

Paul uses the Petersen capture recapture method in order to find an estimate for the number of trout living in a lake.

Q3

To do this, Paul catches an initial sample of 50 trout from the lake and he tags each trout. He then releases the trout back into the lake.

For his second sample, Paul catches a sample of 80 trout from the lake. He finds that 16 of these trout have tags.

(a) Explain what needs to be true about his two samples for them to be valid for the capture recapture method.

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(1)

Using his results, Paul is able to work out an estimate for the number of trout living in the lake.

(b) Find Paul's estimate for the number of trout and discuss the validity and the reliability of his estimate.

Q4

A researcher wants to get the opinions of a town's residents about proposed changes to the traffic system.

The council decides to carry out a sample survey to gather residents' opinions instead of a census.

(a) Give two advantages to carrying out a sample survey rather than a census.

1. _____
_____ [1]

2. _____
_____ [1]

Before using the questionnaire with the sample of residents, the researcher decides to conduct a pilot survey.

(c) Give two reasons why this is a good idea.

1. _____
_____ [1]

2. _____
_____ [1]

A sample of 300 people is chosen in the town centre for the survey.

(d) Suggest a reason why this would not be a suitable sampling method.

_____ [1]

Q5

Peter and Helen want to collect information about how much time pupils at their school spend on homework every week. They attend a large post-primary school with 1400 pupils.

Peter is planning to use systematic sampling to select 50 pupils.

(a) Describe how Peter could select his sample.

[3]

Helen is planning to select 50 pupils from outside the canteen.

(b) Name the method of sampling which Helen is planning to use.

[1]