AP Statistics – Chapter 12 Practice Free Response Test

1. Eleven percent of the products produced by an industrial process over the past several months fail to conform to the specifications. The company modifies the process in an attempt to reduce the rate of nonconformities. In a trial run, the modified process produces 16 nonconforming items out of a total of 300 produced. Treat this sample as an SRS.

   Do these results demonstrate that the modification is effective? Support your conclusion with a complete test of significance.

2. A study of "adverse symptoms" in users of over-the-counter pain relief medications assigned subjects at random to one of two common pain relievers: acetaminophen and ibuprofen. In all, 650 subjects took acetaminophen, and 44 experienced some adverse symptom. Of the 347 subjects who took ibuprofen, 49 had an adverse symptom. We want to assess the evidence that the two pain relievers differ in the proportion of people who experience an adverse symptom.

   (a) State conditions necessary to compute a confidence interval for the difference in the proportion of adverse symptoms for these two pain relievers.
   (b) Construct and interpret a 90% confidence interval for the size of the difference.

3. A study of chromosome abnormalities and criminality examined data from 4,124 males born in Copenhagen. Each man was classified as having a criminal record or not, using the registers maintained in the local police offices. Each was also classified as having the normal male XY chromosome pair or one of the abnormalities XYY or XXY. Of the 4,096 men with normal chromosomes 381 had criminal records, while 8 of the 28 men with normal chromosomes had criminal records. Some experts believe chromosome abnormalities are associated with increased criminality.

   Do these data lend support to this belief? Perform a significance test to answer this question.