

True/False - No explanation needed. (2pts)

1. If we want to find a 99% confidence interval, we need to change the constant 2 appears in the formula of 95% interval to a bigger number. True/False
2. The Maximum Likelihood (M-L) method uses a probabilistic experiment to estimate a real world parameter θ by considering all possible outcomes of the experiment. True/False

Problems - Need justification. No justification means **zero!**

Assume that we are flipping a biased coin until we get a head. We did this process 10 times and we counted the number of tails until we get a head:

6, 7, 11, 9, 13, 8, 10, 9, 12, 5.

Let p be a probability that head comes out when we flip the coin once.

Estimate the probability p and the variance σ^2 . For the variance, compute it **by using two different estimators** - universal one or the specific one for specific distribution. You can assume that the sum of above numbers is 90 and the sum of squares is 870.

Also, compute the 95% confidence interval (you can use any of the estimators above). (10pts)