Name: **Date:**

Elementary Statistics **HW 7.2 part 3**

1. Express the confidence interval (0.0268, 0.133) in the form of (p – E) < p < (p + E).

2. The Genetics and IVF Institute conducted a clinical trial of the YSORT method designed to increase the probability of conceiving a boy. As of this writing, 291 babies were born to parents using the YSORT method, and 239 of them were boys. Use a 90% confidence level.

   a. Use the sample data to find the following:

      $n =$

      $\hat{p} =$

      $\hat{q} =$

   b. Find the best point estimate of the population proportion p

   c. Identify the value of the margin of error E

      CL =

      $\alpha =$

      $\alpha/2 =$

      Area to the left of $Z\alpha/2$=

      What is the critical value, $Z\alpha/2$?

      $$E = Z\alpha/2 \bullet \sqrt{\frac{\hat{p}\hat{q}}{n}}$$

   d. Construct the 90% confidence interval

   e. Write a statement that correctly interprets the confidence interval

3. Find the sample size needed to estimate the percentage of robberies in Texas that result in arrests. Use a 0.04 margin of error, a confidence level of 80%, and assume that p and q are **unknown**.

$$n = \frac{\left[Z\alpha_{/2}\right]^2 (0.25)}{E^2}$$

4. Find the sample size needed to estimate the percentage of adults who have consulted fortune tellers. Use a 0.03 margin of error, a confidence level of 98%, and results from a prior Pew Research Center poll suggesting that 15% of adults have consulted fortune tellers.

$$n = \frac{\left[Z\alpha_{/2}\right]^2 \hat{p}\hat{q}}{E^2}$$