Name:_____ Math 130 Day 11.5 In Class Worksheet

Date: The Normal Approximation to Binomial Random Variables

1. **Sneeze** According to a study done by Nick Wilson of Otago University Wellington, the probability that a randomly selected individual will not cover his or her mouth when sneezing is 0.267. Suppose you sit on a bench at a mall and observe 300 randomly selected individuals' habits as they sneeze. Use the normal approximation to the binomial to answer each of the questions below.

a) What is the probability that of the 300 randomly observed individuals exactly 100 do not cover their mouth when sneezing?

b) What is the probability that of the 300 randomly observed individuals at least 100 do not cover their mouth when sneezing?

c) What is the probability that of the 300 randomly observed individuals more than 100 do not cover their mouth when sneezing?

d) What is the probability that of the 300 randomly observed individuals fewer than 85 do not cover their mouth when sneezing?

e) What is the probability that of the 300 randomly observed individuals at most 85 do not cover their mouth when sneezing?

f) What is the probability that of the 300 randomly observed individuals between 80 and 90 inclusive do not cover their mouth when sneezing?

g) What is the probability that of the 300 randomly observed individuals between 80 and 90 (including 80 but not including 90) do not cover their mouth when sneezing?

h) What is the probability that of the 300 randomly observed individuals between 80 and 90 (excluding 80 but including 90) do not cover their mouth when sneezing?

i) What is the probability that of the 300 randomly observed individuals between 80 and 90 (excluding both 80 and 90) do not cover their mouth when sneezing?