

## Stats 2 Estimation Questions

- 3 The time,  $T$  minutes, that parents have to wait before seeing a mathematics teacher at a school parents' evening can be modelled by a normal distribution with mean  $\mu$  and standard deviation  $\sigma$ .

At a recent parents' evening, a random sample of 9 parents was asked to record the times that they waited before seeing a mathematics teacher.

The times, in minutes, are

5    12    10    8    7    6    9    7    8

- (a) Construct a 90% confidence interval for  $\mu$ . *(7 marks)*
- (b) Comment on the headteacher's claim that the mean time that parents have to wait before seeing a mathematics teacher is 5 minutes. *(2 marks)*
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- 2 The weights of lions kept in captivity at Wildcat Safari Park are normally distributed.

The weights, in kilograms, of a random sample of five lions were recorded as

46    48    57    49    54

- (a) Construct a 95% confidence interval for the mean weight of lions kept in captivity at Wildcat Safari Park. *(6 marks)*
- (b) State the probability that this confidence interval does **not** contain the mean weight of lions kept in captivity at Wildcat Safari Park. *(1 mark)*
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- 1 Alan's journey time, in minutes, to travel home from work each day is known to be normally distributed with mean  $\mu$ .

Alan records his journey time, in minutes, on a random sample of 8 days as being

36    38    39    40    50    35    36    42

Construct a 95% confidence interval for  $\mu$ . *(5 marks)*

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- 5 Members of a residents' association are concerned about the speeds of cars travelling through their village. They decide to record the speed, in mph, of each of a random sample of 10 cars travelling through their village, with the following results:

33    27    34    30    48    35    34    33    43    39

- (a) Construct a 99% confidence interval for  $\mu$ , the mean speed of cars travelling through the village, stating any assumption that you make. *(7 marks)*
- (b) Comment on the claim that a 30 mph speed limit is being adhered to by most motorists.
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