National 5 Mathematics

Standard Deviation - Questions

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.

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:

$$13 \quad 16 \quad 10 \quad 22 \quad 5 \quad 12$$

(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:

$$1 \quad 4 \quad 6 \quad 3 \quad 6$$

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

Find the values of a and b.

A farmers' market took place one weekend.

Stallholders were asked to record the number of customers who visited their stall.

The number of customers who visited six of the stalls on Saturday were as follows:

$$120 \quad 126 \quad 125 \quad 131 \quad 130 \quad 124$$

(a) Calculate the mean and standard deviation of the number of customers.

The mean number of customers who visited these six stalls on Sunday was 117 and the standard deviation was 6·2.

(b) Make two valid comments comparing the number of customers who visited these stalls on Saturday and Sunday.

2022 Paper 2 Question 5, (4) (2)

A school netball team recorded the number of sit-ups each player completed in a minute.

The numbers for the seven players were:

$$29 \quad 27 \quad 24 \quad 31 \quad 22 \quad 19 \quad 30$$

(a) Calculate the mean and standard deviation of the numbers of sit-ups.

Some players in the school's hockey team also recorded the number of sit-ups they completed in a minute.

Their numbers gave a mean of 29 and a standard deviation of 3.2.

(b) Make two valid comments comparing the numbers of sit-ups of the players in the netball team and the hockey team.

2025 Paper 2 Question 4, (4) (2)

The weights, in kilograms, of a sample of rugby players in Scotland are shown.

$$93 \quad 103 \quad 99 \quad 105 \quad 88 \quad 106 \quad 92$$

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

A sample of rugby players in France has a mean weight of 105 kilograms and a standard deviation of 5.9 kilograms.

(b)   Make two valid comments comparing the **weights** of the rugby players in the samples from Scotland and France.