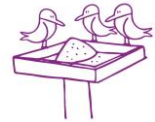   (c) What is the probability that a pack will contain 20 strawberries?

Unit level:

5. 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.

Performance before training

Performance after training

number of sit-ups

(a) Calculate the interquartile range for before and after training.

(b) Make **two** valid statements to compare the performances.

6. 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.

7. The stem and leaf diagram shows the number of minutes on average spent on homework per night by a group of S1 pupils:
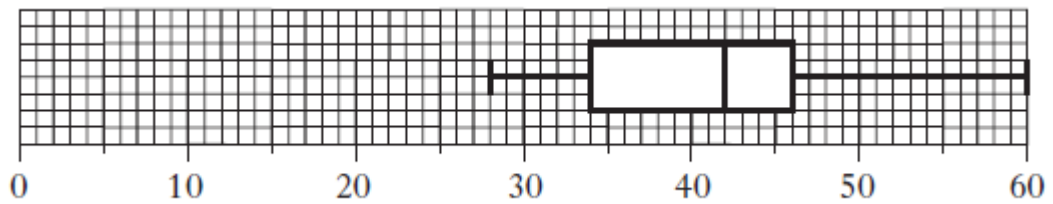
```
1 | 0 5 5 5
2 | 0 1 2 2 3 5 5 8 9
3 | 0 5 5 6 6 7 8 9 9 9
4 | 2 4 4 5 6 7
5 | 0
```

HOMEWORK
ALERT

$n = 30$ $1 | 0$ 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

Assessment level:

8. The number of goals scored one weekend in the Premier League is shown below.

| 0 | 1 | 1 | 2 | 1 | 0 | 0 | 5 | 0 | 1 | 3 |
| 0 | 2 | 2 | 1 | 1 | 3 | 0 | 0 | 2 | 4 | 1 |

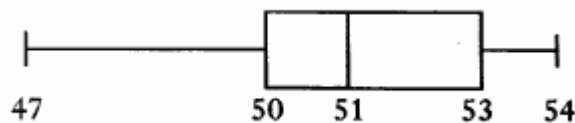(a) Construct a dot plot for this data.

(b) The shape of the distribution is: A – Skewed to the right
                                         B – Symmetrical
                                         C – Skewed to the left
                                         D – Uniform

Write the letter that corresponds to the correct shape.

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

47   50   51   53   54

What percentage of matchboxes had fewer than 50 matches?

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

	Mean number of cigarettes smoked per person per day	Standard deviation
Before	20·8	8·5
After	9·6	12·0

Make **two** valid comments about these results

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

Company	Minimum	Maximum	Lower Quartile	Median	Upper Quartile
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.