Standard deviation from a frequency table

Grade 8 | Higher | 5 questions, 22 marks

GCSE Statistics topic practice

Name: _____ **Date:** _____ **Score:** _____ **/ 22**

1 The table shows the number of siblings of each of 20 students. Some of the working for the mean and the standard deviation is shown.

Number of siblings (x)	0	1	2	3
Frequency (f)	4	9	5	2
fx	0	9		6
fx^2	0	9	20	

a. Complete the table. (1)

b. Work out the mean number of siblings. (1)

c. Calculate the standard deviation of the number of siblings. Give your answer correct to 2 decimal places. (2)

(4 marks)

2 The table shows the number of goals scored by a hockey team in each of 20 matches.

Goals scored (x)	0	1	2	3	4
Frequency (f)	2	7	6	3	2

a. Show that the mean number of goals per match is 1.8 (2)

b. Calculate the standard deviation of the number of goals per match. Give your answer correct to 2 decimal places. (2)

(4 marks)

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3 A machine packs sweets into bags. Asif counts the number of sweets, x, in each of 50 bags and puts his results in a frequency table. He works out these totals.

$\Sigma f = 50 \quad \Sigma fx = 1200 \quad \Sigma fx^2 = 29\,250$

a. Calculate the mean and the standard deviation of the number of sweets in a bag. (3)

b. For bags packed by a second machine, the standard deviation of the number of sweets is 1.8. Which machine is more consistent? Give a reason for your answer. (1)

(4 marks)

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4 The table shows the times, t minutes, that 20 customers waited for a table at a restaurant.

Time (t minutes)	Frequency
$0 < t \leq 10$	3
$10 < t \leq 20$	8
$20 < t \leq 30$	6
$30 < t \leq 40$	3

a. Calculate an estimate for the mean waiting time. (2)

b. Calculate an estimate for the standard deviation of the waiting times. Give your answer correct to 1 decimal place. (2)

c. Explain why your answers are only estimates. (1)

(5 marks)

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5 The table shows information about the number of bedrooms in each house on a street.

Number of bedrooms (x)	1	2	3	4
Frequency (f)	4	6	k	4

The mean number of bedrooms is 2.5

a. Show that $k = 6$ (2)

b. Calculate the standard deviation of the number of bedrooms. Give your answer correct to 2 decimal places. (3)

(5 marks)

End of questions | Total 22 marks

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