Chi-Square Review

Provide a complete solution to each of the following problems.

1. Of 150 Democrats interviewed, 90 favor a proposition, and of 120 Republicans interviewed, 80 favor it. Is the true proportion of individuals in favor of the proportion significantly larger among Republicans than among Democrats at the 10% level of significance?

2. Does the color of a car influence the chance that it will be stolen? The Associate Press reported the following for a sample of 830 stolen vehicles: 140 were white, 100 were blue, 270 were red, 230 were black, and 90 were other colors. Suppose it is known that 15% of all cars are white, 15% are blue, 35% are red, 30% are black, and 5% are other colors. At the 0.01 level, does it appear that cars are stolen in proportion to the population color proportions?

3. Suppose, according to a survey conducted in 1960, the probability distribution of the age of an adult that is attending a 4 year university. In 1993, when a sample of 1000 adults attending a university was interviewed the following frequency distribution was observed. Is there significant evidence to conclude that the distribution of adults in a 4-year university is the same as that in 1960?

Age Group	Percent Distribution from 1960	Observed Values from 1993
17-18	25%	270
19-20	23%	202
21-22	20%	180
23-24	15%	160
25-26	8%	88
27 and over	9%	100

4. In the Lamorinda (Lafayette-Moraga-Orinda in the East Bay) community, 360 randomly picked people were classified according to their age group and political leaning. The data are as follows:

Political Leaning	Age Group		
	20-35	36-50	Over 50
Conservative	30	25	35
Moderate	80	85	45
Liberal	40	10	10

Is there significant evidence to conclude that a person's age and political leaning are not related?

5. The article "Should Dentists Advertise" compared the attitudes of consumers and dentists toward the advertising of dental services. Separate random samples of 101 consumers and 124 dentists were asked to respond to the statement, "I favor the use of advertising by dentists to attract new patients." The authors were interested in determining whether the two groups differed in their attitudes toward advertising. The data were as follows:

	Response				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Consumers	34	49	9	4	5
Dentists	9	18	23	28	46

Do the two groups seem to differ in their attitudes toward advertising?