

Topics 16-20 Review

1. A pair of dice used to play the game of craps in a Lake Tahoe casino is suspected of having been tampered with. Specifically, it is believed that this pair of dice has been “loaded” so as to produce the sum of “7” an exceptional number of times. When the dice were rolled 100 times, they produced a sum of “7” 25 times.
 - a) Create and interpret a 99% confidence interval to estimate the percentage of times a “7” would be rolled.

 - b) What would be the probability of rolling a sum of “7” on fair dice?

 - c) Does this sample provide significant evidence that the dice are loaded?

2. A battery manufacturer randomly quality control tests its products. The standard deviation of the operating life of a "D" size battery is 3.0 hours. A sample of 9 batteries has a mean operating life of 20 hours. The manufacturer claims that its batteries have a mean operating life of 22 hours.

a) Create and interpret a 95% confidence interval for the mean number of hours a "D" battery will last.

b) Should the manufacturer be concerned about his claim at the 5% level of significance?

c) What assumptions are you making in order for this test to be valid?