(1.)

Research results suggest a relationship between the TV viewing habits of 5-year-old children and their future performance in high school. For example, Anderson, Huston, Wright, & Collins (1998) report that high school students who regularly watched Sesame Street as children had better grades in high school than their peers who did not watch Sesame Street. Suppose that a researcher intends to examine this phenomenon using a sample of 20 high school students.

The researcher first surveys the students' parents to obtain information on the family's TV viewing habits during the time that the students were 5 years old. Based on the survey results, the researcher selects a sample of $n = 10$ students with a history of watching Sesame Street and a sample of $n = 10$ students who did not watch the program. The average high school grade is recorded for each student and the data are as follows:

Average High School Grade			
Watched Sesame Street		Did Not Watch Sesame Street	
86	99	90	79
87	97	89	83
91	94	82	86
97	89	83	81
98	92	85	92

(2.)

Steven Schmidt (1994) conducted a series of experiments examining the effects of humor on memory. In one study, participants were given a mix of humorous and nonhumorous sentences and significantly more humorous sentences were recalled. However, Schmidt argued that the humorous sentences were not necessarily easier to remember, they were simply preferred when participants had a choice between the two types of sentence. To test this argument, he switched to an independent-measures design in which one group got a set of exclusively humorous sentences and another group got a set of exclusively nonhumorous sentences. The following data are similar to the results from the independent-measures study.

Humorous Sentences				Nonhumorous Sentences			
4	5	2	4	6	3	5	3
6	7	6	6	3	4	2	6
2	5	4	3	4	3	4	4
3	3	5	3	5	2	6	4

Do the results indicate a significant difference in the recall of humorous versus nonhumorous sentences? Use a two-tailed test with $\alpha = .05$.

The psychology department at Rockhaven University conducted a study to determine the effectiveness of an integrated statistics/experimental methods course as opposed to the traditional method of taking the two courses separately. It was hypothesized that the students taking the integrated course would conduct better quality (more controlled and statistically sound) research projects than students in the traditional courses as a result of their integrated training. To determine whether there actually was a difference in student performance as a result of integrated versus traditional training, the final research projects of 20 students from an integrated course and 20 students from a traditional course were evaluated. Their scores are listed here. (For condition, 1 = integrated course and 2 = traditional course.)

Student	Condition	Score	Student	Condition	Score
1	1	87	21	2	82
2	1	95	22	2	72
3	1	89	23	2	95
4	1	74	24	2	60
5	1	73	25	2	90
6	1	92	26	2	87
7	1	63	27	2	89
8	1	90	28	2	86
9	1	94	29	2	76
10	1	84	30	2	74
11	1	91	31	2	85
12	1	90	32	2	75
13	1	75	33	2	90
14	1	93	34	2	91
15	1	87	35	2	88
16	1	85	36	2	63
17	1	90	37	2	70
18	1	89	38	2	72
19	1	87	39	2	84
20	1	85	40	2	60

In this problem, we are testing the null hypothesis that there is no difference in student performance as a result of the integrated versus traditional courses; that is, the mean difference between the conditions in the population from which the sample was drawn is zero. The alternative hypothesis reflects the psychology department's belief that the population means for the two groups of students are not equal (that is, the belief that course format had some kind of effect on quality of research projects).