Basic Statistics

Name:

Test 1

1) A test worth 100 points was given to a class with the following results:

**Midpoint Interval Freq. Rel. Freq.**

89.5 – 99.5 5

79.5 – 89.5 8

69.5 – 79.5 17

59.5 – 69.5 7

49.5 – 59.5 3

A) Fill in the *Midpoint* column and the *Relative Frequency* column in the above

table.

B) Draw the Histogram.

C) Calculate the ***population* mean** and ***population* standard deviation**.

\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_

D) What proportion of the class score 79.5 or above?

*P*(*X* 79.5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) Consider the probability experiment of flipping a fair coin 6 times. Let X be the

number of heads. The probability distribution is given in the following table:

**X P(X) freq.**

0 .016 1

1 .094 6

2 .234 15

3 .313 20

4 .234 15

5 .094 6

6 .016 1

A) *Carefully* Draw the Histogram, labeling both axis.

B) Calculate the population mean and standard deviation.

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C) What is the probability of flipping a coin 6 times and getting exactly 3 heads?

*P*(*X* 3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D) What is the probability of flipping a coin 6 times and getting 4 or MORE heads?

*P*(*X* 5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) Emissions data for a sample of different vehicles are given for HC (hydrocarbon) and CO (carbon monoxide), which are both measured in grams per meter.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HC | 0.65 | 0.55 | 0.72 | 0.83 | 0.57 | 0.51 | 0.43 | 0.37 |
| CO | 14.7 | 12.3 | 14.6 | 15.1 | 5.0 | 4.1 | 3.8 | 4.1 |

A) Construct the scatter diagram of the data.

B) Calculate the linear correlation coefficient r, and the slope and y-intercept of the regression line. Draw the graph of the regression line on the same plot as the scatter diagram above.

r =

slope =

y-intercept =

C) Find the best predicted value of CO given that the HC amount is 0.62 g/m.

4) Listed below are intervals (in minutes) between eruptions of the Old Faithful geyser in Yellowstone National Park. After each eruption, the National Park Service provides an estimate of the length of time to the next eruption. From the sample data below, find the mean and standard deviation for the time between eruptions.

98, 92, 95, 87, 96, 90, 65, 92, 95, 93, 98, 94, 77, 85, 81, 93

5) Stanford Binet IQ scores have a mean of 100 and a standard deviation of 15. Albert Einstein reportedly had an IQ of 160. Convert Einsteins’s IQ score to a z score. Suppose Forrest Gump had an IQ score of 65. Convert Forrest Gump’s IQ score to a z score.

Ans: Einstein’s z score = \_\_\_\_\_\_\_\_\_ and Forrest Gump’s z score = \_\_\_\_\_\_\_\_\_\_