

Maths Rules

Mean, Standard Deviation and Variance

Section A

1. Find the mean and standard deviation of the following set of data:

3 5 9 11 14

Round your answers to 3 decimal places where appropriate.

2. Given the summary statistics $n = 130$, $\Sigma x = 53.2$, $\Sigma x^2 = 24.51$, find $\bar{x}$ and σ^2 , the mean and variance of the data.
3. The masses, x kg, of 6 puppies are recorded. The summary statistics are calculated to be:

$$\Sigma x = 146 \quad \Sigma x^2 = 3556$$

- (a) Find the mean mass of the puppies.
- (b) Find the standard deviation of the mass of the puppies.
4. The shoe sizes, x , of a class are recorded in the table below.

Shoe size	Frequency
5	3
6	6
7	8
8	6
9	0
10	3

- (a) Find the mean shoe size of a student in the class.
- (b) Find the standard deviation of the shoe size of a student in the class.
5. The times, t minutes, taken to complete a sudoku puzzle are recorded in the table below.

Time taken	Frequency
$0 < t \leq 3$	6
$3 < t \leq 5$	13
$5 < t \leq 10$	8
$10 < t \leq 20$	2

- (a) Find an estimate for the mean time taken to complete the sudoku puzzle.
- (b) Find an estimate for the variance of the time taken to complete the sudoku puzzle.

Section B

1. A sample of 10 paint pots is taken and each pot's capacity, x litres, is recorded. The summary statistics are found to be $\Sigma x = 25$ and $\Sigma x^2 = 63.4$.

Another sample of 15 paint pots is taken and each pot's capacity, y litres, is recorded. The mean capacity of each of the pots in this sample is 2.2 litres and the standard deviation of the capacity in this sample is 0.21 litres.

Find the variance of the capacity of the combined 25 paint pots.

2. In the final of a 100 metre race, the times of the 8 competitors, t seconds, are recorded. The average time is 12.5 seconds and the standard deviation of the times is 1.3 seconds. One of the competitors, who ran the 100 metres in 11 seconds, is disqualified for a false start.

Find the standard deviation of the remaining 7 competitors. Give your answer to 3 decimal places.

3. The mean and variance of the four numbers

$$3 \quad 5 \quad x \quad y$$

are 6.25 and 5.6875 respectively, where $x < y$.

Find the value of x and y .