SQA Past paper questions

FORMULAE LIST

Standard deviation:

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

2024 - Paper 2 - Question 8

A bathroom company counts the number of visitors to their shop in Stirling each Sunday.

A sample of these results is shown.

44 55 32 39 43 26 34

(a) For these results, calculate:

(i) the mean 1

(ii) the standard deviation. 3

The number of visitors to the company's shop in Aberdeen each Sunday was also recorded.

The mean number of visitors was 49 and the standard deviation was 3.2.

(b) Make two valid comments about the number of visitors each Sunday to the shops in Stirling and Aberdeen. 2

Click here for video solution.

2023 - Paper 2 - Questions 5(a) and (b)

Stuart records the chlorine levels in his hot tub.

A sample of the levels is shown below.

Mon	Tue	Wed	Thurs	Fri	Sat	Sun
0.8	1.9	1.1	2.6	3.1	2.4	2.1

(a) For these levels, calculate:

(i) the mean 1

(ii) the standard deviation. 3

His friend Colin's hot tub had a mean chlorine level of 2.2 and a standard deviation of 1.4.

(b) Make two valid comparisons about the chlorine levels in Stuart's and Colin's hot tubs. 2

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2022 - Paper 2 - Question 2

The prices of lambs sold in September was recorded.

A sample of the prices, in pounds, is shown.

72 75 73 68 65 70

(a) For these prices, calculate:

(i) the mean 1

(ii) the standard deviation. 3

The price of lambs sold in August was also recorded.

The mean price was £70.20 and the standard deviation was £3.85.

(b) Make two valid comparisons about the prices of lambs in August and September. 2

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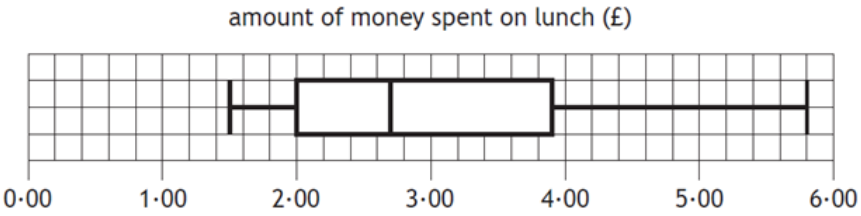
2021 - Paper 1 - Question 6

Mr Kenneth asked his class how much money they had spent on their lunch.

The results are shown in the boxplot.



(a) Calculate the inter-quartile range. 2

The money spent on lunch by Mrs Campbell's class had an inter-quartile range of £1·82.

(b) Make one valid comment comparing the money spent on lunch by Mr Kenneth's class and Mrs Campbell's class. 1

Click here for video solution.

2021 - Paper 2 - Question 9

A company uses a packing machine to put sweets into packets.

The number of sweets in a sample of packets is counted.

The number of sweets in each packet is shown below.

39 39 42 41 43 36

(a) Calculate

(i) the mean 1

(ii) the standard deviation. 3

The company purchase a new packing machine.

The number of sweets in a sample of packets from the new machine is counted.

For the new machine the mean number of sweets is 40 and the standard deviation is 1·7.

(b) Make **two** valid comparisons about the number of sweets in each packet between the original and new machines. 2

Click here for video solution.

2019 - Paper 2 - Question 7(a) and (b)

The birth weight of babies in a hospital in 2017 was recorded.

A sample of the weights, in kilograms, is shown.

2·5 4·5 3·7 3·1 3·8 3·4

(a) For these weights, calculate

(i) the mean 1

(ii) the standard deviation. 3

The birth weight of babies born in hospital in 1987 was also recorded.

The mean weight in 1987 was 3·4 kg and the standard deviation was 0·95 kg.

(b) Make two valid comparisons about the weight of babies in 1987 and 2017. 2

Click here for video solution.

2018 - Paper 2 - Question 8(c) and (d)

Scott trains at the velodrome on his new bike.

He records his top speed, in kilometres per hour, for each lap.

Six of these speeds are shown below.

61·2 58·3 59·1 58·8 60·4 59·8

(c) For these speeds, calculate:

(i) the mean; 1

(ii) the standard deviation. 3

Scott had a mean top speed on his old bike of 57·3 km/h and a standard deviation of 1·21 km/h.

(d) Make two valid comments comparing his top speed on the two different bikes. 2

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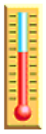
2017 - Paper 2 - Question 7



Mr Mackenzie has decided to move to South Africa with his family. He has been offered jobs in both Durban and Cape Town.

The typical monthly temperatures from March to August in Durban are recorded in the table below.

Month	Temperature (°C)
March	24
April	22
May	19
June	18
July	17
August	17

(a) For the typical monthly temperatures in Durban, calculate:

(i) the mean; 1

(ii) the standard deviation. 3

In Cape Town the mean monthly temperature for the same period is 15·5 °C and the standard deviation is 1·87 °C.

(b) Make two valid comments comparing the temperatures in both cities. 2

Click here for video solution.

Additional National 5 Maths questions…

2024 - Paper 1 - Question 5

The prices, in pounds (£), of the cameras on display in a shop are listed below.

155 160 190 210 230 240

(a) Calculate the median and the interquartile range of these prices. 3

On a website, a sample of camera prices have a median of £195 and an interquartile range of £73.

(b) Make two valid comments comparing the prices of the cameras in the shop and on the website. 2

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2023 - Paper 1 - Question 9

A magazine company conducted a survey of the ages of its readers.

A sample of ten readers' ages, in years, are shown below.

33 55 38 47 36 41 42 41 35 31

(a) Calculate the median and interquartile range of the ages of readers for this sample. 3

A newspaper company also conducted a survey of the ages of its readers.

The median age of a sample of its readers was 41 years and the interquartile range was 9 years.

(b) Make two valid comments comparing the ages of the readers of the magazine and the ages of the readers of the newspaper. 2

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2022 - Paper 2 - Question 5

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

The numbers for the seven players were:

29 27 24 31 22 19 30

(a) Calculate the mean and standard deviation of the numbers of sit-ups. 4

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 number of sit-ups of the players in the netball team and the hockey team. 2

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2021 - Paper 2 - Question 6

A company operates a bus route from the city centre to the airport.

The number of passengers on six of its buses on a Monday was

32 27 34 29 31 33.

(a) Calculate the mean and standard deviation of the number of passengers. 4

(b) The mean number of passengers the following Saturday was 28 and the standard deviation was 3·2.

Make two valid comments comparing the number of passengers on each bus on Monday and Saturday. 2

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2018 - Paper 2 - Question 5

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:

120 126 125 131 130 124

(a) Calculate the mean and standard deviation of the number of customers. 4

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. 2

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2016 - Paper 2 - Question 6

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.  4

(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. 2

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2014 - Paper 2 - Question 4

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. 1

(ii) Calculate the standard deviation of these lap times.
Show clearly all your working. 3

(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. 1

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Specimen - Paper 2 - Question 8

A frozen food company uses machines to pack sprouts into bags.

A sample of six bags is taken from Machine A and the number of sprouts in each bag is counted.

The results are shown below.

23 19 21 20 19 24

(a) Calculate the mean and standard deviation of this sample. **3**

(b) Another sample of six bags is taken from Machine B.

This sample has a mean of 19 and a standard deviation of 2·3.

Write down two valid comparisons between the samples. **2**

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