**Problem Statement 1:**

**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.**

H0: μ= 100

H1: μ > 100

z= (108 - 100) / (15 / 36 \*\* 0.50) = 3.20

z critical is +1.96 and -1.96

So we reject null hypothesis as 3.20 much larger than +1.96 and falls above. the critical region

**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?**

Total voters in first = 100

Total voters in second = 100

P1 = republic voters if first state = 0.52

P2 = republic voters if second state = 0.47

Mean = 0.52 – 0.47 = 0.05

Std deviation = (P1(1 - P1) / n1 ] + [ P2(1 - P2) / n2) \*\* 0.50 = 0.070

Ztest = (0 - 0.05)/0.070 = -0.70

The P-Value is .241964(by using <https://www.socscistatistics.com/pvalues/normaldistribution.aspx>)

**Problem Statement 3:**

**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?**

Z = 1100 -1026 / 209 = 0.354

Form <https://www.statisticshowto.com/tables/z-table/> : we see that o.354 corresponds to 0.1368 + 5000 = 0.6368 = 63.68 %