

HOMWORK 2

Show ALL WORK to get full credit.

(Write the pledge on top of your work and sign under it.)

Problem 1:

The following table contains the daily high temperatures for a southern city in July (measured in degrees Fahrenheit).

High Temperature in July (°F)									
84	85	84	88	94	100	97	102	97	89
89	90	88	95	91	95	99	93	97	99
90	94	90	88	91	88	106	99	102	85

- Calculate the mean of the daily high temperature.
- Calculate the median of the daily high temperature.
- Calculate the mode of the daily high temperature.
- Calculate the 10% trimmed mean of the daily high temperature.
- Which measure of central tendency (location) do you think best describes the center of the data set? Why?

Problem 2:

Consider the following time until failure for 10 randomly selected car batteries (measured in years).

Years until Failure for Car Batteries									
5	3	4	6	2	5	7	10	8	4

- Calculate the sample variance of the time until failure.
- Calculate the sample standard deviation of the time until failure.
- Calculate the range of the time until failure.
- What are some of the factors which might contribute to the variation in the observations?

Problem 3:

Consider the following market values of two portfolios of stocks at five randomly selected times during a year.

Market Values (\$)					
Portfolio A	150,000	155,000	145,000	160,000	140,000
Portfolio B	130,000	175,000	100,000	150,000	195,000

- Calculate the mean, (sample) standard deviation, maximum value, minimum value and range for the two portfolios.
- Which portfolio has the least amount of risk? Why?

Problem 4:

Subjects in a marketing study were shown a film and at the end of the film were given a test to measure their recall. The scores are listed in the following table.

Test Scores														
97	31	61	49	61	85	35	57	31	26	27	40	86	78	28
61	87	62	92	58	38	95	81	68	64	72	45	57	84	100

- Calculate Q_1 , the first quartile.
- Calculate Q_2 , the second quartile.
- Calculate Q_3 , the third quartile.
- Explain the meaning of these quartiles in the context of the marketing study.
- Calculate the interquartile range IQR.
- Construct a box plot for the test scores.
- Are there any outliers? If yes, list them.

Problem 5:

Find the sample space for the given experiments.

- When choosing your seat at the opera, you can choose from three levels and then whether you want an aisle seat or not.
- A bag contains four marbles: one each of green, red, blue, and violet. Randomly draw two marbles from the bag and consider their colors (order of colors does not matter). Assume that the first marble is not put back in the bag before drawing the second marble.

Problem 6:

A family consisting of three persons - A, B, and C - goes to a medical clinic that always has a doctor at each of stations 1, 2, and 3. During a certain week, each member of the

family visits the clinic once and is assigned at random to a station. The experiment consists of recording the station number for each member. One outcome is (1, 2, 1) for A to station 1, B to station 2, and C to station 1.

- a) List the 27 outcomes in the sample space.
- b) List all outcomes in the event that all three members go to the same station.

Problem 7:

A college library has five copies of a certain text on reserve. Two copies (1 and 2) are first printings, and the other three (3, 4, and 5) are second printings. A student examines these books in random order, stopping only when a second printing has been selected. One possible outcome is 5, and another is 213.

- a) List the outcomes in S.
- b) Let A denote the event that exactly one book must be
- c) examined. What outcomes are in A?
- d) Let B be the event that book 5 is the one selected. What outcomes are in B?
- e) Let C be the event that book 1 is not examined. What outcomes are in C?