Descriptive Statistics: Practice 1*

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Abstract

This module provides students with opportunities to apply concepts related to descriptive statistics. Students are asked to take a set of sample data and calculate a series of statistical values for that data.

1 Student Learning Outcomes

- The student will calculate and interpret the center, spread, and location of the data.
- The student will construct and interpret histograms an box plots.

2 Given

Sixty-five randomly selected car salespersons were asked the number of cars they generally sell in one week. Fourteen people answered that they generally sell three cars; nineteen generally sell four cars; twelve generally sell five cars; nine generally sell six cars; eleven generally sell seven cars.

3 Complete the Table

Data Value (# cars)	Frequency	Relative Frequency	Cumulative Relative Frequency

Table 1

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4 Discussion Questions

Exercise 1 *(Solution on p. 4.)*
What does the frequency column sum to? Why?

Exercise 2 *(Solution on p. 4.)*
What does the relative frequency column sum to? Why?

Exercise 3
What is the difference between relative frequency and frequency for each data value?

Exercise 4
What is the difference between cumulative relative frequency and relative frequency for each data value?

5 Enter the Data

Enter your data into your calculator or computer.

6 Construct a Histogram

Determine appropriate minimum and maximum x and y values and the scaling. Sketch the histogram below. Label the horizontal and vertical axes with words. Include numerical scaling.

7 Data Statistics

Calculate the following values:

Exercise 5 *(Solution on p. 4.)*
Sample mean = $\overline{x}$ =

Exercise 6 *(Solution on p. 4.)*
Sample standard deviation = s_x =

Exercise 7 *(Solution on p. 4.)*
Sample size = n =

8 Calculations

Use the table in section 2.11.3 to calculate the following values:

Exercise 8 *(Solution on p. 4.)*
Median =

Exercise 9 *(Solution on p. 4.)*
Mode =

Exercise 10 *(Solution on p. 4.)*
First quartile =

Exercise 11 *(Solution on p. 4.)*
Second quartile = median = 50th percentile =

Exercise 12 *(Solution on p. 4.)*
Third quartile =

Exercise 13 *(Solution on p. 4.)*
Interquartile range (IQR) = _____ - _____ = _____

Exercise 14 *(Solution on p. 4.)*
10th percentile =

Exercise 15 *(Solution on p. 4.)*
70th percentile =

Exercise 16 *(Solution on p. 4.)*
Find the value that is 3 standard deviations:

a. Above the mean
b. Below the mean

9 Box Plot

Construct a box plot below. Use a ruler to measure and scale accurately.

10 Interpretation

Looking at your box plot, does it appear that the data are concentrated together, spread out evenly, or concentrated in some areas, but not in others? How can you tell?

Solutions to Exercises in this Module

Solution to Exercise 1 (p. 2)
65
Solution to Exercise 2 (p. 2)
1
Solution to Exercise 5 (p. 2)
4.75
Solution to Exercise 6 (p. 2)
1.39
Solution to Exercise 7 (p. 2)
65
Solution to Exercise 8 (p. 3)
4
Solution to Exercise 9 (p. 3)
4
Solution to Exercise 10 (p. 3)
4
Solution to Exercise 11 (p. 3)
4
Solution to Exercise 12 (p. 3)
6
Solution to Exercise 13 (p. 3)
$6 - 4 = 2$
Solution to Exercise 14 (p. 3)
3
Solution to Exercise 15 (p. 3)
6
Solution to Exercise 16 (p. 3)

a. 8.93
b. 0.58