On this quiz you are welcome to use technology but please indicate what formula you are using and how you are plugging into that formula. I will provide formulas on the board. Use the back of the page if necessary.

I. A bag of Halloween candy contains 25 miniature Snicker bars and 35 miniature Reeses Cups. A trick-or-treater reaches into the bag and draws out 4 pieces of candy. Let the random variable X denote the number of Snicker bars drawn. Below you are given the values of the relative frequency distribution of X (a.k.a. the probability mass function for X) and a plot of the distribution.

Value of X	Relative Frequency $f(x)$
0	0.10738
1	0.33555
2	0.36605
3	0.16508
4	0.02594
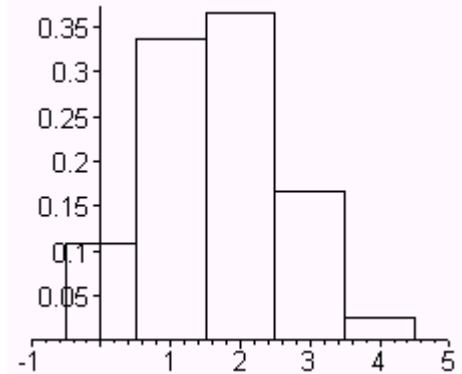
(a) Find the mean and standard deviation for the random variable X. (7 points)

II. Now suppose we take a random sample of size twenty from the distribution of X (i.e. we repeatedly perform the experiment 20 independent times and observe the value of X on each run of the experiment. Note this implies we are returning the four pieces of candy to the bag for each run of the experiment). Suppose the following values for X are observed:

2, 2, 2, 2, 2, 2, 1, 2, 0, 1, 1, 1, 1, 3, 1, 3, 1, 0, 2, 0

(a) Complete the frequency chart to the right and plot the empirical relative frequency histogram on the same axes as the distribution of X given above. (4 points)

(b) Find the mean and standard deviation for the experimental data. (7 points)

Value of X	Frequency	Relative Frequency
0		
1		
2		
3		
4		

(c) If you ran the experiment 100 times how would you expect the shape of the relative frequency histogram and the mean of the experimental data to compare (relative to the distribution given and mean computed in Question I above) to the relative frequency histogram and mean of the data when you ran the experiment 20 times? (2 points)