9.10 Histograms and Grouped Data

Chapter 9: Statistics and Data Analysis

Name: _____ Date: _____ Class/Period: _____

Problem 9.145 Explain why histogram bars touch while bar-graph bars are separated. Refer to adjacent numerical intervals and separate categories.

Problem 9.146 A histogram uses unequal-width bins. Explain why comparing bar heights directly may mislead the reader.

Problem 9.147 A histogram has frequencies 3, 6, 7, and 2. Find the sample size and identify the modal interval.

Problem 9.148 The frequencies are 4, 9, 9, and 3. Explain why the histogram has two modal intervals.

Problem 9.149 Place 37 into the bins 20–29, 30–39, and 40–49. Explain which boundary rule you used.

Problem 9.150 Write five equal-width whole-number intervals covering scores from 50 through 99 with no overlaps or gaps.

Problem 9.151 Explain why a histogram may reveal a modal interval but not the exact mode.

Problem 9.152 Explain why the exact median may be impossible to recover when the middle observations lie inside a bin.

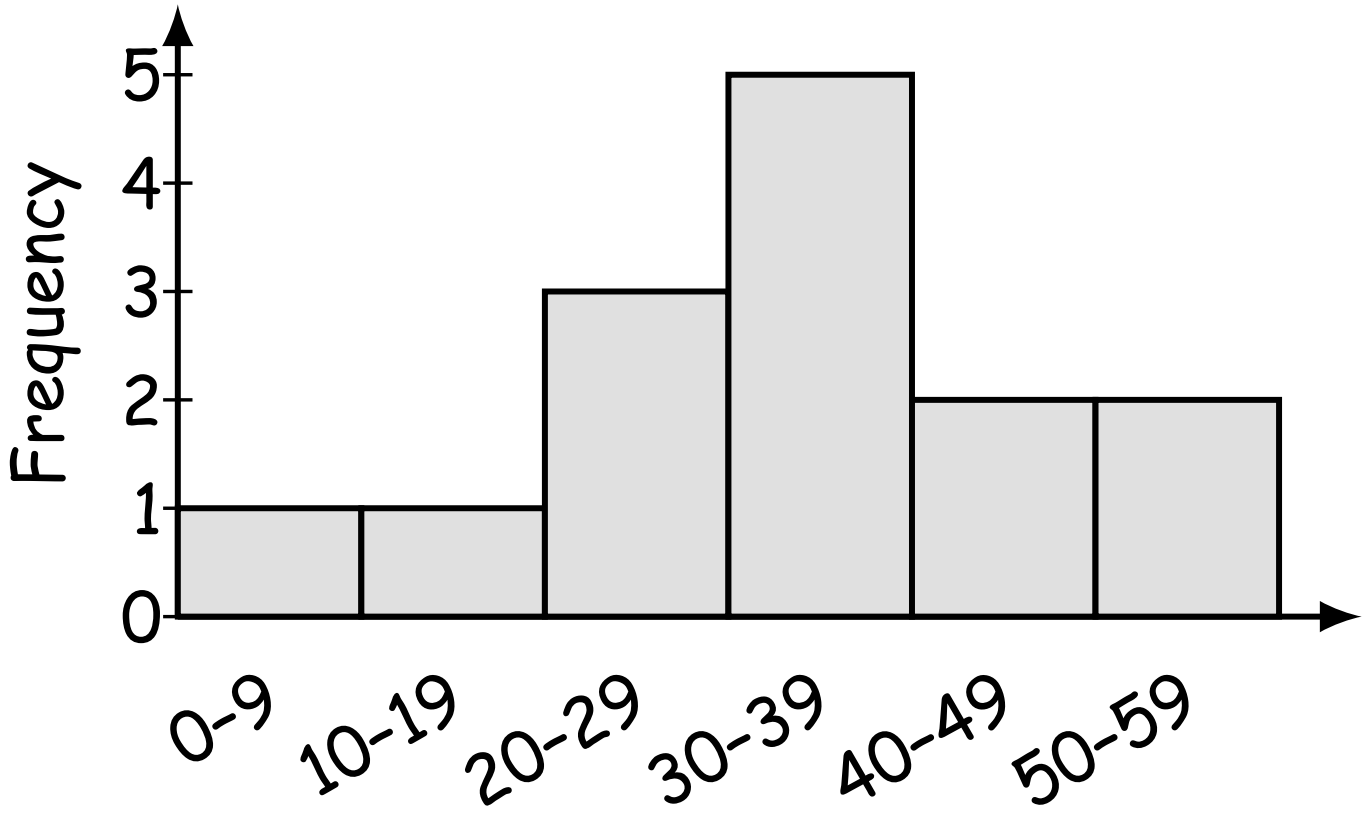
Problem 9.153 A histogram has a long right tail. Describe its shape and predict the usual mean-median relationship.

Problem 9.154 Every frequency is doubled. Explain what changes in the histogram and what stays the same about its shape.

Problem 9.155 Explain how bins that are too wide can hide two clusters separated by a small gap.

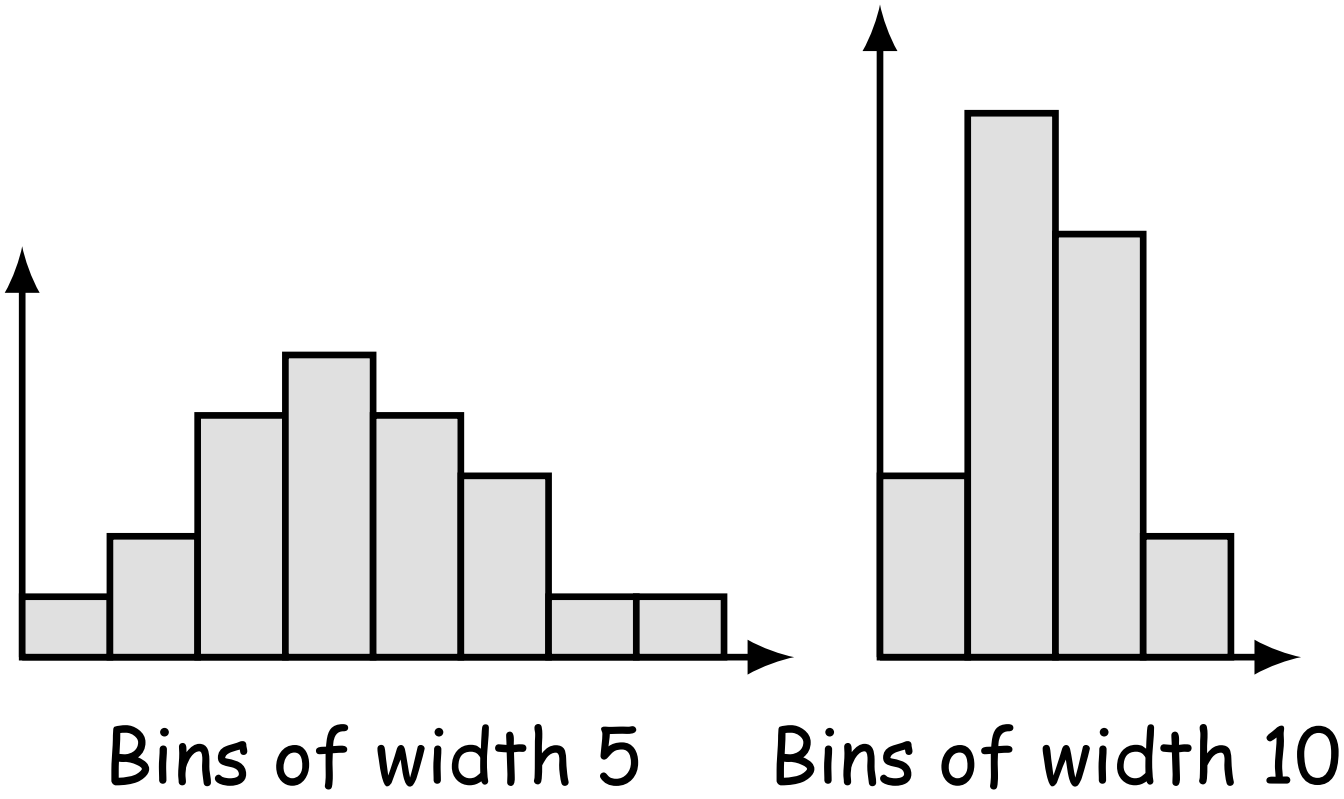
Problem 9.156 Two exact data sets have the same histogram. Explain how their means can still differ.

Problem 9.157 Study the histogram.



Find the sample size, identify the modal interval, and describe the overall shape. Can the exact mean be found? Explain.

Problem 9.158 The diagrams use two bin widths for the same data.



Which display shows more detail? Which makes the broad shape easier to see? Explain why neither contains more observations.

Problem 9.159 Create a grouped frequency table for $12, 15, 17, 22, 24, 29, 31, 36, 38, 41, 45$ using bins of width 10, then describe the shape you would expect.

Problem 9.160 Use the same data with bins of width 5. Compare what becomes easier and harder to see, and explain why both histograms can be accurate.