Name: _____ Date: _____

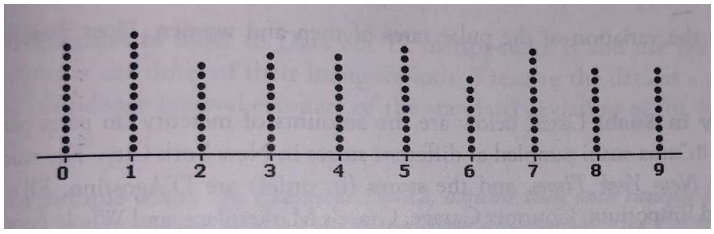
Elementary Statistics HW 7.4 part 1

1. Using a simple random sample of 40 LDL cholesterol levels of women (in $mg/dL)^2$, we get the following 95% confidence interval estimate of the population variance: $916.591 < \sigma^2 < 2252.119$

    a. Identify the corresponding confidence interval estimate of the population standard deviation, σ. (round your final answers to the thousandths place).

    b. State the confidence interval estimate for σ in context of the question.

2. The dotplot below depicts individual digits selected in the Pick 4 lottery from different states.



    a. Can the original list of individual sample digits be identified?

    b. Can the sample data be used to construct a 95% confidence interval estimate of the population standard deviation for all such digits? Why or why not?

3. A simple random sample of 20 dollar coins has a standard deviation of 0.04111g. Assume the data is from a population that is normally distributed and you want a 99% confidence interval estimate of the standard deviation for the weights of all dollar coins, σ.

   a. Identify the following values:

      n =

      s =

      df =

   b. Find the critical values, χ_L^2 and χ_R^2

      CL =

      α =

      $\alpha/2$

      Area to the right of χ_L^2 =

      χ_L^2 =

      Area to the right of χ_R^2 =

      χ_R^2 =

   c. Construct the 99% confidence interval estimate of the population standard deviation, σ. (Round your final answers to the thousandths place.)

      $$\sqrt{\frac{(n-1)s^2}{\chi_R^2}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi_L^2}}$$

   d. State the confidence interval estimate for σ in context of the question.

4. Based on a simple random sample of 40 Chips Ahoy cookies, the mean number of chocolate chips is 23.95 and the standard deviation is 2.55. Assume the data is from a population that is normally distributed and you want a 90% confidence interval estimate of the standard deviation for the number of chocolate chips in all Chips Ahoy cookies, σ.

   a. Identify the following values:

      n =

      s =

      df =

   b. Find the critical values, χ_L^2 and χ_R^2

      CL =

      α =

      $\alpha/2$

      Area to the right of χ_L^2 =

      χ_L^2 =

      Area to the right of χ_R^2 =

      χ_R^2 =

   c. Construct the 99% confidence interval estimate of the population standard deviation, σ. (Round your final answers to the hundredths place.)

      $$\sqrt{\frac{(n-1)s^2}{\chi_R^2}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi_L^2}}$$

   d. State the confidence interval estimate for σ in context of the question.