A.P. Statistics
Assignment 9.5

<u>Remember to show your thinking through your work.</u>

1) What are the conditions for using the standard deviation formula when conducting a significance test? Be specific about p versus p-hat.

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2) In the 1996 regular baseball season, the World Series Champion New York Yankees played 80 games at home and 82 games away. They won 49 of their home games and 43 of the games played away. We can consider these games as samples from potentially large populations of games played at home and away.
    (a) Combining all of the games played, what proportion did the Yankees win?

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    (b) Find the standard error needed for testing that the probability of winning is the same at home and away.

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    (c) Most people think that it is easier to win at home than away. Formulate null and alternative hypotheses to examine this idea.

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    (d) Compute the z statistic and its P-value. What conclusion do you draw?

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3) A study of chromosome abnormalities and criminality examined data on 4124 Danish males born in Copenhagen. The study used the penal registers maintained in the offices of the local police chiefs and classified each man as having a criminal record or not. Each was also classified as having the normal male XY chromosome pair or one of the abnormalities XYY or XXY. Of the 4096 men with normal chromosomes, 381 had criminal records, while 8 of the 28 men with chromosome abnormalities had criminal records. Some experts believe that chromosome abnormalities are associated with increased criminality. Do these data lend support to this belief? Report your analysis and draw a conclusion.

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4) A recent study examined the association between high blood pressure and increased risk of death from cardiovascular disease. There were 2676 men with low blood pressure and 3338 men with high blood pressure. In the low-blood-pressure group, 21 men died from cardiovascular disease; in the high-blood-pressure group, 55 died.
    (a) Compute the 95% confidence interval for the difference in proportions.

(b)   Do the study data confirm that death rates are higher among men with high blood
        pressure? State hypotheses, carry out a significance test, and give your
        conclusions.