

1. According to a report by the American Cancer Society, more men than women smoke and twice as many smokers die prematurely than nonsmokers. In random samples of 200 males and 200 females, 62 of the males and 54 of the females were smokers. Is there sufficient evidence to conclude that the proportion of male smokers is higher than the proportion of female smokers when the significance level is 0.01?

2. A coal-fired power plant is considering two different systems for pollution abatement. The first system has reduced the emission of pollutants to acceptable levels 68 percent of the time and determined from 200 random air samples. The second, more expensive system has reduced the emissions of pollutants to acceptable levels 76% of the time, as determined from 250 random air samples. If the expensive system is significantly more effective than the inexpensive system in reducing pollutants to acceptable levels, then the management of the power plant will install the expensive system. Which system will be installed if management uses a significance level of 0.02 in making its decision?

3. A group of clinical physicians is performing tests on patients to determine the effectiveness of a new antihypertensive drug. Patients with high blood pressure were randomly chosen and then randomly assigned to either the control group (which received a well-established antihypertensive) or the treatment group (which received the new drug). The doctors noted the percentage of patients whose blood pressure was reduced to a normal level within one year. Test the appropriate hypotheses to determine whether the new drug is significantly more effective than the older drug in reducing high blood pressure.

Group	Proportion that Improved	Number of Patients
Treatment	0.45	120
Control	0.36	150

4. A swimming school wants to determine whether a recently hired instructor is working out. A random sample of sixteen out of 28 of Instructor A's students passed the lifeguard certification test on the first try. In comparison, a random 57 out of 72 of more experienced Instructor B's students passed the test on the first try. Determine if Instructor A's success rate is worse than Instructor B's? Use a significance level of $\alpha = 0.10$.