1. A study was conducted on the distribution and packaging of 1.69 ounce packages of plain m&m® candies. A random sample of 78 bags was collected and the data reported in the attached Excel file. The study wanted to examine the color percentages and the total number of candies packaged in each bag. Using this data, answer the following:
   1. Calculate the sample proportion for each color.
   2. Construct a pie chart for the color proportions.
   3. Calculate the mean, median, and standard deviation for the total number of candies.
   4. Construct a histogram of the total number of candies.
   5. Use the z-score method to identify any potential outliers and outliers.
   6. Assume the total number of candies is normally distributed, calculate the probability that a randomly sampled bag has at least 55 candies in a bag.
   7. If a random sample of 30 bags is selected, find the probability that the mean number of candies in a bag is at least 56 candies. Assume the total number of candies is normally distributed.
   8. Assume the total number of candies is normally distributed, find a 95% confidence interval for the mean total number of candies.
   9. Construct a probability distribution for the colors of m&m candies based upon your sample:

|  |  |
| --- | --- |
| Color | Probability |
| Blue |  |
| Orange |  |
| Green |  |
| Yellow |  |
| Red |  |
| Brown |  |

1. Assume you are in charge of a production line which allows for no more than 1% defectives in order to be in compliance. A random sample of 500 is tested and 4 defective items are found. Find the probability of getting exactly 4 defectives out of 500 using the binomial distribution. Based upon this evidence, is your production line in compliance? Explain.