1. A certain brand of oatmeal claims that eating their oatmeal product for breakfast will decrease your cholesterol level by an average of 12.5. To verify the claim, a laboratory selected 120 individuals with medium cholesterol level who regularly eat oatmeal for breakfast for certain period and found that the cholesterol level decreased by 12.1 with a standard deviation of 3.2. Assuming that the decrease in cholesterol levels in one month is normally distributed, follow the five steps hypothesis testing and test the validity of the oatmeal manufacture's claim at 95%.level

Ans.

- To Test

Ho : $\mu = 28$ Vs H1 : $\mu \neq 28$ (Two tailed test)

- Level of Significance

$\alpha = 0.05$

- Test Statistics: We use z test as n is large.

$$z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}} \text{ follows N(0,1)}$$

$$= -1.37$$

where

$\bar{x} = 12.1$ n=120 $\sigma = 3.2$ $\mu = 12.5$

- P-value =2 * P(z < -1.37) = 0.1709

Since P-value of 0.1709> 0.05 we do not reject H0.

It is statistically not significant.

- Thus data does not provide enough evidence at a 0.05 level to justify rejecting H0. Thus we conclude regarding manufacture's claim that eating their oatmeal product for breakfast will decrease your cholesterol level by an average of 12.5 is true.

Hypothesis Test: Mean vs. Hypothesized Value

12.500	hypothesized value
12.100	mean
3.200	std. dev.
0.292	std. error
120	n
-1.37	z
.1709	p-value (two-tailed)