National 5 Mathematics

Standard Deviation - **Questions** - 2014-2017

Marks are indicated in brackets after each question number

2014 Paper 2 Question 4, (1) (3) (1)

A runner has recorded her times, in seconds, for six different laps of a running track.

53 57 58 60 55 56

(a) (i) Calculate the mean of these lap times.
Show clearly all your working.

(ii) Calculate the standard deviation of these lap times.
Show clearly all your working.

(b) She changes her training routine hoping to improve her consistency.
After this change, she records her times for another six laps.
The mean is 55 seconds and the standard deviation 3·2 seconds.
Has the new training routine improved her consistency?
Give a reason for your answer.

2015 Paper 1 Question 5, (3)

The standard deviation of 1, 2, 2, 2, 8 is equal to $\sqrt{a}$.

Find the value of a.

2016 Paper 2 Question 6, (4) (2)

Jack called his internet provider on six occasions to report connection problems.

On each occasion he noted the length of time he had to wait before speaking to an adviser.

The times (in minutes) were as follows:

13 16 10 22 5 12

(a) Calculate the mean and standard deviation of these times.

(b) Sophie also called the same internet provider, on several occasions, to report connection problems.

Her mean waiting time was 15 minutes and the standard deviation was 4·3 minutes.

Make two valid comments comparing Sophie's waiting times with Jack's waiting times.

2017 Paper 1 Question 12, (4)

Gym members are asked to fill out a questionnaire to rate the quality of service provided.

They are asked to give a rating on a scale of 1 to 6.

The ratings given by five members were as follows:

1 4 6 3 6

In its simplest form, the standard deviation of these ratings can be written as $\frac{a\sqrt{b}}{2}$.

Find the values of a and b.