

**A.P. Statistics**  
**Assignment 10.1**

**Remember to show your thinking through your work.**

1. What does the chi-squared Goodness of Fit test actually test? Is it testing means or proportions? How many?

2. As the *chi-square statistic* increases, what happens to the P-value?

3. What is the shape of a *chi-square distribution*? What happens to the shape as the degrees of freedom increases?

4. For a chi-squared Goodness of Fit test, what are the null and alternate hypotheses?

5. How many degrees of freedom does a chi-squared Goodness of Fit test have?

6. You think that people's ice cream favorites are 25% each vanilla and chocolate, 20% strawberry, 15% butter pecan, 8% rocky road, and 7% other or no preference. You survey 1000 people and find preferences are 220 vanilla, 255 chocolate, 190 strawberry, 170 butter pecan, 95 rocky road, and 70 other or no preference.

- a. Using  $\alpha=5\%$ , was your idea right or wrong?

- b. Which of the flavors contributed the most to the chi-squared test statistic?

7. 425 school children were surveyed about what they want to be when they grow up, out of a choice of five professions. The results were Teacher 80, Doctor 105, Lawyer 70, Police officer 70, Firefighter 100.

- a. Obviously these particular children preferred some occupations over others. Test whether their preference reflects a real difference in the population or not.

- b. Which of the categories contributed the most to the chi-squared test statistic?