

1. Assuming that the null hypothesis is true, the p-value is the probability that trends we see in the data are due to random chance rather than something meaningful.
 - a. Ex: if the p-value is 0.05, that means one out of 20 data points will be significant
 - b. If results are below the p-value, that means results reject the null hypothesis.
Data not from random chance, good!
2. The p-value is 0.0059, which means that the null hypothesis is rejected. The coin is rigged as its results are not due to random chance.
3.
 - a. The mutation status of the gene MSH2 between old and young colorectal cancer patients will be the same.
 - b. Old colorectal cancer patients will have more mutations in their MSH2 gene.
 - c. Given that the p-value is 0.07, this means that greater amount of mutation found amongst younger patients is due to random chance rather than statistical significance. However, if the p-value is 0.03, the null hypothesis is rejected and the trend we found is meaningful. MSH2 does mutate more frequently in younger patients compared to older patients. This response assumes that the p-value threshold used in the experiment is 0.05.
 - d. The false-positive rate will be too high for a p-value of 0.05 to determine if the data is significant.
4.
 - a. Alex's answer is false because we can only say that the data supports a hypothesis, not that results prove it.
 - b. Jamie's answer is correct because according to Fisher's Exact Test, the low p-value indicates that the two variables are dependent. The null hypothesis is rejected.