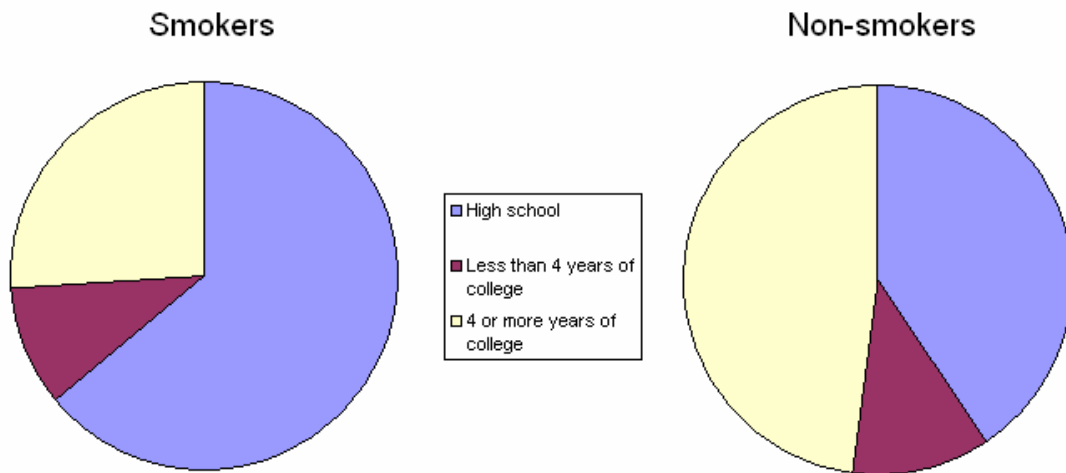
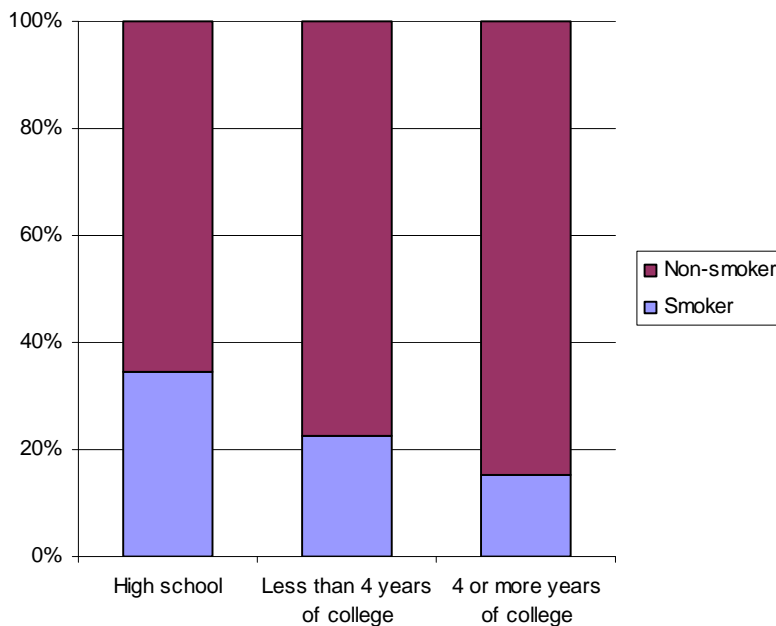


AP Statistics – Review for Test 1 – Answers

- $\frac{32}{200} = 16\%$ of the shoppers were smokers with only a high school education.
- $\frac{32}{93} = 34.4\%$ of the shoppers with only a high school education were smokers.
- $\frac{32}{50} = 64\%$ of the smokers had only a high school education.
- The two variables, education level and smoking, seem **not** to be independent. From the two pie charts below, one can see that the percentage of those with 4 or more years of college is much higher in the non-smoking group than in the smoking group. The percentage of those with just a high school education is significantly higher in the smokers group.



The ribbon chart below shows that as the shoppers' level of education increases, the percentage of those who smoke decreases.



5. The marginal distribution of the education level of the shoppers is:

High school:	93 (46.5%)
Less than 4 years of college:	22 (11%)
4 or more years of college:	85 (42.5%)

6. The marginal distribution of the smoking habits of the shoppers is:

Smokers:	50 (25%)
Non-smokers:	150 (75%)

1. 188 students were surveyed.
2. The variables are gender (male or female) and mode of transportation (bus, car or other)
3. $\frac{64}{188} = 34\%$ of the students surveyed ride the bus.
4. $\frac{34}{102} = 33\%$ of the girls surveyed ride the bus.
5. The marginal distribution of gender is:

Male:	86 (45.7%)
Female:	102 (54.3%)
6. The two variables seem independent of each other. Looking at the marginal distribution, about 34% ride the bus, about 44% take a car, and about 22% use another mode of transportation. The conditional distributions based on gender look strikingly similar: for boys, we have 35% on the bus, 43% in cars and 22% with other modes of transportation; for girls, we have 33% on the bus, 44% in cars and 23% with other modes of transportation. The percentages don't change by more than one or two degrees depending on the gender of the students. Therefore, the variables are independent. Below is a ribbon chart showing the conditional and marginal distributions and how similar they are to one another:

