

NAME _____

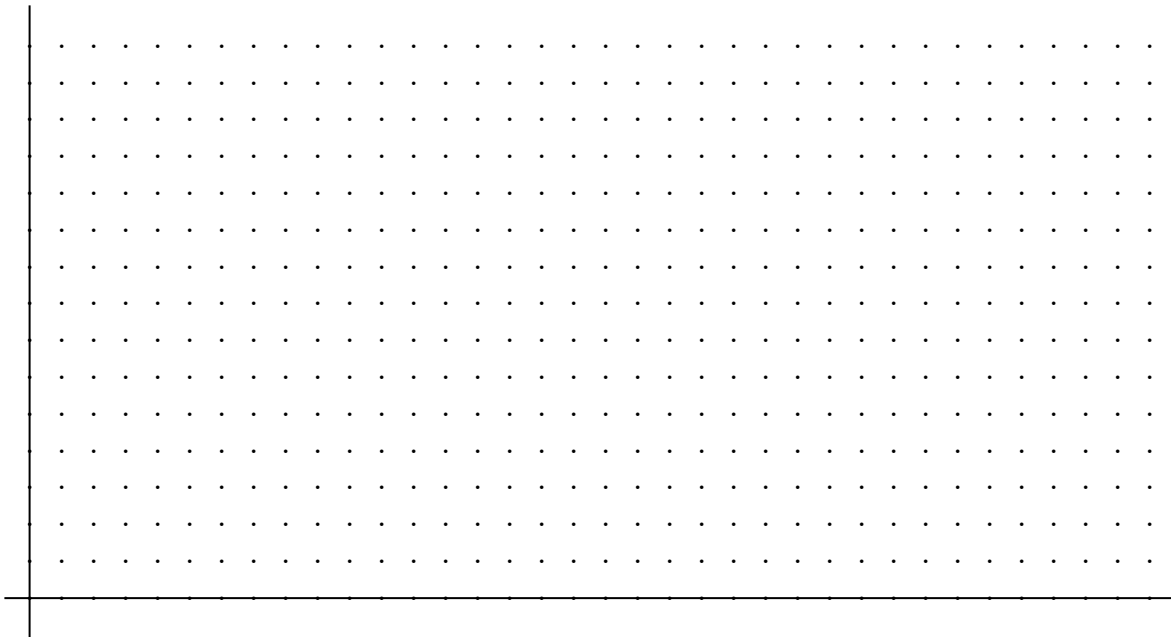
Math 15 Homework – Sampling Distributions

NOTE: For this homework assignment, you are allowed to show work on this worksheet.

Assume that you have a hat filled with pieces of paper that have the digits 0, 3, and 9 printed on them. Also assume that there are an equal number of each digit in the hat. Assume that initially we pull one number out of the hat, and then replace it after we look at the number.

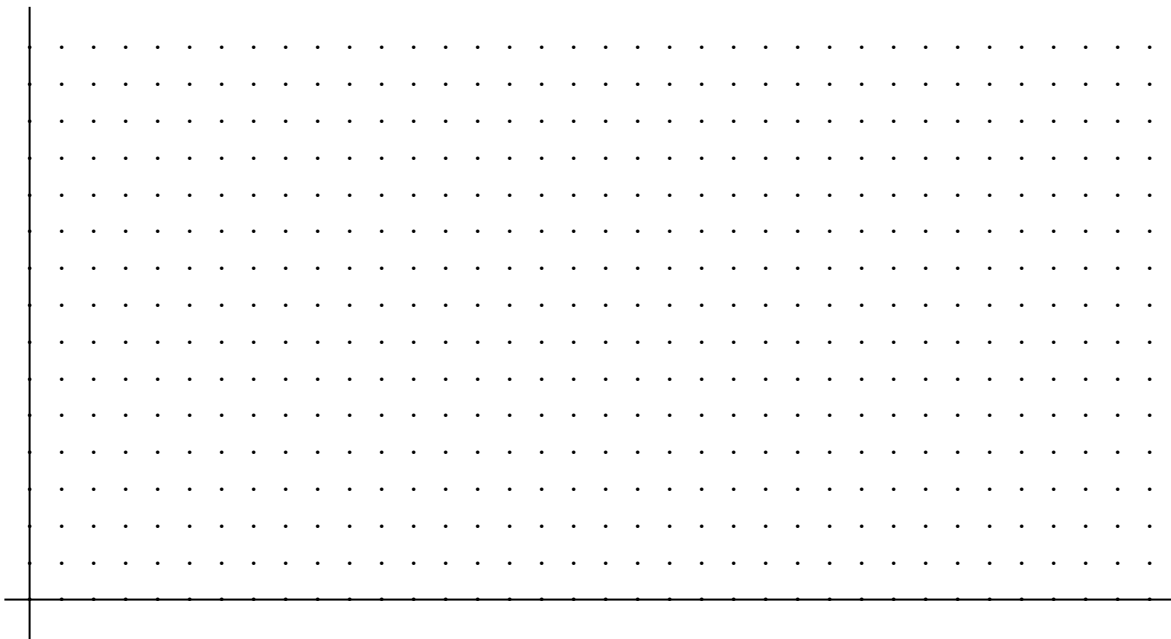
1. What is the mean value of the population consisting of all digits in the hat? Be sure to explain how you obtain your answer.

2. Using the dot grid below, draw the theoretical probability distribution for picking any one number out of the hat. Draw a vertical line through the mean value on your probability distribution. Lastly, calculate the standard deviation in the space below. (HINT: The values along the horizontal axis of your probability distribution should be the digits 0, 3, and 9 – make sure you scale the horizontal axis properly!)



4. Complete the relative frequency table of the sample means obtained in problem 3, using the table at the right. Then, draw a probability histogram of your results using the dot grid below.

\bar{x}	Freq. (f)	Rel. Freq.
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		



5. Calculate the mean and standard deviation of the probability distribution of sample means, and draw a vertical line through the mean value on your probability histogram above.
6. Check to see whether $\mu_{\bar{x}} = \mu$ and $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$ in this case where $n = 3$. Show your calculation work below.