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Chapter 3 Review

3.1 Sampling Techniques, pages 102-109

1. Identify the sampling technique used in each situation.

a) Moira asked the students in her class which type of beverage they preferred.

b) A mayoral candidate sent surveys to each household and asked people to mail their responses to her office.

c) The owner of a grocery store surveyed 5 of his full-time employees and 5 of his part-time employees.

2. Can a research organization make valid conclusions based on responses from 2% of the population? Explain.

3. Identify the population and the sample for each survey.

a) A survey is sent to 2000 random households in Canada asking their opinions about natural gas prices.

b) Drivers are asked to comment on the current cost of their vehicle insurance at a local gas station on Friday.

c) Baseball fans are asked to vote for their picks for the upcoming all-star game by filling out a ballot at a Saturday afternoon game.

3.2 Collect and Analyse Data, pages 110-117

4. Identify the type of bias in each survey.

a) a survey where people are asked to mail their responses to the surveyor

b) a survey where people are asked to choose from a list of suggested options

c) a survey with the question: "The student council is doing a terrible job this year. Should they all resign?"

5. Suggest a way to reduce the bias in each survey from question 4.

6. Explain the difference between response bias and measurement bias.

3.3 Display Data, pages 118-129

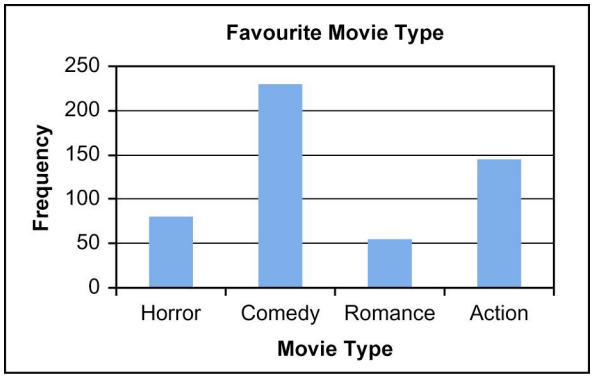
7. What type of graph would best represent the data in each case? Explain your choice.

a) each part of the family budget

b) television show preferences of classmates

c) a child's height as he ages

8. Manny surveyed people about their favourite type of movie. The results are shown in the bar graph.



a) What was the most popular type of movie?

b) How many people chose romance?

c) How many people were surveyed?

d) What percent of people surveyed chose action movies?

9. a) Refer to the graph in question 8. What other type of graph could be used to display the data?

b) Display the data using this type of graph.

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3.4 Measures of Central Tendency, pages 130-139

10. Find the mean, the median, the mode, and the range for each set of data.
- **a)** 55, 75, 41, 37, 81, 87, 64, 62, 45, 42, 83, 71
- **b)** 11, 14, 9, 15, 22, 7, 14, 21, 25, 26, 11, 9, 11

11. Explain when the mode would be the best measure of central tendency for a set of data. Give an example.

3.5 Measures of Spread, pages 140-147

12. Find the median, the first and third quartiles, and the interquartile range for each set of data. Then display the data using a box-and-whisker plot.
- **a)** 45, 51, 57, 64, 72, 51, 65, 74, 86, 72
- **b)** 8.7, 7.9, 8.4, 14.4, 12.9, 6.2, 7.5, 8.8, 11.2, 12.7, 7.9, 11.4

13. Find the mean, the variance, and the standard deviation for each set of data.
- **a)** 91, 47, 58, 55, 74, 83, 64, 61, 55, 64, 67, 73
- **b)** 5, 8, 11, 9, 4, 7, 12, 8, 7, 16, 2, 8, 10, 9, 11, 4, 5

3.6 Common Distributions, pages 148-155

14. Sketch a graph of each type of distribution.
- **a)** skewed
- **b)** normal
- **c)** bimodal

15. Give an example of a data set that would follow each type of distribution from question 14.