

NCERT SOLUTIONS

CLASS - 11th



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Class : 11th
Subject : Statistics
Chapter : 2

Chapter Name : Collection of Data

Q1 Frame at least four appropriate multiple-choice options for following questions:

- (i) Which of the following is the most important when you buy a new dress?
- (ii) How often do you use computers?
- (iii) Which of the newspapers do you read regularly?
- (iv) Rise in the price of petrol is justified.
- (v) What is the monthly income of your family?

Answer.

- (i) (a) Colour
(b) Brand
(c) Price
(d) Store
- (ii)(a) More than 8 hours a day
(b) 5-8 hours a day
(c) 2-5 hours a day
(d) less than 2 hours a day
- (iii) (a) The Hindu
(b) The Pioneer
(c) Indian Express
(d) Business Standard
- (iv)(a) Because international crude oil is getting costly
(b) Because petrol has no sustainable alternative
(c) Because the government has increased taxes on petrol
(d) Because the demand is very high for petrol

- (v) (a) ₹5000- ₹25000
(b) ₹25000- ₹45000
(c) ₹45000- ₹65000
(d) above ₹65000

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Q2 Frame five two-way questions (with 'Yes' or 'No').

- Answer. (a) Do you ride a bicycle?
(b) Do you play outdoor games daily?
(c) Do you love pizza?
(d) Do you like studying?
(e) Is the Sun a star?

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Q3 State whether the following statements are True or False.

- (i) There are many sources of data.
(ii) Telephone survey is the most suitable method of collecting data, when the population is literate and spread over a large area.
(iii) Data collected by investigator is called the secondary data.
(iv) There is a certain bias involved in the non-random selection of samples.
(v) Non-sampling errors can be minimised by taking large samples.

Answer.

- (i) False. There are only two sources of data, i.e. primary and secondary
(ii) False. Telephone survey method is the most suitable method when the population is illiterate and is spread over a large area. Due to illiteracy, the survey forms cannot be distributed to these people and due to a large area, it becomes uneconomical to reach out to everyone.

(iii) False. The data collected by investigator is called primary data. Secondary data is collected by someone else and used by someone else.

(iv) True. When the selection of samples is non-random, the probability of each sample being selected is not equally likely. Hence, a bias is always involved based on one or the other parameter.

(v) False. Sampling Errors can be minimised by taking large samples. Non sampling errors increase by taking large samples.

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Q4 What do you think about the following questions? Do you find any problem with these questions? Describe.

(i) How far do you live from the closest market?

(ii) If plastic bags are only 5 per cent of our garbage, should it be banned?

(iii) Wouldn't you be opposed to increase in price of petrol?

(iv) Do you agree with the use of chemical fertilisers?

(v) Do you use fertilisers in your fields?

(vi) What is the yield per hectare in your field?

Answer.

(i) The answer to this question involves a large range of values as a person in the core of a city lives closer to the market whereas there are settlements where the market is far away. Hence, to analyse the data for this question, it should be framed with choices, such as:

1. Less than 2 km
2. 2-4 km
3. 4-6 km
4. More than 6 km

(ii) The question is good as it provides the complete information with data for the people to answer based on their inference.

(iii) This question tempts the people to give an affirmative answer, hence it should be framed in an unbiased manner, preferably with choices such as:

1. Yes
2. No
3. Can't Say

(iv) This is a sensitive question and it should have been asked after questions (v) and (vi) so that the questions flow from general to specific.

(v) This question is a specific question and it should have been asked after question (vi), which is a general question related to this one.

(vi) This is a general question, which should have preceded the questions (iv) and (v) as the questions should move from general to specific.

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Q5 You want to do a research on the popularity of Vegetable Atta Noodles among children. Design a suitable questionnaire for collecting this information.

Answer. The required questionnaire is as follows:

1. Name: _____
2. Age: _____
3. Class: _____
4. Gender: _____
5. Do you love eating noodles: Yes/No
6. Do you prefer Vegetable Atta Noodles: Yes/No
7. Do you love the taste and flavours of Vegetable Atta Noodles: Yes/No
8. Would you eat the Vegetable Atta Noodles with your parents and friends: Yes/No

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Q6 In a village of 200 farms, a study was conducted to find the cropping pattern. Out of the 50 farms surveyed, 50% grew only wheat. What is the population and the sample size?

Answer. The population is 200 and the sample size is 50 as only 50 farms were surveyed out of 200.

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Q7 Give two examples each of sample, population and variable.

Answer. The two examples of sample, population and variable can be given as:

1. In a colony of 100 flats, 40 families were surveyed about the average income of the colony. Here, sample size is 40, population is 100 and variable is income.
2. In a market area of 50 shops, 15 of them were surveyed to calculate the average daily sales. Here, the sample size is 15, population is 50 and variable is daily sales.

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Q8 Which of the following methods give better results and why?

(a) Census (b) Sample

Answer. The sample method gives better results due to the following reasons:

1. Lesser non sampling errors take place because fewer items are studied.
2. Due to lesser number of samples, the errors can be easily found and rectified.
3. The small number of samples makes it economical to conduct a survey.
4. Due to small size, the survey takes lesser time.
5. Sample method is largely suitable for huge population where census seems to be irrational.

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Q9 Which of the following errors is more serious and why?

(a) Sampling error (b) Non-Sampling error

Answer. A non sampling error is more serious because it depends on the person analysing the data. It can occur due to poor calculation, interpretation and measurements. It cannot be corrected by increasing the sample size as is the case with sampling errors.

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Q10 Suppose there are 10 students in your class. You want to select three out of them. How many samples are possible?

Answer. The number of samples possible are $^{10}C_3 = 120$.

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Q11 Discuss how you would use the lottery method to select 3 students out of 10 in your class.

Answer. The following steps can be used in the lottery method:

1. Write names of 10 students on a paper slip and put them in a bowl.
2. Pick up 3 slips from the bowl after mixing them.
3. The students with their names on the slips are selected.

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Q12 Does the lottery method always give you a random sample? Explain.

Answer. Yes. The lottery method has zero chances of bias so it gives a random sample in which all outcomes are equally likely.

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Q13 Explain the procedure for selecting a random sample of 3 students out of 10 in your class by using random number tables.

Answer. To select a random sample of 3 students out of 10, use the following steps.

1. Assign a particular number to each student from 01-10.
2. Select a random number, say 05.
3. Use the Two Digit Random Number Table to select the other two students.

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Q14 Do samples provide better results than surveys? Give reasons for your answer.

Answer. Yes, samples provide better results than surveys. It is due to the following reasons:

1. Samples are more accurate than surveys, due to the small size of sample.
2. Samples are economical to conduct as only a part of the population needs to be surveyed.
3. Samples give lesser non sampling errors due to small number of inputs.
4. Samples are a rational solution in case of a huge population.

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