

For each problem, show all necessary parts of the appropriate significance test including a sketch of the sample distribution that supports your result and an interpretation of your result in clear English,

The president of an all-female school stated in an interview that she was sure than the students at her school studied more, on average, than the students at a neighboring all-male school. The president of the all-male school responded that he thought the mean study times for each student body was undoubtedly about the same and suggested that a study be undertaken to clear up the controversy. Accordingly, random samples were taken that the two schools with the following results:

School	Sample Size	Mean Study time (hours)	Standard deviation (hours)
All-female	65	18.56	4.35
All-male	75	17.59	4.87

a) Determine at the 2% level of significance if there is a significant difference between the mean studying times of the students in the two schools based on these samples. b) Also determine the 98% confidence level for the average difference in study times and interpret it.

The guidance office of a school wants to test the claim of an SAT test preparation company that students who complete their course will improve their Math SAT score by at least 50 points. Ten members of the junior class who have had no SAT preparation but have taken the SAT once were selected at random and agreed to participate in the study. All took the course and re-took the SAT at the next opportunity. The results of the testing were as follows:

<b>Student</b>	1	2	3	4	5	6	7	8	9	10
<b>Before</b>	475	512	492	465	523	560	610	477	501	420
<b>After</b>	500	540	512	530	533	603	691	512	489	458

a) Is there sufficient evidence to support the prep company's claim that scores will improve by at least 50 points at the 5% level of significance? b) Also determine and interpret the 99% confidence interval for improvement.