Statistical Methods Test 1 Practice

Chapters 2 – 6.

Use this data table for questions within the practice test. The data is not in numerical order since you do not have an in-class time constraint.

Geographic Latitude and Mean August Temperature

City	Latitude	Aug.Temp
Miami FL	26	83
Houston TX	30	82
Mobile AL	31	82
Phoenix AZ	33	92
Dallas TX	33	85
Los Angeles CA	34	75
Memphis TN	35	81
Norfolk VA	37	77
San Francisco CA	38	64
Baltimore MD	39	76
Kansas City MO	39	76
Washington DC	39	74
Pittsburgh PA	40	71
Cleveland OH	41	70
New York NY	41	76
Boston MA	42	72
Syracuse NY	43	68
Minneapolis MN	45	71
Portland OR	46	69
Duluth MN	47	64

I. Specify whether each of the following is a categorical variable or a quantitative variable.

1. Your favorite color.
2. Your shoe size.

II. Using both the Geographical Latitude and the August temperatures, find the following:

3. Create a stem and leaf display
4. Mean
5. Range
6. Standard Deviation
7. Five Number Summary
8. Draw a boxplot

III. Answer the following questions, using the August temperature calculations from Part II.

9. Suppose Orlando, FL is 85 degrees, what is the percentile for this temperature?
10. Now suppose that Buffalo, NY is in the 32^{nd} percentile for its temperatures. What is the z-score for this percentile?
11. What formula will you use to find Buffalo's temperature?
12. What is Buffalo's temperature?

IV. Construct the following:

13. Use the Geographical Latitude to create a dotplot, describe its distribution.

14. Use the August Temperatures to create a histogram with a bin width of five, starting at 60, describe its distribution.

V. Adult IQ Scores have a normal distribution with a mean of 100 and a standard deviation of 15.

15. Using the Empirical Rule between what two IQ scores would 95% of adults fall?

16. Calculate the z-score for an adult with an IQ score of 67.

VI. In November 2003 *Discover* published an article on the colonies of ants. They reported some basic information about many species of ants and the results of some discoveries found by myrmecologist Walter Tschinkel of the University of Florida. Information included the scientific name of the ant species, the geographic location, the depth of the nest (in feet), the number of chambers in the nest, and the number of ants in the colony. The article documented how new ant colonies begin, the ant-nest design, and how nests differ in shape, number, size of chambers, and how they are connected, depending on the species. It reported that nest designs include vertical, horizontal, or inclined tunnels for movement and transport of food and ants.

17. Identify the Who.
18. Identify the What.
19. Identify the Why.

Statistical Methods Test 1 Practice

ANSWERS:

1. Categorical
2. Quantitative
3. First is for latitude and the second is for temperature.

2	6										
3	0	1	3	3	4	5	7	8	9	9	9
4	0	1	1	2	3	5	6	7			

6	4	4	8	9					
7	0	1	1	2	4	5	6	6	6	7
8	1	2	2	3	5					
9	2									

4. $\bar{x} = 37.95, \bar{x} = 75.4$
5. 21, 28
6. $s = 5.5864, s = 7.1994$
7.

Min	Q1	Median	Q3	Max		Min	Q1	Median	Q3	Max
26	33.5	39	41.5	47		64	70.5	75.5	81.5	92

9. 90.82%
10. $z = -0.47$
11. $x = \bar{x} + zs$
12. 72.0 degrees
13. skewed left, possible outliers, unimodal
14. symmetric, unimodal, no outliers
15. 70 to 130
16. $z = -2.2$
17. colonies of ants
18. scientific name, geographic location, average nest depth, average number of chambers, average colony size, how new any colonies begin, the ant-nest design, and how nests differ in architech
19. information of interest to readers of the magazine