Name:

Elementary Statistics **HW 5.4**

1. In a clinical trial of the cholesterol drug Lipitor, 270 subjects were given a placebo and 7% of them developed headaches. For such randomly selected groups of 270 subjects given a placebo, find the following values for the number of subjects who develop headaches:

   a. n =

   b. p =

   c. q =

   d. mean = μ = *np* =

   e. standard deviation = $\sigma = \sqrt{npq} =$

2. In an analysis of preliminary test results from the XSORT gender selection method, 14 babies are born and it is assumed that 50% of babies are girls, so n = 14 and p = 0.5

   a. Find the mean, μ

   b. Find the standard deviation, σ

   c. Using the range rule of thumb, find the minimum usual value: $\mu - 2\sigma$

   d. Using the range rule of thumb, find the maximum usual value: $\mu + 2\sigma$

3. In a Gallup poll of 1013 randomly selected adults, 66% said that they worry about identity theft, so n = 1013 and p = 0.66

   a. Find the mean, μ

   b. Find the standard deviation, σ

   c. Using the range rule of thumb, find the minimum usual value: $\mu - 2\sigma$

   d. Using the range rule of thumb, find the maximum usual value: $\mu + 2\sigma$

4. Mars Inc. claims that 14% of its M&M plain candies are yellow and a sample of 100 such candies is randomly selected.

    a. Find the mean number of yellow candies in randomly selected groups of 100 M&M's.

    b. Find the standard deviation for the number of yellow candies in randomly selected groups of 100 M&M's.

    c. Data set 20 in appendix B consists of a random sample of 100 M&M's including 8 that are yellow. Using the range rule of thumb, would 8 yellow M&M's be considered unusually low?

    d. Based on your answer to part c, does it seem that the claimed rate of 14% is wrong?

5. The Central Intelligence Agency (CIA) has specialists who analyze frequencies of letters of the alphabet in an attempt to decipher intercepted messages that are sent as ciphered text. In standard English test, the letter e is used at a rate of 12.7%.

    a. Find the mean for the number of times the letter e will be found on a typical page of 2600 characters.

    b. Find the standard deviation of the number of times the letter e will be found on a typical page of 2600 characters.

    c. In an intercepted ciphered message sent to France, a page of 2600 characters is found to have the letter e occurring 290 times. Using the range rule of thumb, is this unusually low or high?

6. If you place a bet on the number 7 in roulette, you have a 1/38 probability of winning.

    a. Find the mean number of wins for a person who bet on the number 7 fifty times.

    b. Find the standard deviation of the number of wins for a person who bet on the number 7 fifty times.

    c. Using the range rule of thumb, would 0 wins in 50 bets be an unusually low number of wins?