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National 5 Maths
Comparing Data Sets

SQA past paper and specimen paper questions and answers by topic

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National 5 Maths
SQA 2013 Specimen
Paper 2 Question 8

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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**

Answers:

(a) Mean = 21

Standard deviation = 2.1

(b) Machine A, on average, packs more sprouts into a bag.

The number of sprouts packed in a bag by Machine A is more consistent.

(or equivalent statements)

National 5 Maths
SQA 2014 Paper 2
Question 4

National 5 Maths
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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

Answers:

(a) (i) 56.5

(ii) 2.4

(b) No, because her standard deviation has increased (or equivalent reason).

National 5 Maths
SQA 2015 Paper 1
Question 5

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

Find the value of a. **3**

Answer:

8

National 5 Maths
SQA 2015 Paper 1
Question 10

National 5 Maths
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Ten couples took part in a dance competition.

The couples were given a score in each round.

The scores in the first round were

16 27 12 18 26 21 27 22 18 17

(a) Calculate the median and semi-interquartile range of these scores. **3**

(b) In the second round, the median was 26 and the semi-interquartile range was 2·5.

Make two valid comparisons between the scores in the first and second rounds. **2**

Answers:

(a) Median = 19.5

SIQR = 4.5

(b) On average, the second round's scores were higher.

The second round's scores were more consistent.

(or equivalent statements)

National 5 Maths
SQA 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**

Answers:

(a) Mean = 13 minutes

Standard deviation = 5.7 minutes (approximately)

(b) On average, Sophie's waiting times were longer.

Sophie's waiting times were more consistent.

(or equivalent statements)

National 5 Maths
SQA 2017 Paper 1
Question 2

National 5 Maths
Maths.scot

The number of calls received by the police was recorded over 10 days.
The results are shown below.

198 216 218 230 232 247 248 250 265 267

Find the semi-interquartile range of this data. **2**

Answer:

16

National 5 Maths
SQA 2017 Paper 1
Question 12

National 5 Maths
Maths.scot

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. **4**

Answers:

$a = 3$
$b = 2$

National 5 Maths
SQA 2018 Paper 2
Question 5

National 5 Maths
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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**

Answers:

(a) Mean = 126

Standard deviation = 4.05 (approx.)

(b) On average, the number of customers was higher on Saturday.

The number of customers was less varied on Saturday.

(or equivalent statements)

National 5 Maths
SQA 2019 Paper 1
Question 5

National 5 Maths
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The midday temperatures in Grantford were recorded over a nine day period.

The temperatures, in °C, were

4 7 4 3 6 10 9 5 3

(a) Calculate the median and semi-interquartile range for these temperatures. **3**

Over the same nine day period the midday temperatures in Endoch were also recorded.

The median temperature was 8 °C, and the semi-interquartile range was 1·5 °C.

(b) Make two valid comments comparing the midday temperatures of Grantford and Endoch during this period. **2**

Answers:

(a) Median = 5

SIQR = 2.25

(b) On average, temperatures in Grantford are lower.

Temperatures in Grantford are less consistent.

(or equivalent statements)

National 5 Maths
SQA 2021 Paper 1
Question 5

National 5 Maths
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The number of absentees at Applegrove High School was recorded each day over a four-week period.

The results are shown below.

7	8	8	11	12	14	14	15	17	17
18	20	20	21	23	24	25	26	27	29

Find the semi-interquartile range of this data. **2**

Answer:

5.25

National 5 Maths
SQA 2021 Paper 2
Question 6

National 5 Maths
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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**

Answers:

(a) Mean = 31

Standard deviation = 2.6 (approx.)

(b) On average, there were more passengers on Monday.

The number of passengers was more consistent on Monday.

(or equivalent statements)

National 5 Maths
SQA 2022 Paper 2
Question 5

National 5 Maths
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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 numbers of sit-ups of the players in the netball team and the hockey team. **2**

Answers:

(a) Mean = 26

Standard deviation = 4.47

(b) On average, the hockey team recorded a higher number of sit-ups.

The hockey team's numbers of sit-ups were more consistent.

(or equivalent statements)

National 5 Maths
SQA 2023 Paper 1
Question 9

National 5 Maths
Maths.scot

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**

Answers:

(a) Median = 39.5

IQR = 7

(b) On average, the ages of the newspaper readers are higher.

The ages of the newspaper readers are more varied.

(or equivalent statements)

National 5 Maths
SQA 2024 Paper 1
Question 5

National 5 Maths
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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**

Answers:

(a) Median = 200

IQR = 70

(b) On average, the prices are lower on the website.

The prices in the shop are more consistent.

(or equivalent statements)

National 5 Maths
SQA 2025 Paper 1
Question 3

National 5 Maths
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Ten pupils record the length of time, in minutes, it takes them to walk to school one morning.

3 11 13 15 15 16 17 18 19 22

Calculate the interquartile range of these times. **2**

Answer:

5

National 5 Maths
SQA 2025 Paper 2
Question 4

National 5 Maths
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The weights, in kilograms, of a sample of rugby players in Scotland are shown.

93 103 99 105 88 106 92

(a) Calculate the mean and standard deviation of these weights. **4**

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. **2**

Answers:

(a) Mean = 98 kg

Standard deviation = 7.07 kg

(b) On average, the weights of the rugby players in Scotland are lower.

The weights of the rugby players in Scotland are more varied.

(or equivalent statements)