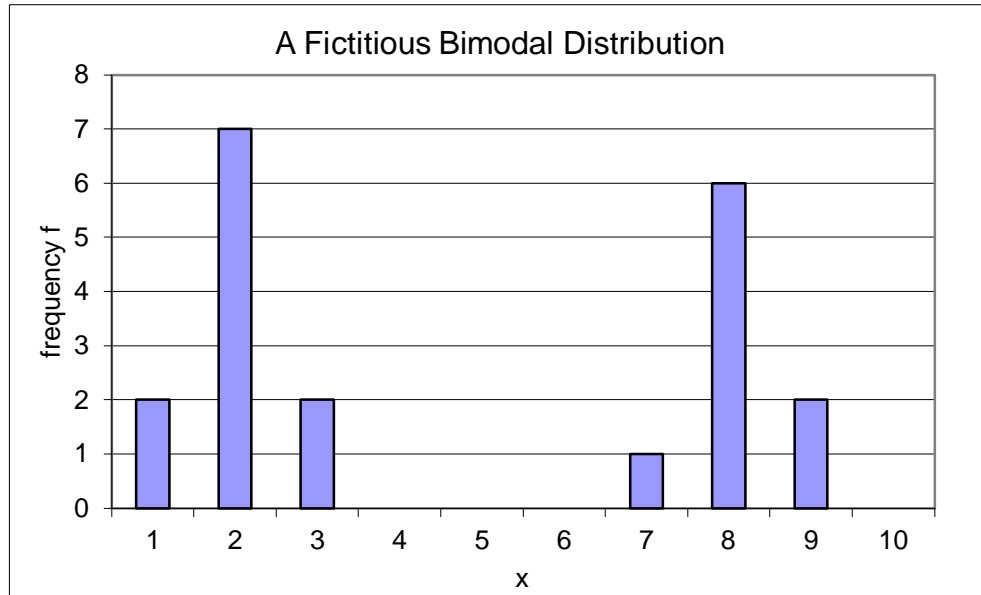


## Math 156: Tchebysheff & Empirical Rules

Consider the following sample data set:

1, 1, 2, 2, 2, 2, 2, 2, 2, 3, 3, 7, 8, 8, 8, 8, 8, 8, 8, 8, 9, 9

The mean of this data set is 4.75 with standard deviation of 3.18. It has the following frequency histogram.



Complete the table below by finding the percentage of measurements in the intervals  $\bar{x} \pm s$ ,  $\bar{x} \pm 2s$  and  $\bar{x} \pm 3s$ . Also, state the percentages you'd expect to find in each interval according to the Empirical Rule and Tchebysheff's Theorem.

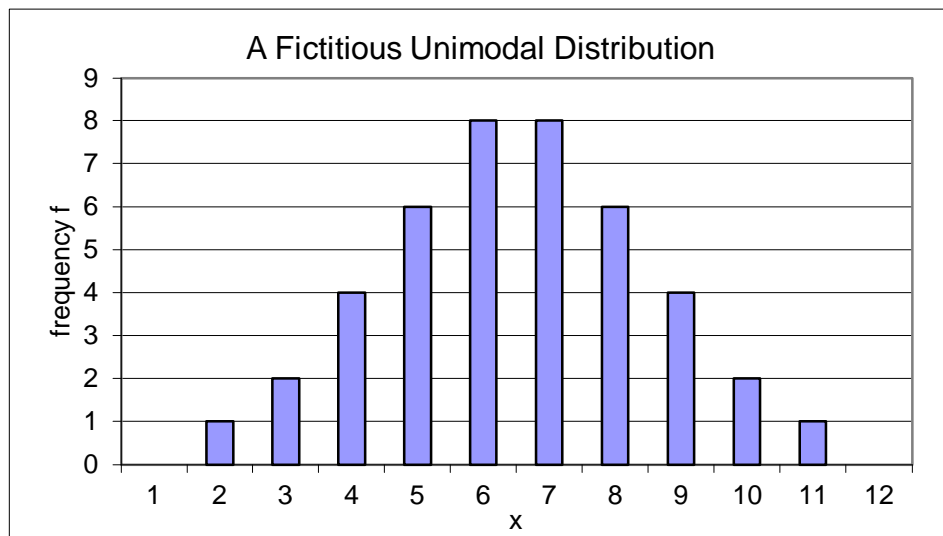
	interval	# of points	% of points	Empirical	Tcheby	Empirical works?	Tcheby works?
$\bar{x} \pm s$							
$\bar{x} \pm 2s$							
$\bar{x} \pm 3s$							

Should the actual percentages agree with the Empirical Rule? With Tchebysheff?

Consider another sample data set in which  $x$  is the value of the data point and  $f$  is the frequency with which that value occurs.

$x$	$f$
1	0
2	1
3	2
4	4
5	6
6	8
7	8
8	6
9	4
10	2
11	1
12	0

The mean of this data set is 6.5 with standard deviation 2.0. It has the following histogram.



Complete the table below.

	interval	# of points	% of points	Empirical	Tcheby	Empirical works?	Tcheby works?
$\bar{x} \pm s$							
$\bar{x} \pm 2s$							
$\bar{x} \pm 3s$							

Should the actual percentages agree with the Empirical Rule? With Tchebysheff?