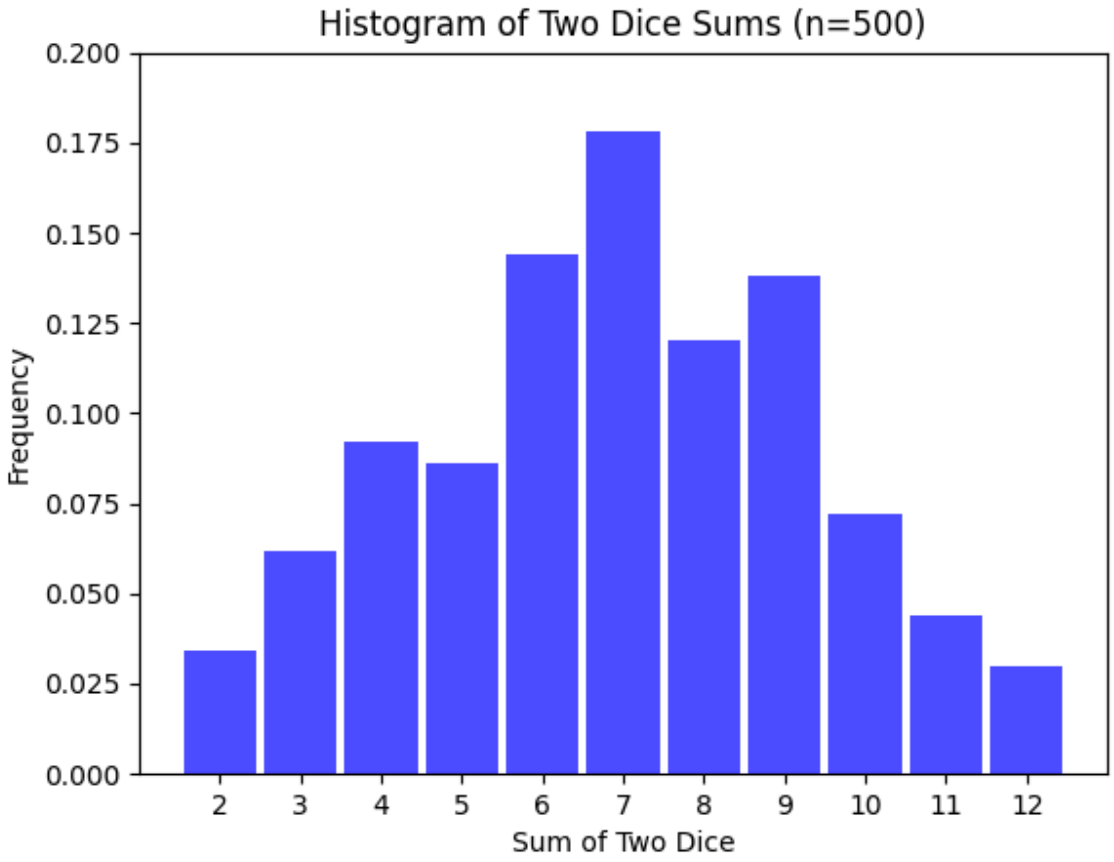
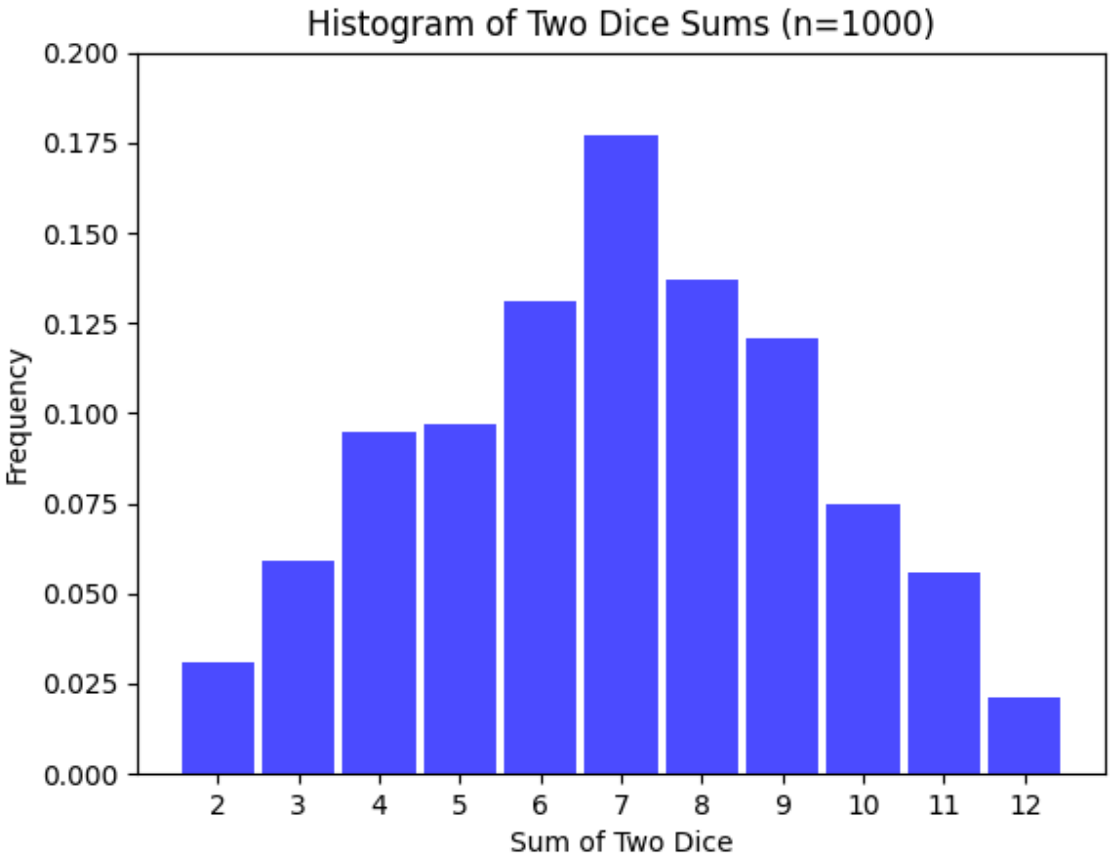
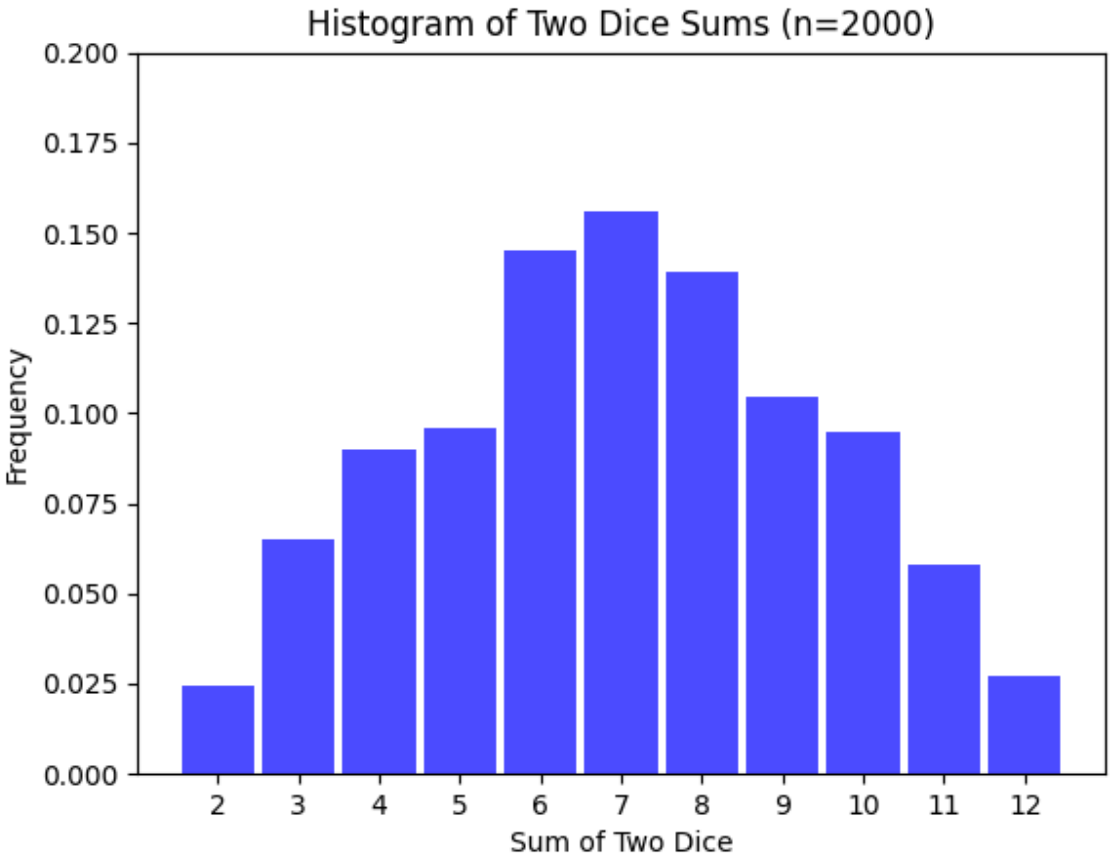
Exercise 1:

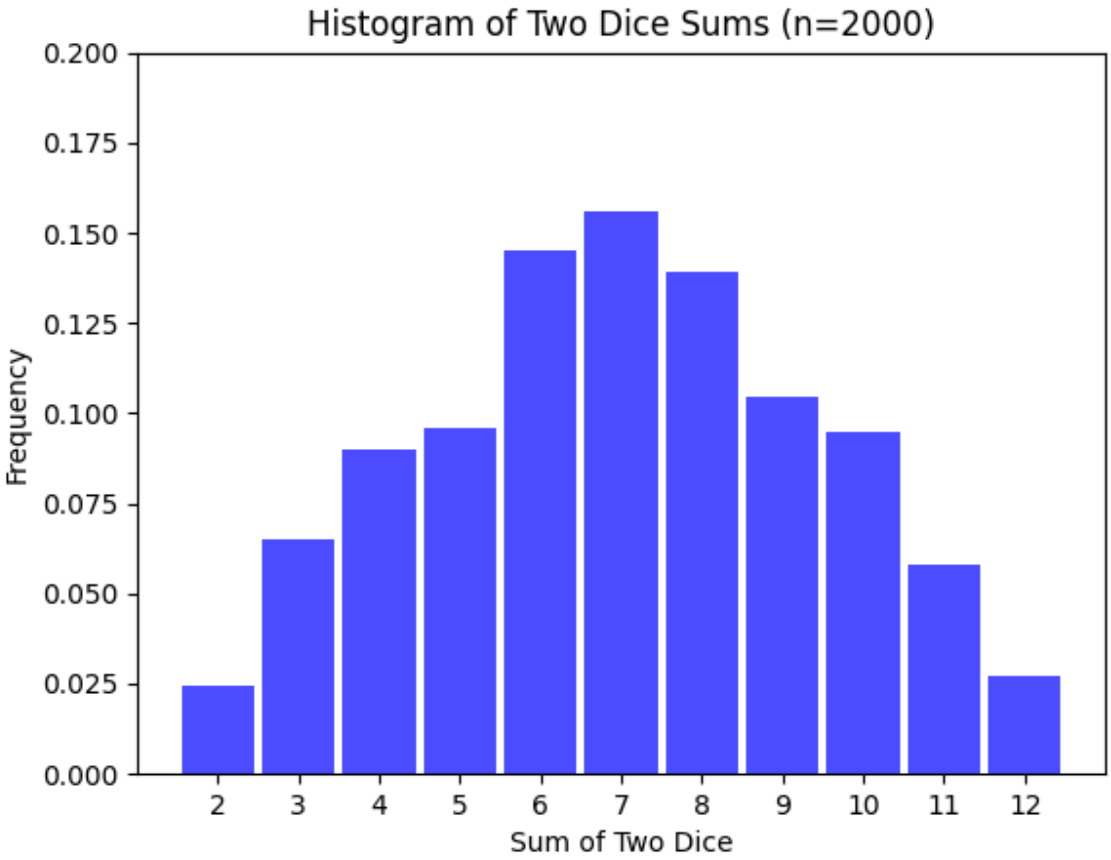
As n increases, the histogram becomes smoother and more closely resembles the theoretical probabilities.With smaller n, randomness causes some sums to appear more or less frequently than expected.For larger n, the relative frequencies

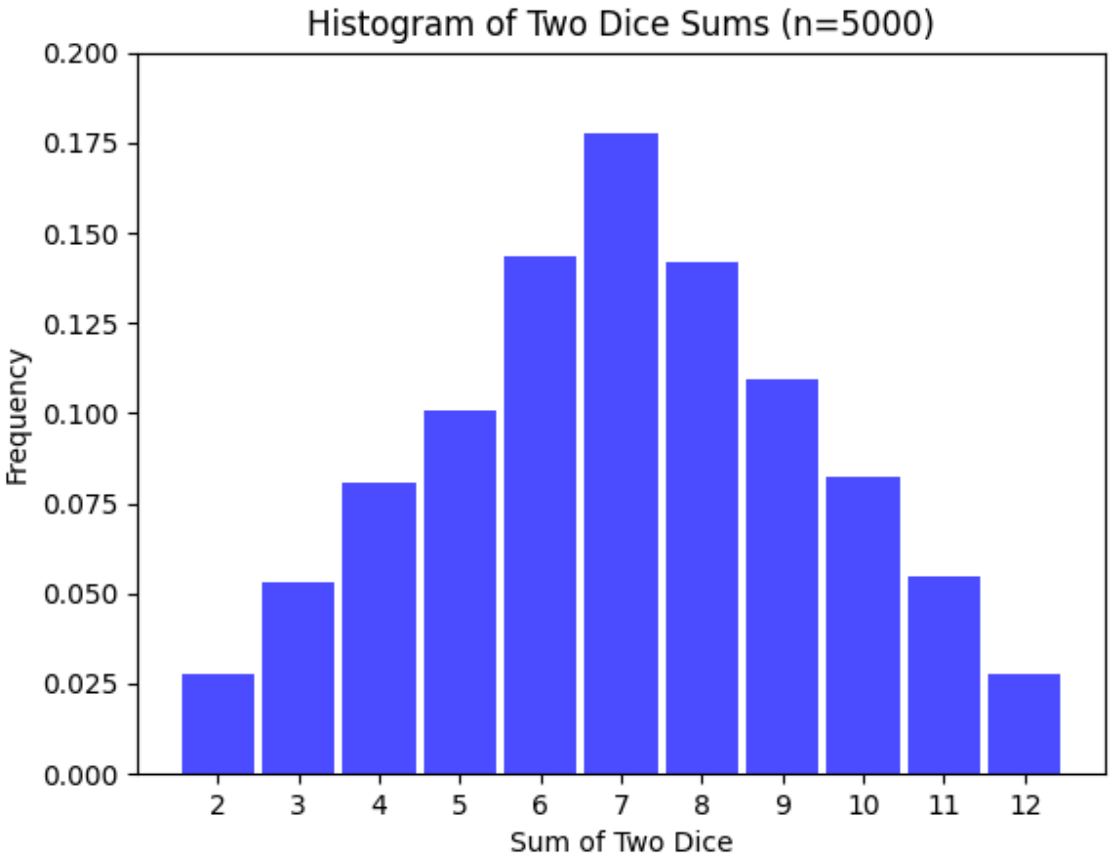


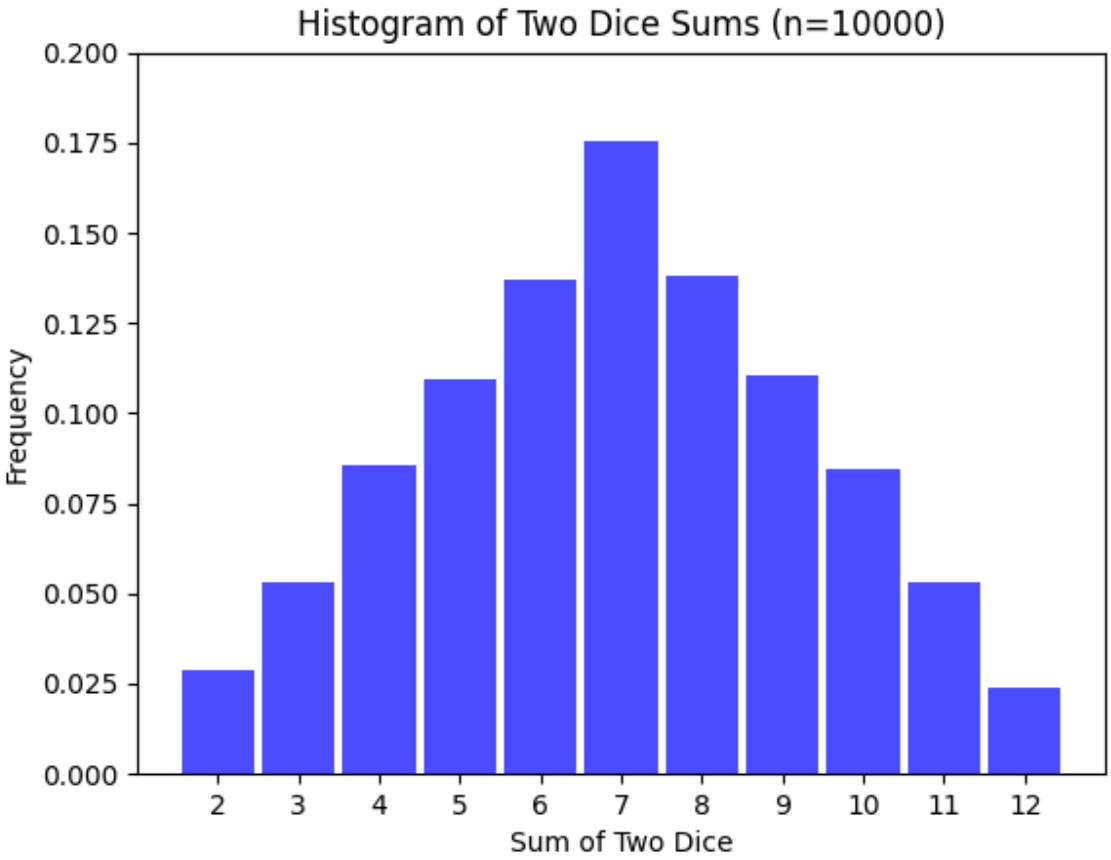
converge toward the expected probabilities.

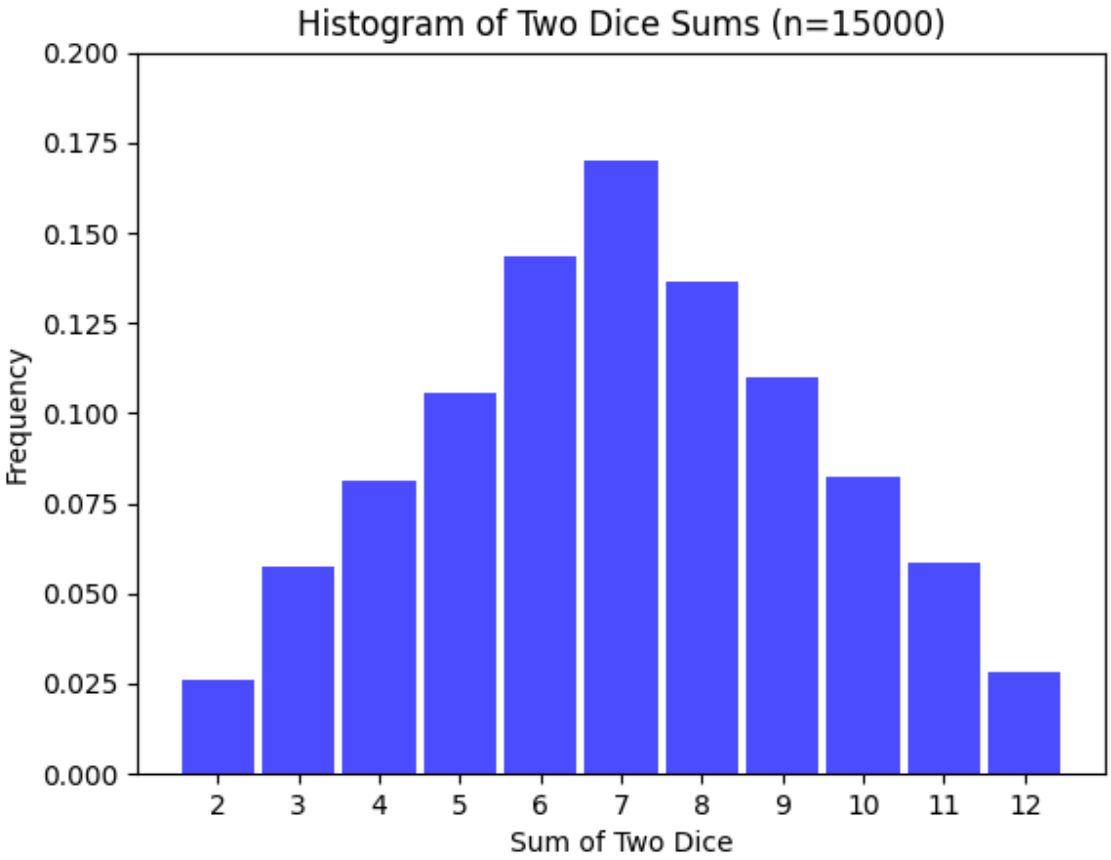

Histogram of Two Dice Sums (n=1000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice

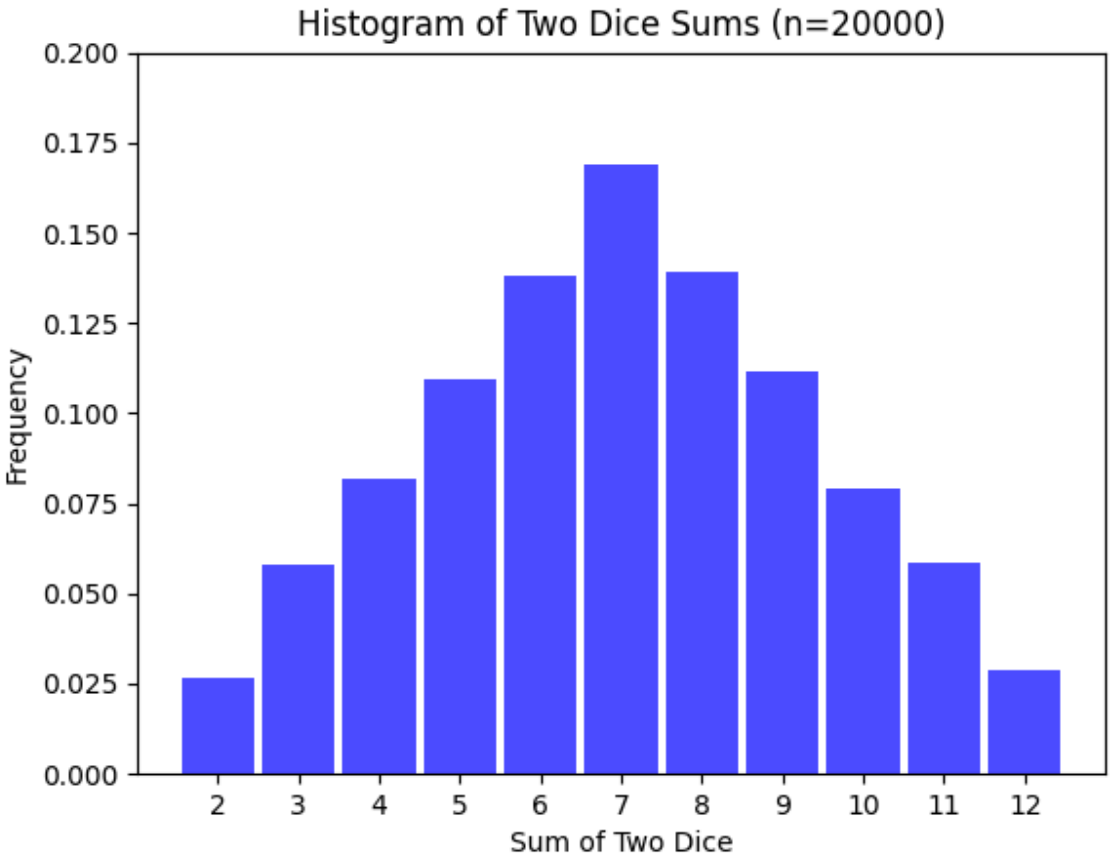

Histogram of Two Dice Sums (n=2000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice

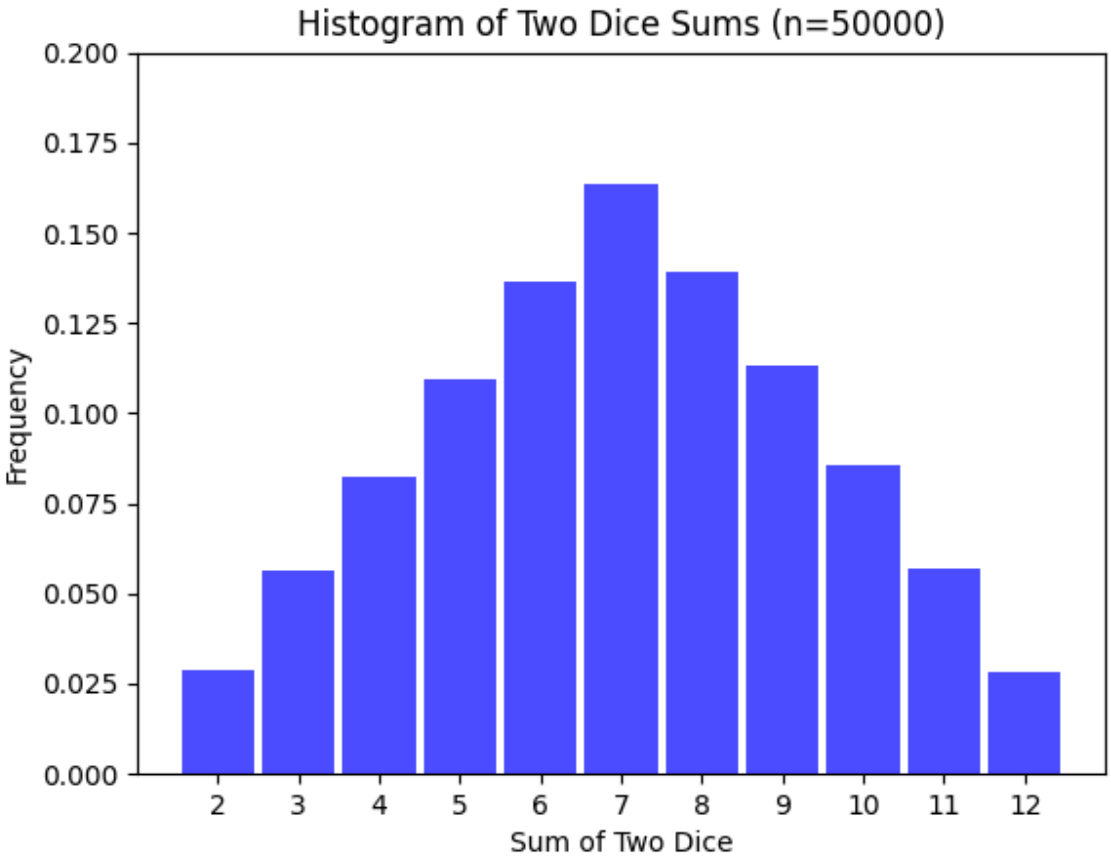

Histogram of Two Dice Sums (n=2000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice


Histogram of Two Dice Sums (n=5000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice

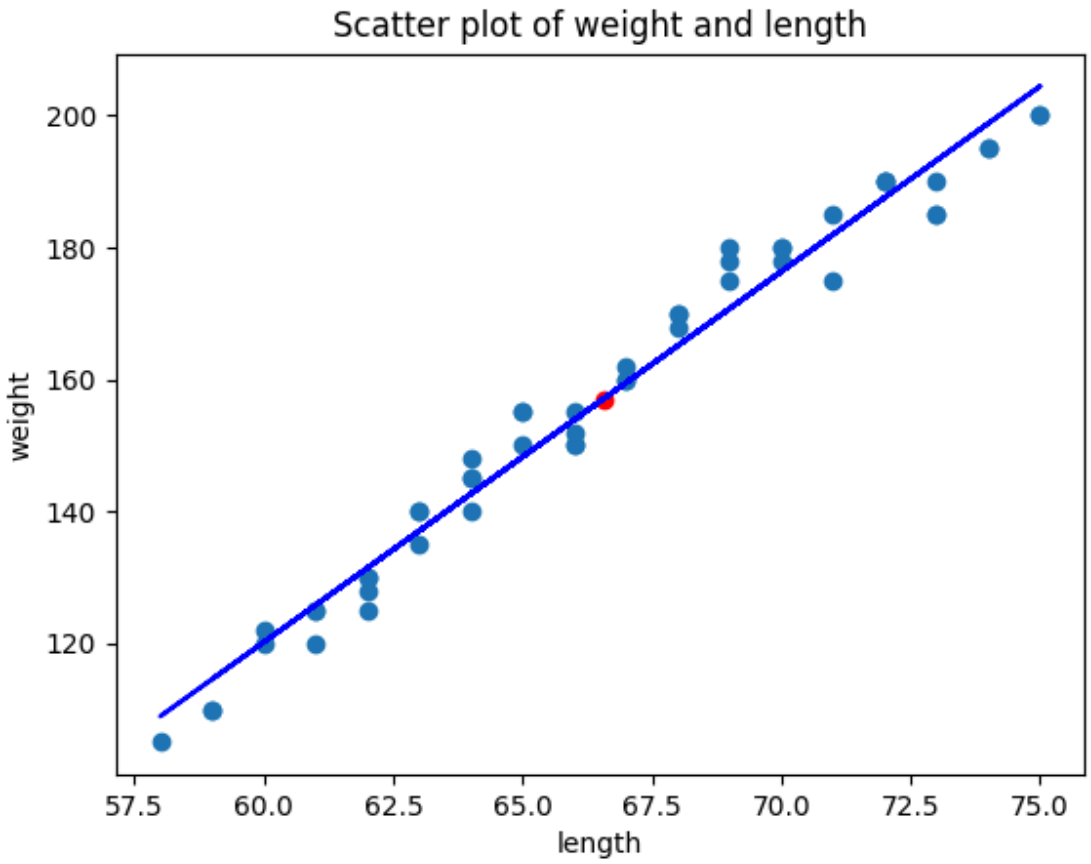

Histogram of Two Dice Sums (n=10000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice


Histogram of Two Dice Sums (n=15000)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
Frequency
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice


Histogram of Two Dice Sums (n=20000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice


Histogram of Two Dice Sums (n=50000)
Frequency
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
2
3
4
5
6
7
8
9
10
11
12
Sum of Two Dice

Exercise 2:



RMSE measures the average error in prediction.A lower RMSE value indicates a better fit of the model to the data.In this case, RMSE = **0.7397866705418054**, meaning that, on average, the model's height predictions deviate by about **0.7397866705418054 units** from the actual values.

The R2 score represents the proportion of variance in height that is explained by weight.A value of **0.97485646143086 (or ~97.5%)** suggests that weight explains **97.5% of the variability** in height.The closer R2 is to **1**, the better the model fits the data.