**R and Statistics - Exercises**

1) Create the samples (hint: Use Sample function for questions a to c)

1. Rolling a fair die 3000 times
2. Choose 27 random numbers from 30 to 70
3. Flip a fair coin 1000 times
4. Let x be the normally distributed random variable with mean=0 and standard deviation =30 , with n=100
5. Plot the probability distribution of x assuming that the points are normally distributed with mean=0 and standard deviation=30
6. Plot the cumulative distribution points.
7. Input the probability 0.2 and obtain the number whose cumulative value matches this value (hint: qnorm(0.2, mean=0, sd=30)
8. Compute the 50% quantile value using qnorm function
9. In the above example observe and briefly explain what happens to the normal distribution curve when you change the mean, the variance, or both simultaneously.
   1. change SD to 15
   2. change SD to 45
   3. Change the mean to 50
   4. Change the mean to -50
10. Draw a histogram of 5000 random variables normally distributed with given SD= 5 and mean=20 (hint : use rnorm)
11. Calculate the probability that a normally distributed random variable with mean 22 and variance 25
12. is greater than 29
13. is less than 17
14. is less than 15 or greater than 25
15. If the mean length of a sample of rock cod (a fish variety) is 30 inches and the variance is 4 inches, calculate the approximate probability that a certain rock cod is 31 in. long. Calculate the probability using the equation

a) .

(Hint: 1/(sqrt(2\*pi)\*sigma)\*exp(-((31 - mu)^2/(2\*sigma^2))))

b) Verify the same using dnorm() function