GCSE Statistics: Grade 7

Higher | 8 questions, 34 marks

GCSE Statistics practice

Name: _____ **Date:** _____ **Score:** _____ **/ 34**

1 STANDARD DEVIATION

The waiting times, in minutes, of six patients at Clinic A are shown below.

12 15 9 14 10 12

a. Calculate the standard deviation of these waiting times. Give your answer correct to 2 decimal places.

b. At Clinic B the mean waiting time is 12 minutes and the standard deviation is 4.5 minutes. Compare the consistency of the waiting times at the two clinics.

(4 marks)

2 SPEARMAN'S RANK CORRELATION COEFFICIENT

Two judges, Judge X and Judge Y, each rank eight cakes at a village show. Rank 1 is the best cake.

Cake	A	B	C	D	E	F	G	H
Judge X	1	2	3	4	5	6	7	8
Judge Y	3	1	2	6	4	8	5	7

a. Calculate Spearman's rank correlation coefficient for these ranks. Give your answer correct to 3 decimal places.

b. Interpret your answer to part (a) in context.

(4 marks)

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3 **THE REGRESSION LINE Y = A + BX**

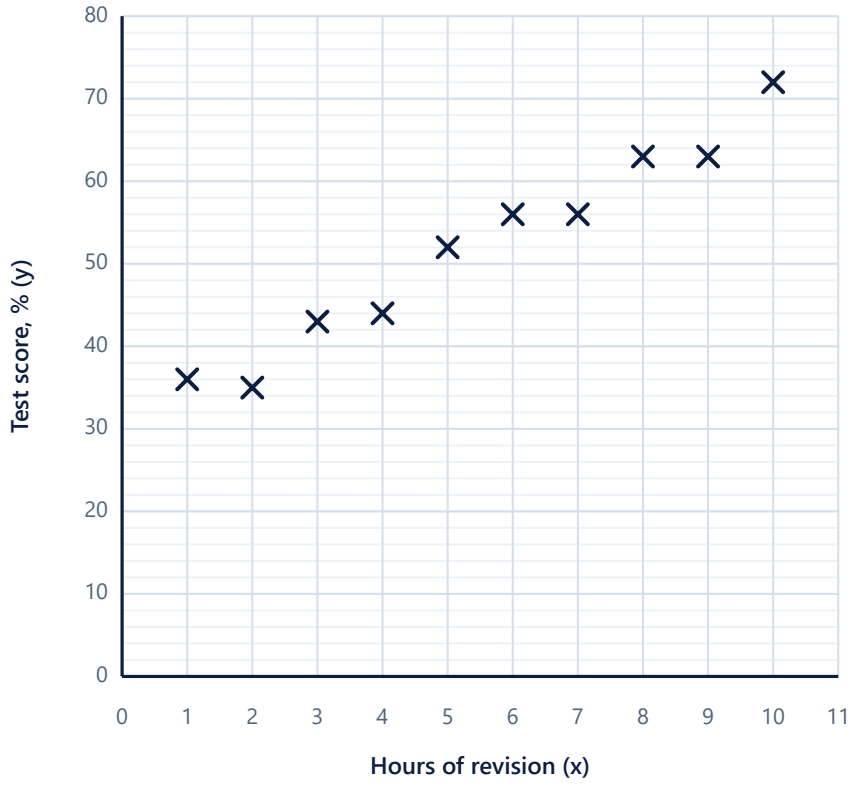
A teacher records the number of hours of revision, x, and the test score, y %, for each of 10 students. The scatter diagram shows this information.

The equation of the regression line of y on x is $y = 30 + 4x$

a. Draw the regression line on the scatter diagram.

b. Interpret the value 4 in the equation of the regression line.

c. Use the equation to estimate the test score of a student who revises for 6.5 hours.



(4 marks)

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4 WEIGHTED INDEX NUMBERS

A council works out index numbers for the costs of running a leisure centre in 2025, using 2020 as the base year.

Cost	Index number (2020 = 100)	Weight
Staff	112	6
Energy	135	3
Maintenance	94	1

a. Calculate the weighted index number for the costs of running the leisure centre in 2025.

b. Interpret your answer to part (a).

(4 marks)

5 STANDARDISED SCORES

Amara and Ben are in the same year group. The table shows the mean and standard deviation of the year group's marks in two tests, and Amara's marks.

Test	Mean	Standard deviation	Amara's mark
Maths	56	8	68
Physics	52	5	61

a. Calculate Amara's standardised score for each test.

b. In which test did Amara do better, compared with the rest of the year group? Give a reason for your answer.

c. Ben's standardised score in the Maths test was -0.75. Work out Ben's mark in the Maths test.

(5 marks)

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6 GEOMETRIC MEAN

The number of members of a climbing club went up by 50% in 2023, by 20% in 2024 and by 8% in 2025.

a. Calculate the geometric mean of the three yearly multipliers. Give your answer correct to 3 significant figures.

b. Interpret your answer to part (a) in context.

(4 marks)

7 STANDARDISED DEATH RATES

The table shows the population and the number of deaths in one year for the town of Harwick, split into three age groups. It also shows the standard population.

Age group (years)	Population	Deaths	Standard population
0 to 39	12 000	18	500
40 to 69	8000	56	350
70 and over	5000	240	150
Total	25 000	314	1000

a. Calculate the standardised death rate for Harwick.

b. Explain why the standardised death rate, rather than the crude death rate, should be used to compare Harwick with another town.

(5 marks)

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8 **ESTIMATING THE MEDIAN BY LINEAR INTERPOLATION**

The table shows the times, t minutes, that 60 customers spent in a supermarket.

Time (t minutes)	Frequency
$0 < t \leq 10$	6
$10 < t \leq 20$	14
$20 < t \leq 30$	22
$30 < t \leq 40$	12
$40 < t \leq 60$	6

a. Use linear interpolation to estimate the median time. Give your answer correct to 1 decimal place.

b. Write down one assumption you made in part (a).

(4 marks)

End of questions | Total 34 marks

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