AQA – Confidence intervals – A2 Further Mathematics Statistics

1. June/2020/Paper_3/No.3

    The mass of male giraffes is assumed to have a normal distribution.

    Duncan takes a random sample of 600 male giraffes.

    The mean mass of the sample is 1196 kilograms.

    The standard deviation of the sample is 98 kilograms.

    (a) Construct a 94% confidence interval for the mean mass of male giraffes, giving your values to one decimal place.

    [3 marks]

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    (b) Explain whether or not your answer to part **(a)** would change if a sample of size 5 was taken with the same mean and standard deviation.

    [1 mark]

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2. June/2019/Paper_3/No.3

Alan's journey time to work can be modelled by a normal distribution with standard deviation 6 minutes.

Alan measures the journey time to work for a random sample of 5 journeys. The mean of the 5 journey times is 36 minutes.

(a) Construct a 95% confidence interval for Alan's mean journey time to work, giving your values to one decimal place.

[2 marks]

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(b) Alan claims that his mean journey time to work is 30 minutes.

State, with a reason, whether or not the confidence interval found in part **(a)** supports Alan's claim.

[1 mark]

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(c) Suppose that the standard deviation is not known but a sample standard deviation is found from Alan's sample and calculated to be 6

Explain how the working in part **(a)** would change.

[1 mark]

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