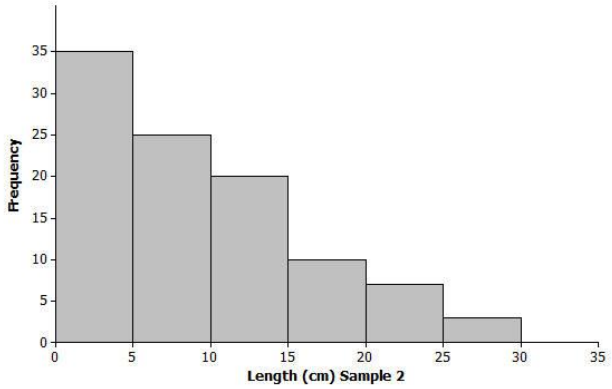
Lesson Summary

Data distributions are usually described in terms of shape, center, and spread. Graphical displays such as histograms, dot plots, and box plots are used to assess the shape. Depending on the shape of a data distribution, different measures of center and variability are used to describe the distribution. For a distribution that is skewed, the median is used to describe a typical value, whereas the mean is used for distributions that are approximately symmetric. The IQR is used to describe variability for a skewed data distribution, while the MAD is used to describe variability for a distribution that is approximately symmetric.

Problem Set

Another sample of Great Lake yellow perch from a different lake was collected. A histogram of the lengths for the fish in this sample is shown below.



1. If the length of a yellow perch is an indicator of its age, how does this second sample differ from the sample you investigated in the exercises? Explain your answer.

2. Does this histogram represent a data distribution that is skewed or that is nearly symmetrical?

3. What measure of center would you use to describe a typical length of a yellow perch in this second sample? Explain your answer.

4. Assume the smallest perch caught was 2 centimeters in length, and the largest perch caught was 29 centimeters in length. Estimate the values in the five-number summary for this sample:

   Minimum (min) value =

   Q1 value =

   Median value =

   Q3 value =

   Maximum (max) value =

5. Based on the shape of this data distribution, do you think the mean length of a yellow perch from this second sample would be greater than, less than, or the same as your estimate of the median? Explain your answer.

6. Estimate the mean value of this data distribution.

7. What is your estimate of a typical length of a yellow perch in this sample? Did you use the mean length from Problem 5 for this estimate? Explain why or why not.

8. Would you use the MAD or the IQR to describe variability in the length of Great Lakes yellow perch in this sample? Estimate the value of the measure of variability that you selected.