



STATISTICS 1, 2, 3 & 4

Assignment 1

STATISTICS 1, 2, 3 & 4: Assignment 1

Table of Contents

1.Introduction

2.Problem Statement

3.Output

1. Introduction

This assignment will help you to consolidate the concepts learnt in the session.

2.1. Problem Statement: STATISTICS 1

1. You survey households in your area to find the average rent they are paying. Find the standard deviation from the following data:

\$1550, \$1700, \$900, \$850, \$1000, \$950.
2. Find the variance for the following set of data representing trees in California (heights in feet):

3, 21, 98, 203, 17, 9
3. In a class on 100 students, 80 students passed in all subjects, 10 failed in one subject, 7 failed in two subjects and 3 failed in three subjects. Find the probability distribution of the variable for number of subjects a student from the given class has failed in.

2.2. Problem Statement: STATISTICS 2

1. A test is conducted which is consisting of 20 MCQs (multiple choices questions) with every MCQ having its four options out of which only one is correct. Determine the probability that a person undertaking that test has answered exactly 5 questions wrong.
2. A die marked A to E is rolled 50 times. Find the probability of getting a "D" exactly 5 times.
3. Two balls are drawn at random in succession without replacement from an urn containing 4 red balls and 6 black balls.

Find the probabilities of all the possible outcomes.

2.3. Problem Statement: STATISTICS 3

Blood glucose levels for obese patients have a mean of 100 with a standard deviation of 15. A researcher thinks that a diet high in raw cornstarch will have a positive effect on blood glucose levels. A sample of 36 patients who have tried the raw cornstarch diet have a mean glucose level of 108. Test the hypothesis that the raw cornstarch had an effect or not.

1. In one state, 52% of the voters are Republicans, and 48% are Democrats. In a second state, 47% of the voters are Republicans, and 53% are Democrats. Suppose a simple random sample of 100 voters are surveyed from each state.

What is the probability that the survey will show a greater percentage of Republican voters in the second state than in the first state?

2. You take the SAT and score 1100. The mean score for the SAT is 1026 and the standard deviation is 209. How well did you score on the test compared to the average test taker?

2.4. Problem Statement: STATISTICS 4

1. Is gender independent of education level? A random sample of 395 people were surveyed and each person was asked to report the highest education level they obtained. The data that resulted from the survey is summarized in the following table:

	High-School	Bachelor	Masters	Ph.D.	Total
Female	60	54	46	41	201
Male	40	44	53	57	194
Total	100	98	99	98	395

Question: Are gender and education level dependent at 5% level of significance? In other words, given the data collected above, is there a relationship between the gender of an individual and the level of education that they have obtained?

2. Using the following data, perform a one-way analysis of variance using $\alpha=.05$. Write up the results in APA format.

[Group1: 51, 45, 33, 45, 67]

[Group2: 23, 43, 23, 43, 45]

[Group3: 56, 76, 74, 87, 56]

3. Calculate F Test for given 10, 20, 30, 40, 50 and 5,10,15, 20, 25.

For 10, 20, 30, 40, 50:

Note: Solution submitted via github must contain all the detailed steps.

4 . Output

This assignment consists of 800 marks and has to be submitted in Github. You can follow Github submission guide provided to do the same.