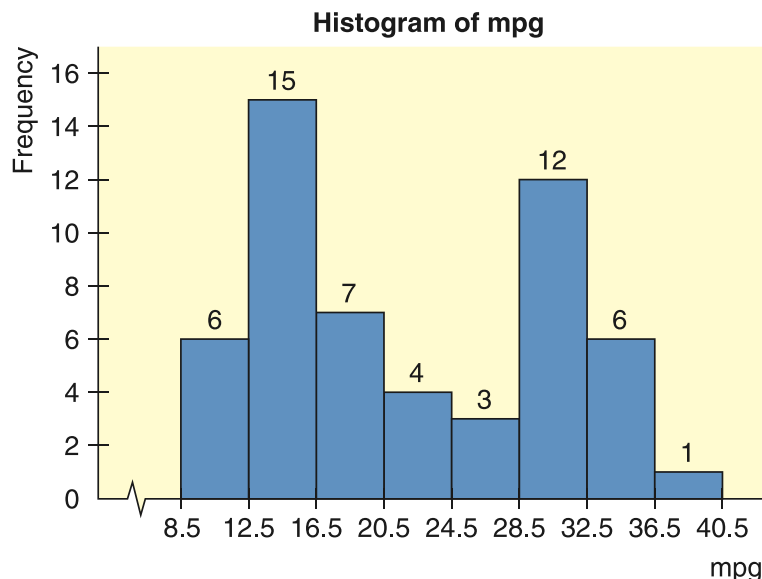


# Statistics Optional Take-Home Test 1

Number of questions—5

**Directions:** Solve each of the following problems using separate paper, while clearly indicating each problem number when solving. Irrelevant work will detract from your score, while answers without work shown will be awarded no credit. Answers with partially correct work will receive partial credit. Each problem is worth 20 points. You must work alone, but you may use a graphing calculator as a supplement to your own work if you indicate the steps used. You may not use a phone, computer, computational intelligence, AI, or other tools to assist you in solving the problems.

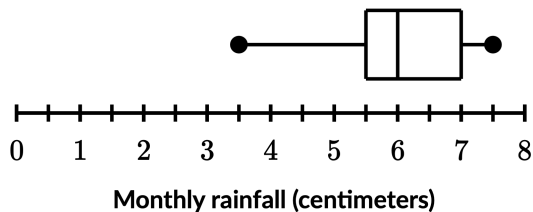
1. For each of the variables listed, state whether it is qualitative or quantitative.
  - (a) Car models are Accord, Altima, and Camry.
  - (b) Car prices are \$25,000, \$24,000, and \$29,000.
  - (c) Miles per gallon estimates are 33, 33, and 31.
  - (d) Number of seats available are 5, 5, and 5.
  - (e) Heated seats are either included or not included.
  - (f) Windshield wiper speeds are off, intermittent, and high.
  - (g) Light settings are high, medium, and low.
  - (h) Maximum speeds are 116 mph, 110 mph, and 120 mph.
  - (i) Product ID numbers are 94559, 8297776, and 64355897.
  - (j) Lengths of the cars are 195 inches, 192 inches, and 193 inches.
2. Look at the histogram in the figure, which shows mileage, in miles per gallon (mpg), for a random selection of older passenger cars.



- (a) What distribution shape best describes this histogram?
- (b) How many cars get 21-24 mpg?
- (c) How many cars were selected in total?
- (d) What percentage of cars get 16 mpg or less?
3. Wetlands offer a diversity of benefits. They provide a habitat for wildlife, spawning grounds for U.S. commercial fish, and renewable timber resources. In the last 200 year, the Unites States has lost more than half its wetlands. *Environmental Almanac* gives the percentage of wetlands lost in each state in the last 200 years. For the lower 48 states, the percentage loss of wetlands per state is as follows:

46 37 36 42 81 20 73 59 35 50  
 87 52 24 27 38 56 39 74 56 31  
 27 91 46 9 54 52 30 33 28 35  
 35 23 90 72 85 42 59 50 49  
 48 38 60 46 87 50 89 49 67

- (a) Make a stem-and-leaf display with the data. Be sure to indicate the scale.
- (b) What distribution shape best fits the data? Explain your answer.
4. Given the sample data
- 23      17      15      30      25
- (a) Find the mean of the data.
- (b) Find the variance of the data.
- (c) Find the standard deviation of the data.
- (d) Find an interval in which at least 88.9% of the data fall.
5. Here is a box plot that summarizes the average monthly rainfall of several cities.



- (a) Find the range of the data.
- (b) Find the interquartile range of the data.
- (c) Find the median of the data.
- (d) What percent of cities have more than 5.5 cm of rainfall?