

5pts 1. Suppose a statistician is interested in the average household income of all households in Dover. Five hundred households are contacted and questioned about their annual income.

a) What is the variable of interest?

b) What is the population?

10pts 2. Classify the following data by class (qualitative, quantitative) and by type (nominal, ordinal, interval, ratio)

a) Your weight.

b) The Fahrenheit temperature needed to boil water.

c) The brand of calculator you are using.

d) The star rating of a hotel.

e) The Kelvin temperature outside today.

10pts 3. Suppose a medium sized company has 300 workers (105 secretarial, 75 managerial, 45 custodial and 75 others). Construct a relative frequency bar chart to depict this information.

10pts 4. Suppose a medium sized company has \$120,000 to spend during this month. \$60,000 will go towards payroll, \$30,000 for utilities, \$15,000 for rent and the rest for advertising. Draw a pie chart (use % instead of \$) to show this information and make sure to give your chart an appropriate title as well.

10pts 5. Construct a stem and leaf display for the following prices in cents of a gallon of gasoline at various Delmarva service stations.

378, 362, 366, 390, 363, 386, 375, 387, 371, 365, 381, 369, 373, 367, 372
386, 395, 371, 369, 373, 359, 375, 384, 373, 369, 378, 369, 387, 378, 341

10pts 6. The annual incomes of 48 randomly selected instructors of a small college are recorded below in thousands of dollars. Construct a frequency histogram using a class interval of 1.2 and 65.35 as the lower class boundary of the first class.

65.4 65.5 65.7 65.8 65.7 65.8 66.1 66.4 66.5 66.7 67.2 67.2
67.3 67.6 67.7 67.8 68.4 68.5 68.8 69.1 69.5 69.8 70.0 70.1
70.2 70.3 70.4 70.7 70.9 71.0 71.1 71.3 71.6 71.8 72.2 72.5
72.7 73.3 73.8 74.1 74.5 74.7 74.9 75.1 75.2 75.3 75.5 75.6

5pts 7. Find the median of the following data

116, 76, 88, 76, 82, 98, 98, 82, 74, 56, 112, 96, 110, 88, 98, 94, 112, 112

25pts 8. Given the following data 305, 330, 295, 424, 295, 367, 397, 421, 365, 331, 295, 330, 408
show work and find

a) The mean

b) The median

c) The mode(s)

d) The range

e) The standard deviation

5pts 9. Find the z-score for the x value and note whether the result is a sample or population z-score.

$$x = 258 \quad \sigma^2 = 36 \quad \mu = 240$$

5pts 10. A manufacturer of automobile batteries claims that the average length of life for its grade A battery is 48 months. Suppose the standard deviation of the life length is known to be 6 months, and the frequency distribution of the life length data is unknown. Explain how to determine the approximate percentage of the manufacturer's grade A batteries that could be expected to last 36 to 60 months, assuming the manufacture's claim to be true.