Name:_

Date:

_____ Math 130 Day 12 Lecture Worksheet The Probability Distributions of x-bar and p-hat

<u>Ex 1</u>:

a) If a number is drawn out of this bag, what is the probability that you get the number 6?

b) If you draw a single number from the bag, what is the probability that it is less than 6?

c) If you draw 2 numbers from the bag (with replacement), what is the probability that the average will be 3.5?

d) If you draw 2 numbers from the bag (with replacement), what is the probability that the average will be more than 2?



Ex 2: A bag of numbers has a normal distribution with a mean of 10 and a standard deviation of 4. Find...

a) the probability that a single number drawn from the bag is less than 21

- b) the probability that a single number drawn from the bag is larger than 5
- c) the probability that a single number drawn from the bag is between 4.5 and 11.3
- d) the probability that in a sample of size 20, the average is less than 9.5
- e) the probability that in a sample of size 20, the average is at least 11.3
- f) the probability that in a sample of size 20, the average is between 10.4 and 11.7

<u>Ex 3</u>: The amount of credit card debt among all Americans ages 18 to 24 has a mean of \$2,982 and a standard deviation of \$315. What is the probability that in a randomly selected group of 36 Americans between the ages of 18 and 24 that

a) their average credit card debt is at most \$3050?

b) their average credit card debt is more than \$2850?

c) their average credit card debt is between \$2900 and \$3000?

<u>Ex 4</u>: A bag of numbers contains only 0's and 1's in it (think of 0's as no's and 1's as yes's). The percentage of 1's in the bag is 72%. If a sample of 60 numbers is drawn from the bag,

a) what is the probability that the percentage of 1's in the sample is less than 65%?

- b) what is the probability that the percentage of 1's in the sample is more than 68%?
- c) what is the probability that the percentage of 1's in the sample is between 73% and 78%?

<u>Ex 5</u>: 56% of the students who enter America's colleges and universities graduate within six years. If 250 college freshman are randomly selected from American colleges and universities,

a) what is the probability that less than 64% of them will graduate within 6 years?

b) what is the probability that at least 60% of them will graduate within 6 years?

c) what is the probability that between 48% and 55% of them will graduate within 6 years?