**Assignment 3– Ch 3 Descriptive Statistics: Numerical Measures**

1. Why is it necessary to square the difference from the mean when computing the population variance?
2. Explain the difference between covariance and correlation coefficient.
3. Explain coefficient of variation.
4. Explain Chebyshev’s theorem and Empirical Rule
5. A management consulting firm, has four types of professionals on its staff: managing consultants, senior associates, field staff, and office staff. Average rates charged to consulting clients for the work of each of these professional categories are $75/hour, $40/hour, $30/hour, and $15/hour. Office records indicate the following number of hours billed last year in each category: 8,000 ; 14,000 ; 24,000 ; 35,000. If the firm is trying to come up with an average billing rate for estimated client charges for next year, what would you suggest they do and what do you think is an appropriate rate?
6. In a small business firm, two typists are employed-typist A and typist B. Typist A types out, on an average, 30 pages per day with a standard deviation of 6. Typist B, on an average, types out 45 pages with a standard deviation of 10. Which typist shows greater consistency in his output?
7. The following table shows the marks obtained by 52 students in a test

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |
| Frequency | 2 | 14 | 23 | 7 | 4 | 2 |

1. Calculate variance and the standard deviation
2. Since the distribution is roughly bell-shaped, as per Emperical Formula how many students score between 0.5 and 1.5? As per actual data, how many students score between 0.5 and 1.5?
3. According to Chebyshev’s theorem, calculate the range of marks within which 65% of the students will score?
4. The following data give the savings bank accounts balances of nine sample households selected in a survey. The figures are in rupees.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 745 | 2,000 | 1,500 | 68,000 | 461 | 549 | 3,750 | 1,800 | 4,795 |

(a) Find the mean and the median for these data; Which of the two is the better measure of central tendency of this data and why?

(b) Do these data contain an outlier? If so, exclude this value and recalculate the mean and median. Which of these summary measures has a greater change when an outlier is dropped?

(c) Which of these two summary measures is more appropriate for this series?

(d) Find the range, interquartile range, 10th percentile, 50th percentile.