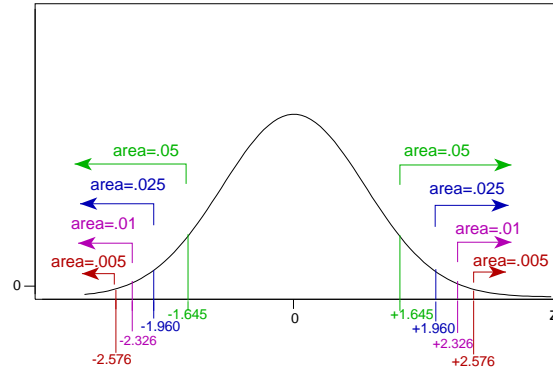# Practice Quiz 6

Statistics 0200   Dr. Nancy Pfenning

1. (5 pts.) The proportion of all assaults on U.S. law enforcement officers that are made with dangerous weapons (firearms, knives, etc. instead of hands, feet, fists, etc.) is 0.20.

   (a) What proportion should lie at the center of the distribution of sample proportions of assaults made with dangerous weapons? _____

   (b) The standard deviation of the distribution of sample proportion for samples of size 64 is $\sqrt{0.20(1-0.20)/64} = 0.05$ as long as the sample is less than one tenth the size of the population. Is it? (Answer yes or no.)

   (c) The shape of the distribution of sample proportion is approximately normal as long as the expected counts in and out of the category of interest are at least 10. In samples of 64 assaults where overall 0.20 are made with dangerous weapons, we expect to see about _____ made with dangerous weapons and _____ made with hands, feet, fists, etc.

   (d) Sketch a normal curve showing the distribution of sample proportion of assaults made with dangerous weapons for samples of size 64, using the center from (a) and the standard deviation mentioned in (b), based on the 68-95-99.7 Rule.

   (e) Suppose 8 in a sample of 64 assaults are made with dangerous weapons; this proportion can be characterized as
   (i) extremely low (ii) somewhat low (iii) somewhat high (iv) extremely high

3. (5 pts.) In fall 2004, mean SAT score of all Pitt incoming freshmen was 1230. Assume standard deviation was 120. The shape of the distribution was approximately normal.

(a) Since 1230 describes the entire population of incoming freshmen, it is (i) a parameter denoted μ (ii) a parameter denoted $\bar{x}$ (iii) a statistic denoted μ (iv) a statistic denoted $\bar{x}$

(b) How do we denote the number 120? _____

(c) Circle any of the following that are approximately normally distributed:

 i. sample mean SAT for a small sample of incoming freshmen
 ii. sample mean SAT for a large sample of incoming freshmen

(d) Sample mean SAT for a sample of 36 incoming freshmen has mean _____ and standard deviation _____.

(e) Find the z-score if a sample of 36 incoming freshmen has mean 1240. _____

(f) Use the sketch above, showing tails of the standard normal distribution, to give a range for the probability of sample mean SAT being 1240 or more:
(i) less than 0.005 (ii) between 0.005 and 0.01 (iii) between 0.01 and 0.025
(iv) between 0.025 and 0.05 (v) greater than 0.05

(g) If sample mean SAT for a sample of 36 incoming freshmen enrolled in introductory statistics is found to be 1240, this can be characterized as
(i) not uncommon (ii) unusually high (iii) almost impossible