**IT-223 - Assignment #3**  
  
All questions in this assignment should be saved into a Microsoft Word document or any ‘doc’ or ‘RTF’ compatible file.

**Question #1 (15)**: Use the 68-95-99.7 rule to answer the all but the last problem in this question.  The ACT standardized test has an approximately Normal distribution of scores: N(18, 6), i.e. a mean of 18 and a standard deviation of 6.

1. One student scores a 24. What percentile is she in?
2. What is meant by a percentile?
3. Find the percentage of students who score between 12 and 24.
4. What percentage of students score between 12 and 30?
5. **Do not use the 68-95-99.7 rule for the following problem**.  
   One student is determined to achieve a score that puts her in the 99th percentile or better! What score must she achieve in order to achieve her goal?

**Question #2 (15):** Answer the following questions based on the following: A sample of female professional endurance athletes (marathon runners, triathletes, X-county skiers) has an FTP (fitness test of performance) level that is approximately normally distributed with a mean of 351 and an estimated population standard deviation (sigma) of 27 [N(351,27)].

1. What percentile would a woman with an FTP of 393 be in?
2. What percentage of these athletes would you expect to have an FTP level less than 351?
3. How likely is it to be a professional woman athlete and have an FTP level under 300?
4. How many athletes (in %) will have an FTP between 324 and 378? (Hint: use the 68-95-99.7 rule)
5. How many athletes (in %) will have an FTP between 297 and 351? (Hint: use the 68-95-99.7 rule

**Question #3 (10):** Answer the following questions based on the Forbes article in file Tenn-Hall Tax:

1. What was the mean Hall tax paid in 2014? What was the median Hall Tax paid in 2014?
2. Discuss the values for the Hall tax mean and median. How close are they? What does the difference (or lack thereof) tell you about the income distribution of those who paid the tax?