**Problem Statement1:**

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 or negative effect on blood glucose levels. A sample of 30 patients who have tried the raw cornstarch diet have a mean glucose level of 140. Test the hypothesis that the raw cornstarch had an effect.

**Solution:**

Step 1: State the null hypothesis: H0:μ=100

Step 2: State the alternate hypothesis: H1:≠100

Step 3: State your alpha level. We’ll use 0.05 for this example. As this is a two-tailed test, split the alpha into two.

0.05/2=0.025

Step 4: Find the z-score associated with your alpha level. You’re looking for the area in one tail only. A z-score for 0.75(1-0.025=0.975) is 1.96. As this is a two-tailed test, you would also be considering the left tail (z=1.96)

Step 5: Find the test statistic using this formula: z score formula

z=(140-100)/(15/√30)=14.60.

Step 6: If Step 5 is less than -1.96 or greater than 1.96 (Step 3), reject the null hypothesis. In this case, it is greater, so you can reject the null.