Lab 2: Z test for mean, population SD is known

A manufacturer of a certain brand of 9-volt batteries claims that the average life of battery is hours

One-Sample Z

Descriptive Statistics

|  |  |  |  |
| --- | --- | --- | --- |
| N | Mean | SE Mean | 95% CI for μ |
| 100 | 38.000 | 0.500 | (37.020, 38.980) |

*μ: mean of Sample  
Known standard deviation = 5*

Test

|  |  |
| --- | --- |
| Null hypothesis | H₀: μ = 40 |
| Alternative hypothesis | H₁: μ ≠ 40 |

|  |  |
| --- | --- |
| Z-Value | P-Value |
| -4.00 | 0.000 |

Conclusion: Since p-value=0.000<<α=0.05, we strongly reject H0 at 5% level of significance. Since, sample mean is 38 hours and the test is significant, we can conclude that the average life of battery is significantly lower than 40 hours.