Instruction: Complete each of the steps below using Minitab. You can find the data in the file **143data3.xlsx**. This is the same data from Lab #1. You will need to copy and paste the data into Minitab. Complete the tasks below. Copy and paste any output (graphs, tables, summary statistics, etc.) to a Word document where you should include the requested analysis next to each item. Save the Minitab work as a project. Submit the Word document and the Minitab file to Blackboard.

1. The data on paternal smoking lists birth weights in grams of children of fathers who smoke and those who don't. Rank the data in both lists. Calculate the value of the 10th percentile of the children of fathers who do not smoke. Using the value obtained, find the approximate percentile for the children of smoking parents. What can you conclude? Sketch a comparative boxplot of the data to confirm your conclusions.

2. Using the data on the Sum of Three Dice Simulation (it will change when you open Excel; this is okay; it should freeze in place after copying to Minitab). Make a graph of data. Determine the theoretical probabilities for each of the values and make a graph of that as well. How does your simulation of 200 tosses compare to the theoretical values? Calculate the mean (expected value) and standard deviation of the discrete distribution (simulated and actual). Perform a thorough analysis of your results.

3. Start a new worksheet. Go to Calc→Random Data→Binomial. Generate some samples of binomial distributions using $n = 5$ and vary the probabilities of success from $p = 0.1$ to $p = 0.9$ by increments of 0.1. For each set of conditions, generate a list of 200 trials. (The screenshot below shows 200 rows of data, storing in column C9, with $n = 5$ and $p = 0.5$.)
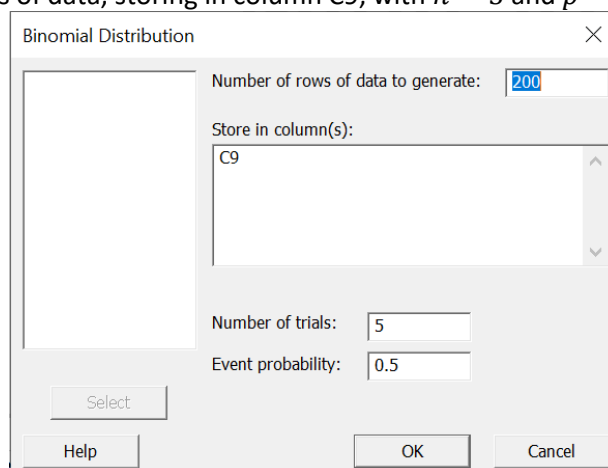
Create histograms of each of the results. Describe what you see. If we are modeling the number of heads obtained when we flip five coins, how does the number of outcomes of each type change as the fairness of the coin changes? Use the binomial formula to predict the number of three heads in five tosses for each of the scenarios and explain how your simulation matches up to those expectations. Find the mean and standard deviation of each result.