CHAPTER 25: COMPARING COUNTS

Chi-Squared:

Chi-Squared Conditions & Assumptions

- Counted data condition -
- Independence Assumption -
- Randomization Condition -
- Expected Cell Frequency –

Chi-Squared Goodness-of-fit

Chi-Squared Test of Homogeneity

Chi-Squared Test of Independence

1. A public opinion poll surveyed a simple random sample of 1000 voters. Respondents were classified by gender (male or female) and by voting preference (Republican, Democrat, or Independent). Results are shown in the contingency table below.

	Voting Preferences			Row total
	Republican	Democrat	Independent	
Male	200	150	50	400
Female	250	300	50	600
Column total	450	450	100	1000

Is there a gender gap? Do the men's voting preferences differ significantly from the women's preferences? Use a 0.05 level of significance.

2. Acme Toy Company prints baseball cards. The company claims that 30% of the cards are rookies, 60% veterans, and 10% are All-Stars. Suppose a random sample of 100 cards has 50 rookies, 45 veterans, and 5 All-Stars. Is this consistent with Acme's claim? Use a 0.05 level of significance.

3. Medical researchers enlisted 90 subjects for an experiment comparing treatments for depression. The subjects were randomly divided into three groups and given pills to take for a period of three months. Unknown to them, one group received a placebo, the second group the "natural" remedy St. John's wort, and the third group the prescription drug Posrex. After six months, psychologists and physicians (who did not know which treatment each person had received) evaluated the subjects to see if their depression had returned.

	Treatment		
Diagnosis	Placebo	StJ W	Posrex
Depression returned	24	22	14
No sign of depression	6	8	16