

Math 21      Final Review #3

1) In a random sample of 90 persons having dinner at a French restaurant, 63 had wine with dinner. Construct a 95% confidence interval for the true proportion of people who drink wine with dinner in French restaurants.

2) 500 people were asked their income level and political affiliation.

	Republican	Democrat	Independent
\$50,000 or lower	30	110	100
Above \$50,000	120	50	90

At the 0.05 level of significance, test the claim that political affiliation is independent of income level.

3) A sample of 240 Americans was asked whether they preferred Coke, Pepsi, or a generic brand of cola. 87 people preferred Coke, 96 preferred Pepsi, and 57 preferred the generic brand. At the 0.05 level of significance, test the claim that the three types of cola are equally preferred by all Americans.

4) How many commercials do Americans watch in their entirety during the Super Bowl? A random sample of 16 Americans reported how many commercials they watched.

12	17	9	3	15	16	16	11
14	20	5	8	11	17	16	16

Construct a 95% confidence interval for the mean number of commercials watched by all Americans during the Super Bowl.

5) In a study of the relationship between intelligence and family size, 40 "only children" had an average IQ of 101.5 with a standard deviation of 6.7 and 50 "firstborns" in two-child families had an average IQ of 105.9 with a standard deviation of 5.8. At the 0.01 level, test the claim that the two means are not equal.

6) In a random sample of 200 retired persons, 192 stated that they prefer living in an apartment to living in a one-family home. At the 0.05 level test the claim that more than 60% of all retired persons prefer living in an apartment to living in a one-family home.

7) Five measurements of the tar content of a certain kind of cigarette yielded 14.5, 14.2, 14.4, 14.3, and 14.6 mg/cigarette. Test, at the 0.05 level, the manufacturer's claim that the mean tar content for their cigarettes is 14.0 mg.

8) In a study conducted at LAX, 81 of 300 persons who had just gotten off a plane and 32 of 200 persons who were about to get on a plane admitted that they were afraid of flying. At the 0.05 level, test the claim that the two population proportions are not equal.

9) To compare two kinds of baseball bats, 18 players were asked to swing 20 times with each kind of bat at balls pitched by a machine. Here are the numbers of home runs that they hit.

Bat A	6	9	4	7	10	5	9	3	5	6	12	8	5	4	9	10	7	11
Bat B	8	5	4	6	8	6	7	4	4	6	9	9	5	6	6	8	7	7

At the 0.05 level, test the claim that Bat A hits more home runs than Bat B.

10) A farmer tried 4 different fertilizers to determine which was the most effective. He applied each fertilizer to 5 different tomato plants, and measured the yield of each plant. Here are the results, in pounds.

Fert. A	Fert. B	Fert. C	Fert. D
57	49	53	39
51	55	56	45
50	54	46	42
52	48	48	37
56	50	55	40

Test the claim, at the 0.05 level of significance, that each fertilizer produces the same mean yield.