GCSE Statistics: Grade 5

Foundation and Higher | 8 questions, 36 marks

GCSE Statistics practice

Name: _____ **Date:** _____ **Score:** _____ **/ 36**

1 CUMULATIVE FREQUENCY DIAGRAMS

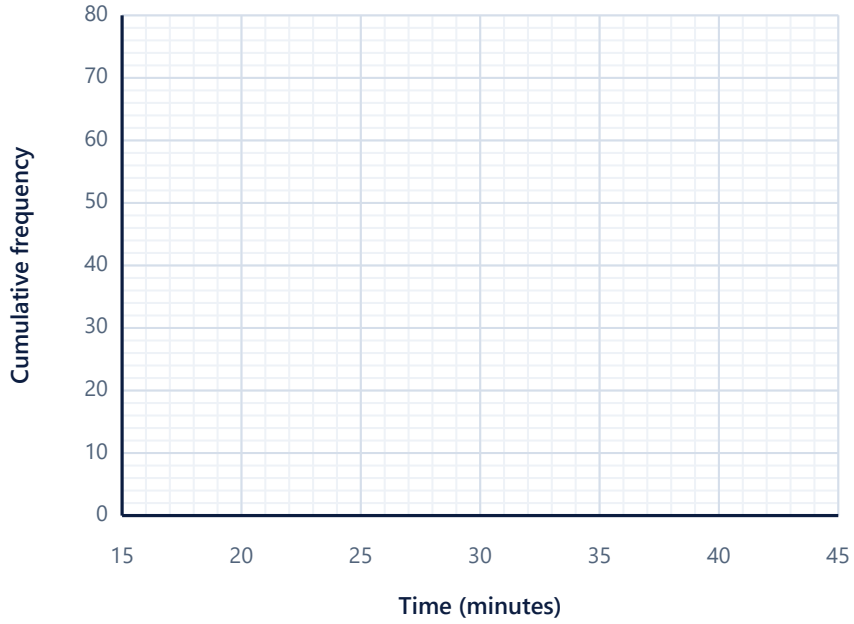
The cumulative frequency table shows the times, t minutes, taken by 80 runners to finish a 5 km run. No runner took 15 minutes or less.

Time, t (minutes)	**$t \leq 20$**	**$t \leq 25$**	**$t \leq 30$**	**$t \leq 35$**	**$t \leq 40$**	**$t \leq 45$**
Cumulative frequency	4	18	46	68	78	80

a. On the grid, draw a cumulative frequency diagram for this information. (2)

b. Use your diagram to find an estimate for the median time. (1)

c. Use your diagram to find an estimate for the number of runners who took more than 37 minutes. (2)



(5 marks)

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2 **MEDIAN, QUARTILES AND INTERQUARTILE RANGE**

A call centre records how long, in seconds, each of 11 callers waits before their call is answered.

12 7 15 9 21 10 18 7 14 25 11

a. Find the median waiting time. (1)

b. Work out the interquartile range of the waiting times. (2)

c. At a second call centre the median waiting time is 12 seconds and the interquartile range is 15 seconds. Compare the consistency of the waiting times at the two call centres. (1)

(4 marks)

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3 **BOX PLOTS AND COMPARING DISTRIBUTIONS**

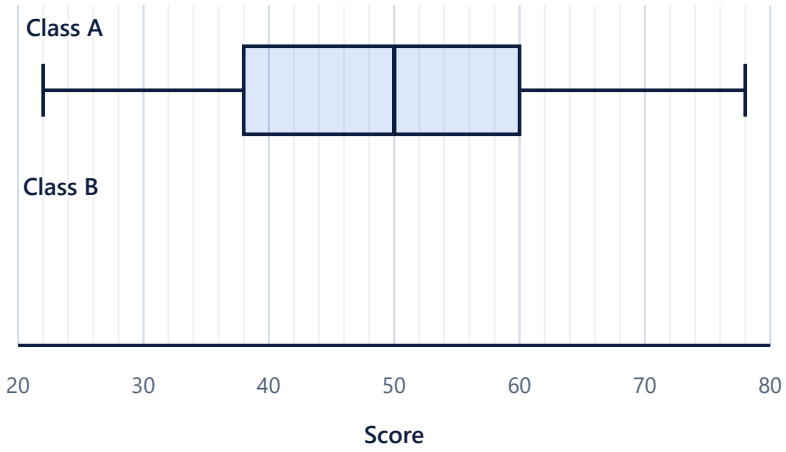
Class A and Class B sat the same statistics test. The box plot shows the scores for Class A. The table gives information about the scores for Class B.

Class B	Lowest score	Lower quartile	Median	Upper quartile	Highest score
Score	30	44	56	62	70

a. Work out the interquartile range of the scores for Class A. (1)

b. On the grid, draw a box plot for Class B. (2)

c. Compare the distributions of the scores for Class A and Class B. (2)



(5 marks)

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4 **MOVING AVERAGES**

The table shows the amount of gas, in thousands of kWh, used by a school in each term of two school years.

School year	**Year 1**	**Year 1**	**Year 1**	**Year 2**	**Year 2**	**Year 2**
Term	Autumn	Spring	Summer	Autumn	Spring	Summer
Gas used (thousand kWh)	45	60	30	51	66	39

The first 3-point moving average is 45.

a. Work out the other three 3-point moving averages. (3)

b. Describe what the moving averages show about the trend in the amount of gas used. (1)

(4 marks)

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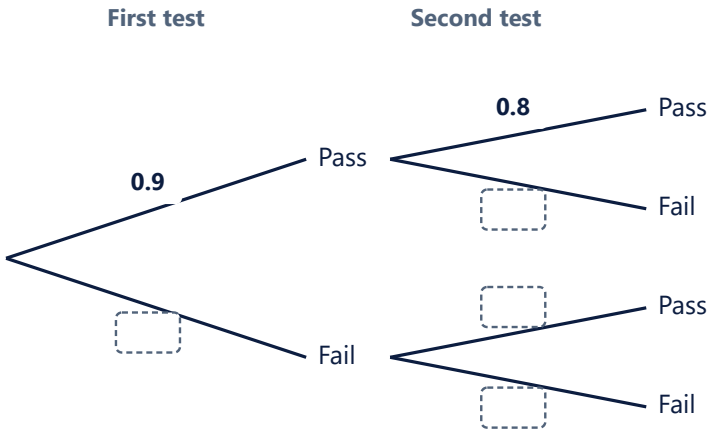
5 TREE DIAGRAMS

A factory tests each smoke alarm twice. The probability that an alarm passes the first test is 0.9. The probability that an alarm passes the second test is 0.8. The results of the two tests are independent.

a. Complete the probability tree diagram. (2)

b. Work out the probability that an alarm passes both tests. (1)

c. Work out the probability that an alarm passes exactly one of the two tests. (2)



(5 marks)

6 CRUDE BIRTH AND DEATH RATES

In 2025, Town A had a population of 48 000. There were 600 births in Town A that year.

a. Work out the crude birth rate for Town A in 2025. (2)

b. In 2025, Town B had a population of 30 000 and a crude death rate of 11.5 per thousand. Work out the number of deaths in Town B in 2025. (2)

c. The crude death rate for Town A in 2025 was 9 per thousand. Give one possible reason why the crude death rate is higher in Town B than in Town A. (1)

(5 marks)

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7 **SYSTEMATIC, QUOTA AND CLUSTER SAMPLING**

A factory makes 2400 phone cases each day. The quality manager wants to check a sample of 60 of the cases made in one day.

a. Describe how the manager could take a systematic sample of 60 phone cases. (2)

b. A researcher wants to know what people think of the phone cases. She stands in a town centre and interviews the first 20 men and the first 20 women who agree to talk to her. Write down the name of this sampling method. (1)

c. Give one disadvantage of the sampling method in part (b). (1)

(4 marks)

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8 **CAPTURE-RECAPTURE**

Ecologists want to estimate the number of fish in a lake. They catch 40 fish, tag each one and release them back into the lake. One week later they catch 60 fish. 8 of these 60 fish have a tag.

a. Work out an estimate for the number of fish in the lake. (3)

b. Write down one assumption you made in part (a). (1)

(4 marks)

End of questions | Total 36 marks

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