Study Questions

A

A survey was conducted of television viewership. A group of 300 viewers were asked which type of TV show they prefer. The results were organized into the table below.

	Drama	Comedy	Reality	Sports
Aged 30 years and Younger	65	128	57	50
Older than 30 Years Old	75	110	43	72

A χ^2 test was carried out, at the 5% significance level. The χ^2 critical value of the test is 7.82.

(a) Write down the null hypothesis for this test. [1]

(b) Write down the number of viewers who preferred sports and were older than 30 years old. [1]

(c) Use your graphic display calculator to find the χ^2 statistic for this test. [2]

(d) Determine, giving a reason, whether the null hypothesis should be accepted. [2]

Working.....

(a) H_0: Age and TV genre preference are independent.

(b) 72

(c) $X^2 = 8.00$

(d) Since χ^2 statistic is > 7.82, H_0 should be rejected

(6 marks)

B

A real estate developer conducted a survey. He asked 100 people who live in the city and 100 people who live in the suburbs if they prefer bicycling, driving, walking, or taking public transportation to work. The results are shown in the table below.

	City	Suburbs
Bicycle	15	20
Drive	35	30
Walk	15	20
Public Transportation	35	30

A χ^2 test was conducted at the 5% significance level.

(a) Write down the null hypothesis for this test. [1]

(b) Write down the number of degrees of freedom. [1]

(c) Use your calculator to find the *p*-value for this test. [2]

The surveyor claims that whether people live in the city or suburbs is independent of their choice of getting to work.

(d) Determine whether this claim is justified. Give a reason for your answer. [2]

Working.....

(a) H_0: where people live is independent of their method commute.

(b) $df = 3$

(c) $p = 0.532$

(d) Since p-value > 0.05, H_0 should be accepted. the surveyors claim is correct.

(6 marks)

Supplemental Solutions to Ch. 11 Review Sets A & B

All of the answers are posted earlier in the blog.

Please note that none of the review problems require you to calculate the correlation coefficient "by hand", or the LSRL "by hand". On the test, there will be questions of this type. → in POINT-SLOPE FORM

Review Set A

The answer to 3c is lacking, because a summary statement is not included. It is needed because of the strong correlation.

→ Add As the area of a canvass increases, the price definitiley goes up.

4d Add there is only a moderate positive linear correlation.

We can say with limited confidence that as time in the store increases, the amount they spend increases.

5d Note one could also question the reliability of the estimate if they knew there was weak correlation between price and sales.

Review Set B

6c Since there is a moderate negative correlation, we should ~~can~~ add:

As the Silent Predator abduction rate climbs, we can be somewhat confident that the Furry Predator rate will decline.