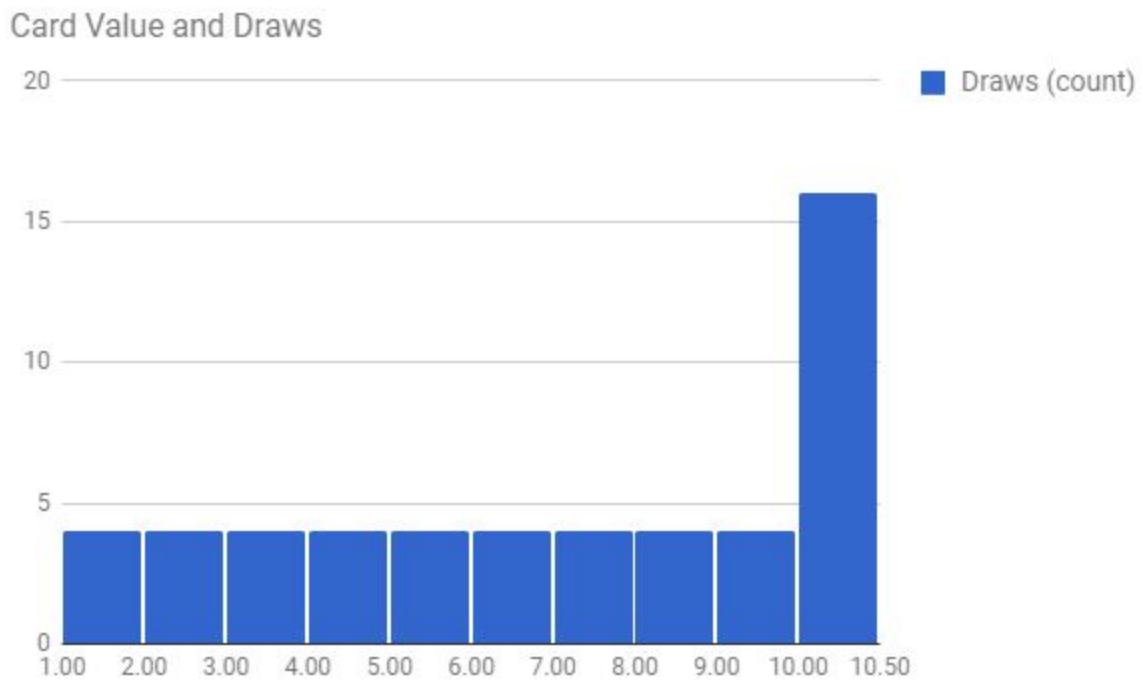


Cards Draw Project

1. Single-Card Draw

This is the histogram:

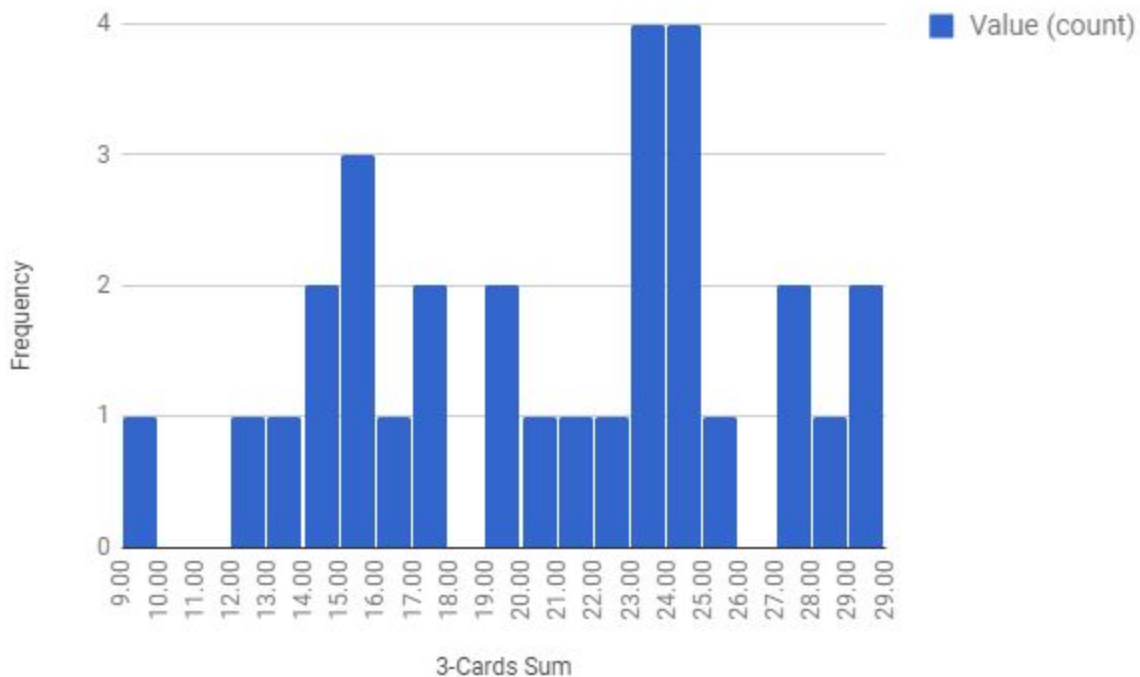


The Mean: 6.54
The Median: 7
Standard Deviation: 3.15

2. 3-Cards Draw Stats

The Mean: 20.37
The Median: 21.5
Variance: 28.90
Standard Deviation: 5.38

3. 3-Cards Draw Histogram



The histogram for the 3-cards draw shows a Normal Distribution, and that is different from the single-card distribution which is a mostly Uniform Distribution (it will be perfectly Uniform if we draw the 10-value cards as single cards by themselves). This is expected as drawing samples from a any population of any distribution form will result in a Normal distribution as postulated by the **Central Limit Theorem**

4. 3-Cards Draw Analysis

A. I would expect that most future draws will be within the 15-25 range, which is approximately 1 standard deviation below and above the mean.

B. 90% of the expected range of drawn values will be **between 3 to 24.35**

This was calculated by finding the Z-value corresponding to 90% (which is 1.285), then calculating the Standard Error (which is 3.1) and then finally to find the cards value corresponding to 90% which is 24.35 while the minimum possible value is 3 (which corresponds to drawing 3 aces. While not likely but it is the lowest possible).

C. The probability of drawing at least 20 is **0.5438**

First I calculate the Z-value corresponding to the value 20, which is -0.12

Then I find the probability of getting up to this value, which is 0.4562 (from the Z-tables)
Now getting at least this value would be $1 - 0.4562 = 0.5438$

Finally, after checking the quiz answers provided in the course end, I see that some of my answers are a little different from the provided answers. I double checked my figures and I think they are correct, so I am leaving them as is to see if I get some feedback to see where I went wrong or missed something.

Below are the Quiz answers provided by the course:

The sample mean is 20.37. The sample median is 21.5. The sample standard deviation is 5.47. The sample variance is 29.90. The interquartile range is 9.

90% of all draw sums should fall between 11 and 29.

Draws of at least 20 should occur with probability approximately 0.5630.