Game theory

A survey on student behavior in some major a-schools in India asked a randomly selected group of 240 students on the number of hours a week he/she reads a newspaper. The sample mean was 4_1 and standard deviation 3. We can assume that the underlying distribution (tot number tot hrs reading newspaper) Is approximately normal. A) what will be a 99% confidence Interval of the population mean (number of hours a B-school student read newspapers/week)?) Suppose you perform a similar survey at AIM with 24 randomly selected students; the sample mean and the sample standard deviation were 45 and 2. Respectively. What will be a 99% confidence interval of the population mean (number of hours an AIM student read newspapers/week)? C) Inspired by your survey, your trend at NIMBI wants to carry out a similar survey. However, she wants to have a 95% confidence Interval with a margin of error of 0. 2. How many students should she select in her sample? (She can use your standard deviation of 2. As the population standard deviation for NIMBI students.) 2. Death penalty: In the 2009 General Social Survey, respondents were asked if they favored or opposed death penalty for people involved tot murder, The confidence Interval tort the population proportion In favor (say, p) was (0. 65, 0. 69). A) For each of the following statements, Identify True or False: (I)We are 95% confident that the true population proportion favoring death penalty is between 0. 65 and 0. 69. (it) The probability that the true population proportion favoring death penalty is between 0. 65 and 0. 9 is 0. 95. (iii) Of a large number of 95% confidence intervals calculated the same way, in the long run, we expect about tot them to capture the true population proportion value, (lb) tot a argue number of Intervals calculated the same way, In the long run, we expect all of them to capture the corresponding sample

proportion value. B) True/False: For the above data, the 99% confidence interval for the true population proportion of respondents who were opposed to the death penalty would be narrower than the one above. C) Suppose 66% of Indian adults supports death penalty.

However, you want to design a survey to gauge the opinions tot AIM students: accordingly. You want to form a 95% confidence Interval with a margin of error of 0. 05. What will be your sample size?) What will be your sample size for the above problem If you have no Idea of the percentage of Indian adults supporting death penalty? 3. Industry and environment: In response to a recent GAS survey on whether the Government should impose strict laws to prohibit industries trot damaging the environment, 1093 out of 1232 subjects said " yes". A) The confidence Interval for p, the population proportion who would say " yes" Is (l) (0. 0, 0. 95) (II) (0. 87, 0. 90) Oil) (0. 50, 1. 00) (iv) (0. 89, 1. 00) b) What is the 99% confidence interval for 1 ? p, the population proportion who would say " no"? (I) (0. 09, 0. 4) 0. 91) (iii) (005, 0. 15) (iv) (080, 0. 95) c) Suppose that you want to do a similar survey in your locality. Accordingly, you selects random sample tot 200 people and 160 tot them said yes". What Is the 99% confidence Interval for p (the population proportion who would 1 OFF Suppose you feel that the above interval is way too wide and would like to have a shorter and more precise interval.

What should you do to achieve that? (I) Increase the confidence level and the sample size. (ii) Decrease the confidence level but increase the sample size. (iii) Decrease the confidence level and the sample size. Iv) Increase the confidence level but decrease the sample size. (v) Cannot do anything; have

to accept the above interval. 4. A dealer in electronic consumer goods received a supply of six televisions of brand A and ten televisions of brand B. Out of the six televisions of brand A, an unknown number, M, are defectives.

Similarly, the number of defectives among the ten televisions of brand B is MM. In order to test the null hypothesis HO: M = 2 against the alternative Ha: M > 2, the following procedure is adopted: (I) From the six televisions of brand A, draw a random sample of size two without replacement. Ii) From the ten televisions of brand B, draw a random sample of size two without replacement. (iii) Reject if and only if both the televisions in at least one of the two samples are defectives. A) What is the probability of type I error for the above test procedure?) Find the probability of type II error for this procedure when M equals 3. 5. Anorexia in teenage girls: Anorexia is an eating disorder that can cause a person to be dangerously underweight. A recent study analyses the effect of cognitive behavioral therapy in aiding weight gain on 29 teenage girls affected with Anorexia. Each girl's weight was measured before and after the therapy and the weight change (positive: weight gain; negative: weight loss) was noted. The weight changes for the 29 girls had a sample mean of = 3 kilos and a standard deviation Offs = 7. 2 kilos. Let p be the population mean weight change. It can be assumed that weight change follow a normal distribution in the population. A) What would be a reasonable set of hypotheses (null and alternative) for this problem?