I: Complete each sentence by putting an appropriate word, number or phrase in the blank.

1) A __________ is a complete set of observations of interest to sample collector.

2) A sample is a __________ of population.

3) For a population with a single mode, the population is said to be skewed to the left / right if median is _______ mean

4) A _______ of data set of n measurements is the value x such that at least 25% of measurements are less than x and 75% are greater than x.

5) For any data (Tchebysheff) _______ of observations will fall within 2 / 3 standard deviations of mean.

6) For a data set having an approximately bell shaped distribution _______ % of data values within 1 / 2 Standard deviation(s)

7) The _____________ is the collection of all possible outcome of an experiment.

8) The ____ is a characteristic or property of a unit of a population

II) The legal profession conducted a study to determine the percentage of cardiologists who had been sued for malpractice in the last five years. The sample of 347 cardiologists was randomly selected from a national directory of doctors.

1) What is the population in this study?

2) What is the sample?

3) What is the variable of Interest?

III) The sample observations are 7, -2, 3, 3, 0, 4 then put your answer in the space provided.

1) Sample range is:

2) The sample mean is:

3) The sample mode is:

4) The sample median is:

5) The sample variance is:

6) The sample standard deviation is:

7) Q₁ and Q₃ of this sample are: ______ /

IVA) for each Data value described below, indicate whether it is quantitative, or qualitative

1) _______________ The amount of time a student takes to finish one course multiple choice test

2) _______________ The severity of side effects experienced by the patients while being treated with a particular medicine. The level of severity is: none, mild, moderate, severe, very severe

3) _______________ The brands of a calculator used by the students in statistics class.

4) The number of new employees hired by a Company in 2005
IV B) Determine whether the given value is statistic or a parameter.

1) A sample of students is selected and the mean average number of textbooks purchased this semester is 4.2.
2) President received 39.2% of all votes (1,865,908) caste

V) The Business Week reported that the average return on all equity funds in 2005 was 22.45. Assume that the distribution of returns for all equity funds in 2005 was mound shaped with a standard deviation of 2.50

1) Sketch a picture of this distribution. Label it carefully.
2) ________% of mutual funds in year 2000 gave the return between 19.95 % and 24.95.

VI (8 points) A data set of n = 25 measurements have the following. Calculate mean, variance, and standard deviation using the SHORT METHOD.
\[ \Sigma x = 1368.1 \quad \text{and} \quad \Sigma x^2 = 77162.63 \]

VII) A and B are events.
If 1) \( P( A \cap B) = P(A) \times P(B) \) then A and B are said to be ________
2) \( P( A \cup B) = P(A) + P(B) \), Then A and B are said to ________
3) If \( P( A \cap B) = 0 \) Then A & B are said to be ________
4) For any event \( A \), \( P(A) \leq \ldots \leq \ldots \).
5) : If A and \( \overline{A} \) are complements of each other then \( P(A) = \) ______

VIII) A pool of potential jurors consists of 10 men and 15 women. If two different people are randomly selected from this pool then Find the probability that they are both women. Hint: Use the multiplicative law of probability

IX) : Four hundred students have been classified according to their current academic status and sex. The results are given in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20</td>
<td>30</td>
<td>70</td>
<td>60</td>
<td>180</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>50</td>
<td>80</td>
<td>40</td>
<td>220</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
</tr>
</tbody>
</table>

a) What is the probability that a randomly selected student is a female?

b) What is the probability that a randomly selected student is a senior and a male?

c) What is the probability that a randomly selected is a junior or female?

d) What is the probability that a randomly selected student is not a freshman?

e) What is the probability that a randomly selected student is a sophomore and freshmen? Are the events \{ freshman\} and \{ Sophomore\} mutually exclusive?

f) Are the events \{ male\} and junior independent? Show your work.
In order to substantiate the advertised gasoline mileage claims for their cars, a manufacturer recorded the gasoline mileage ratings of 50 cars for their company's subcompact model. The following **Relative Frequency Histogram** describes the data recorded by the manufacturer. (In this question you may estimate the relative frequency).

**RELATIVE FREQUENCY HISTOGRAM FOR 50 CARS**

1) What gasoline mileage rating class contains the highest proportion of cars?

2) What proportion of cars' mileage ratings is between 32.0 and 34.9 gasoline mileage ratings?

3) What percentage of cars have gasoline mileage ratings higher than 37.9?

4) How many cars have gasoline mileage ratings less than 34.9?