



Scan for the solutions

Name: _____ **Date:** _____ **Score:** _____ / 70

- 1** Eleven commuters recorded the time, in minutes, of their journey to work one morning.

12 15 9 22 15 18 31 14 15 20 11

- Write down the mode.
- Find the median.
- Find the interquartile range.
- Calculate the mean journey time.

(4 marks)

Answer _____

- 2** The times, t minutes, taken by 40 runners to complete a 5 km park run are summarised by

$$\Sigma t = 1260 \quad \Sigma t^2 = 41\,200$$

- Calculate the mean time.
- Calculate the standard deviation of the times.
- One more runner completes the course in exactly the mean time. State, giving a reason, the effect on the standard deviation of including this runner.

(4 marks)

Answer _____

- 3 The table shows the number of goals, x , scored by a hockey team in each of 30 matches.

Goals, x	0	1	2	3	4	5
Frequency	4	8	9	5	3	1

- Write down the mode.
- Find the median.
- Calculate the mean number of goals.
- Calculate the standard deviation of the number of goals.

(5 marks)

Answer _____

- 4 The masses, m grams, of 80 apples are summarised in the table.

Mass, m (grams)	Frequency
$100 \leq m < 120$	6
$120 \leq m < 130$	14
$130 \leq m < 140$	25
$140 \leq m < 150$	21
$150 \leq m < 170$	14

- Use linear interpolation to estimate the median mass.
- Estimate the mean and the standard deviation of the masses.
- Explain why your answers to part (b) are estimates.

(7 marks)

Answer _____

- 5 A machine fills bottles with olive oil. The volume, x ml, in each of 20 bottles is measured and the data are coded using

$$y = \frac{x - 500}{2}$$

The coded data are summarised by $\Sigma y = 36$ and $\Sigma y^2 = 410$

- Find the mean of x .
- Find the standard deviation of x .
- Find the value of Σx^2 .

(6 marks)

Answer _____

- 6 A helpline records the time, t minutes, that each of 200 callers waits before their call is answered.

Waiting time, t (minutes)	Frequency
$0 \leq t < 2$	18
$2 \leq t < 4$	46
$4 \leq t < 6$	62
$6 \leq t < 10$	48
$10 \leq t < 15$	20
$15 \leq t < 25$	6

- Use linear interpolation to estimate the median waiting time.
- Use linear interpolation to estimate the 10th to 90th interpercentile range.
- Estimate the number of callers who waited more than 8 minutes.

(6 marks)

Answer _____

- 7 Two Year 12 classes sit the same test.

Class	Number of students	Mean mark	Standard deviation
A	12	64	5
B	18	59	7

Find the mean and the standard deviation of the marks of all 30 students.

(6 marks)

Answer _____

- 8 Marek measured the lengths, in cm, of 15 fish caught in a lake. He found the mean length was 52 cm and the standard deviation was 8 cm.

He then noticed that one length had been written down as 48 cm when it should have been 84 cm.

Find the correct mean and the correct standard deviation of the lengths.

(5 marks)

Answer _____

9

The prices, in thousands of pounds, of the nine houses sold in a village last year were

185 210 196 224 202 1150 215 190 207

- Calculate the mean price.
- Find the median price.
- An outlier is a value greater than $Q_3 + 1.5 \times (Q_3 - Q_1)$ or less than $Q_1 - 1.5 \times (Q_3 - Q_1)$. Show that 1150 is an outlier.
- State, giving a reason, whether the mean or the median gives a better average price for a house in this village.

(6 marks)

Answer _____

10

A group of people were asked how many times, x , they went to the cinema last month. The results are shown in the table, where f is a positive integer.

x	0	1	2	3	4
Frequency	7	12	f	6	3

The mean number of visits is 1.6

- Show that $f = 7$
- Calculate the standard deviation of x .
- Find the median of x .

(6 marks)

Answer _____

- 11** Anya records the daily maximum temperature, x °C, at a weather station in Scotland for the 31 days of July. She codes the data using

$$y = 2x - 30$$

and finds $\Sigma y = 155$ and $\Sigma y^2 = 1520$

- Find the mean daily maximum temperature.
- Find the standard deviation of the daily maximum temperatures.

For the same 31 days at a weather station in southern England the mean daily maximum temperature was 21.3 °C and the standard deviation was 4.1 °C.

- Compare the daily maximum temperatures at the two weather stations in July.

(7 marks)

Answer _____

- 12** Eighteen students took a quiz. Their scores had a mean of 12 and a standard deviation of 2. Two more students, Ola and Kwame, then took the quiz. Ola scored a and Kwame scored b , where $a < b$.

For all 20 students the mean score was 13 and the standard deviation was $\sqrt{13}$

Find the value of a and the value of b .

(8 marks)

Answer _____

End of questions | Total 70 marks