Government Social Research

Example Knowledge Test

Nov 2021

This document provides some examples of the types of questions asked in the GSR Knowledge Test. Answers are provided at the end. The actual test is longer.

1. Basic Statistical Principles
Basic statistical concepts including understanding graphical statistical information, levels of measurement, measures of central tendency and dispersion

BSP 1
Consider the following survey question:

On how many days out of the last seven did you have an alcoholic drink?

Which **ONE** of the following **BEST** describes the type of data that is being measured? (ONE MARK)
   a) Nominal
   b) Interval
   c) Ratio
   d) Dichotomous
   e) Ordinal

BSP 2

If you perform a one-tailed statistical test, your hypothesis is: (ONE MARK)
   a) That two different measurements are unpredictable from each other
   b) That the variance of two measurements does not differ significantly
   c) That the mean of two measurements does not differ significantly
   d) That the difference between your groups will be in a specific direction

2. Presentation of Information
Presenting information effectively, understanding different ways of presenting data, selecting the most appropriate presentation method, understanding how data presentation can be improved and how presenting data in certain ways can be misleading

PI 1
Looking at the table below, select the **TWO** most appropriate changes you could make to improve presentation of the numbers. (ONE MARK)

Table 1: Number of units sold by quarter in 2017 and 2018 (in millions)

Year	Quarter	Units sold
2017	Q1	38.7909
	Q2	42.56
	Q3	74.37837
	Q4	101.99088
2018	Q1	.32334
	Q2	100.9989
	Q3	76.488
	Q4	101.92723

a) Round the numbers to 2 significant figures
b) Align the numbers consistently
c) Order in size of units sold
d) Add more grid lines to separate each quarter
e) Display numbers to 2 decimal places

PI 2
Your line manager has asked you to present a chart to show the difference in number of people owning a car by age bracket (e.g. 17-20, 21-24 etc.). Select **ONE** chart that would be best suited to presenting this type of information.
(ONE MARK)
a) Line chart
b) Bar chart
c) Scatter chart
d) Box chart
e) Pie chart

3. Use and Interpretation of Statistics
Selection of the most appropriate statistical tests, standardization, scales, correlation and regression, interpretation of statistical results, levels of significance testing

UIS 1
A researcher is asked to say whether left- or right-handed tennis players are more likely to double fault when serving. Which ONE of the below would be an appropriate statistical test to use? (ONE MARK)
   a) Paired sample t-test
   b) Linear regression
   c) Pearson correlation
   d) Chi-squared
   e) Independent sample t-test

UIS 2
You have been tasked with fielding a survey which looks at the income distribution of working adults in the UK within 12 months of graduating from university. You survey 75 individuals. Your mean income is £22,500 ± 7.695, $p < 0.05$.

Which **ONE** of the following is an accurate statistical interpretation of your result? (ONE MARK)
   a) You can say with 95% confidence that the sampling distribution falls within the range of [£22,492.305, £22,507.695].
   b) You can say with 95% confidence that the true population parameter falls within the range of [£22,496.152, £22,503.848].
   c) You can say with 95% confidence that the true population parameter falls within the range of [£22,492.305, £22,507.695].
   d) You can say with 95% confidence that the true population parameter may fall anywhere between ± 7.695 standard deviations from your mean of £22,500.
   e) None of the above.

4. Design Methodology and Qualitative

Appropriate quantitative and qualitative research designs, the use of proxy questions, question design, sources of bias, sampling, data collection methods, evaluation, the strengths and weaknesses of different research delivery mechanisms (e.g. face to face, vs. telephone), research ethics including anonymity and confidentiality

DMQ 1

More people speed than are caught. Your manager has asked you to conduct a study to find out the true prevalence of speeding by running a survey to ask people how often they break the speed limit. Of the following delivery options, which ONE delivery method would recommend?
(ONE MARK)

a) Telephone survey
b) Postal survey
c) Online survey (name not required)
d) Online survey (name required)
e) Face to face survey

DMQ 2

Opportunity sampling is a type of non-probability sampling that involves the sample being drawn from that part of the population that is close to hand. Which **TWO** of the following issues are you likely to experience when running a survey using an opportunity sampling method?
(ONE MARK)

a) It will be difficult to find respondents
b) The results are less likely to be representative of the population
c) It will be more expensive than alternative sampling methods (e.g. random sampling)
d) It will be very time-consuming
e) The results will be hard to replicate

Answers

BSP 1 - c
BSP 2 - d

PI 1 – a & e
PI 2 - b

UIS 1 - e
UIS 2 - c

DMQ 1 - c
DMQ 2 – b & e