W2A3 Sample questions

1. For a particular sample of 63 scores on a psychology exam, the following results were obtained.
First quartile = 57  Third quartile = 72 Standard deviation = 9  Range = 52
Mean = 72   Median = 68   Mode = 70  Midrange = 57
Answer each of the following:

I.       What score was earned by more students than any other score? Why?
II.     What was the highest score earned on the exam?
III.    What was the lowest score earned on the exam?
IV.     According to Chebyshev's Theorem, how many students scored between 54 and 90?
V.       Assume that the distribution is normal.  Based on the Empirical Rule, how many students scored between 54 and 90?

1. Find the range, standard deviation, and variance for the following sample data:
60, 74, 78, 75, 41, 35, 4, 82, 61, 33, 30, 62, 40, 64, 49, 69
2. In terms of the mean and standard deviation:
-          What does it mean to say that a particular value of x has a standard score of +1.5?
-          What does it mean to say that a particular value of x has a z-score of -2.6?
3. A student scored 37 percent on a test, and was in the 23rd percentile. Explain these two numbers.
4. In each of the four examples listed below, one of the given variables is independent (x) and one of the given variables is dependent (y).  Indicate in each case which variable is independent and which variable is dependent.
I. Cost to ship; Size of package
II. Geographic location; Average annual snowfall
III. Length of ride; Taxi fare
IV. DNA of offspring; DNA of parents

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| 1. A sample of purchases at the local convenience store has resulted in the following sample data, where x = the number of items purchased per customer and f = the number of customers.

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| --- | --- | --- | --- | --- | --- |
| x | 1 | 2 | 3 | 4 | 5 |
| f | 6 | 10 | 9 | 8 | 7 |
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What does the 10 stand for in the above table? Find the midrange of items purchased.How many items were purchased by the customers in this sample? |

1. Suppose we have a set of blood pressures with a mean of 110 Systolic, and a sample standard deviation of 15 points.  If we assume a normal distribution of Systolic blood pressures, then between what two values can we be assured 99.7% of all Systolic blood pressures will lie?
2. Household income does not tend to follow a normal distribution in a particular state, yet average income is approximately $45,000/year in this state, with a standard deviation of about $9000.  Within what income range would approximately 93.75% of the household incomes lie within this state?  Show all work as to how this is obtained.