



3. For each of the following variables, determine whether the variable is categorical or quantitative. For quantitative variables, further determine whether they are discrete or continuous. (4 pts. ea.)

(a) Number of dust particles in a 1-m<sup>3</sup> air sample ..... \_\_\_\_\_

(b) Color of a scented candle ..... \_\_\_\_\_

(c) Amount of soda in a bottle (small, medium, large) .... \_\_\_\_\_

(d) Amount of soda in a bottle (in milliliters) ..... \_\_\_\_\_

4. Shown below is the five-number summary for a data set on  $Y =$  price of a new motorcycle (in hundred dollars).

{35, 69, 87, 111, 168}

(a) Compute the interquartile range. (6 pts.)

(b) The highest price in the data is for BMW R1200RT. Determine whether this bike is unusually expensive. Justify your answer. (8 pts.)

(c) For the same data set, the mean and the standard deviation are  $\bar{y} = 89$  and  $s = 29$ . The lowest price in the data is for Kawasaki Ninja 250R. Calculate the  $z$ -score for this bike and give an interpretation of the computed value. (8 pts.)

5. A survey study was conducted to determine which Presidential candidate is best supported in Lake Wobegon, MN. Approximately one thousand people were randomly selected from the list of registered voters and were contacted by phone. Of all the people successfully reached, a total of  $n = 672$  responded and the rest refused to participate. Results were such that 241 people supported Candidate A, 148 supported Candidate B, and 283 supported Candidate C.

(a) What sampling frame was used in the study? (6 pts.)

(b) Identify a potential non-response bias in this study. (6 pts.)

(c) What percent of the respondents supported Candidate C? (6 pts.)

(d) Compute the margin of error for (c) above. (8 pts.)

6. Consider the following data on  $Z =$  height (in feet) for a sample of ten women.

$$Z: \{5.1, 5.3, 5.3, 5.6, 5.7, 5.7, 5.9, 6.0, 6.1, 6.2\}$$

Construct a stem-and-leaf plot using a stem width of 1 and repeating each stem digit five times. (6 pts.)