Final Exam Information

- **Exam time is 2:00pm on Tuesday, December 10th**
- **The final exam is cumulative**

New Material from Chapter 13 - Contingency Tables
Goodness of fit test
Test for Independence
Test for Homogeneity
How big does the sample size need to be for the χ^2 test to work?
(at least 80% of expected values 5, none less than 1)
df = # cells - # fixed cells - # estimated parameters

You will get copies of the formula sheets from the first three exams, as well as $\sum \frac{(Obs - Exp)^2}{Exp}$

Sample Exam Questions over This Material

1) It is desired to test that a die is fair. (So each of the six sides has the same chance of coming up). What is the minimum number of times we could roll the die to test it and still have the assumptions of the Chi-squared goodness of fit test met?

2) A survey is conducted to determine which type of media various age groups think are most credible.

	Most Credible Medium		
	Newspaper	Television	Radio
Under 35	30	68	10
35-54	61	79	20
Over 54	98	43	21

a) What would the degrees of freedom be for testing the null hypothesis that age is independent of most trusted news medium?

b) For testing the null hypothesis that age is independent of most trusted news medium, what is the expected number of people between ages 35 and 54 who find television most credible?

c) A previous study found for people under age 35 that 20% considered Newspapers most credible, 75% considered Television most credible, and 5% considered Radio most credible. Test the hypothesis that the findings of the survey above agree with these percentages for people under age 35. (Use α=0.05)

Answers:
1) 6x5=30 would give an expected value of 5 for each side.
2a) df=(#row-1)(#col-1)=(3-1)(3-1)=2x2=4
2b) rc/n = (61+79+20)(68+79+43)/(30+68+10+61+79+20+98+43+21)=70.698
2c) This is a goodness of fit test.
Obs=[30 68 10] Exp= [0.20x108 0.75x108 0.05x108] = [21.6 81 5.4]
$\chi^2=(30-21.6)^2/21.6 + (68-81)^2/81 + (10-5.4)^2/5.4 = 9.27$ compare to 5.99 (df=2) and reject H_0.