**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.**

## Ans:

Step-1: State the hypotheses. The population mean is 100.

H0: μ= 100

H1: μ > 100

Step-2: Set up the significance level. It is not given in the problem so let’s assume it as 5% (0.05).

Step-3: Compute the random chance probability using z score and z-table.

For this set of data: z= (108-100) / (15/√36)=3.20

You can look at the probability by looking at z- table and p-value associated with 3.20 is 0.9993 i.e. probability of having value less than 108 is 0.9993 and more than or equals to 108 is (1-0.9993)=0.0007.

Step-4: It is less than 0.05 so we will reject the Null hypothesis i.e. there is raw cornstarch effect.

**Problem Statement 2:**

**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?**

## State\_1\_ Republicans 52

## State\_1\_Democrats 48

## State\_2\_Republicans 47

## State\_3\_Democrats 43

## The mean of difference in sample proportions 0.05

## Standard deviation of the differences

## 1\_Value 0.00249600

## 2\_Value 0.00249100

## Standard Deviation both = 0.07061869

## Probability of P1 is less than P2 by -0.708

## Using Normal Distribution calculator

## P(z < = 0.7082) = 0.24

## The probability of a z-score being -0.7082 or less is 0.24

**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?**

You take the SAT and scored 1100

We have the mean score for SAT as 1026 and Standard Deviation is 209

Z=(1100-1026)/209

Z = 0.354

Now,

check the z-value from z table for the percentage of test – seeker scored.

A z-score of .354 which is approximately equal to 64%