

MAT-204:00020

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1. The probability of blue team destroying more structures than the red team and if team blue wins: 0.068 or 6.8% (Calculated via the original dataset or Dat)

Comparing the value to the the same event but calculated via the `dat_blue_wins` dataset, the results are the same with 0.068 or 6.8%

2. Using the chain rule, we can calculate the probability of blue team winning, kills the dragon and the heralds as well as doing the first kill is 0.038 or 3.8%

Comparing that value to the same event but calculated via the new dat set (`dat_blue_wins_and_kills_dragons_and_heralds_and_firstblood`) is the same with the result being 0.038 or 3.8%

3. The instruction below does the following: Divide the dataset into four quantiles resulting in what can be referred to as “quartiles”.

```
Dat["blueQuantileGold"] = pd.qcut(Dat["blueTotalGold"], 4, labels=False)
```

Using the law of probability to calculate $P(A)$ of events B_1, \dots, B_2 which results in 0.499 or basically 50% and when compared or verified using the value calculated via the normal way of calculating probability (event / sample space) in the same number with 0.499 or 50%.

4. Using Bayes' theorem to calculate the probability that team blue wins where it destroys more structures than the red team results in the value of 0.760 or 76% which when verified via calculation using the Dat dataset, the results of the two are similar / same with 0.760 or 76%.