My signature on this assessment confirms I have used no outside resources and adhered to all assessment protocols assigned to this daily grade/quiz/test/exam.

AP Stat   Quiz: Calculator Output & x^2 Name _____
Ch 14 [50 pts]

You may write your answers to this quiz on notebook paper. Remember to place your name at the top of ALL pages.

1.   A company commissions an Advertising Agency to create an internet ad to promote a new product. Since the product is designed for men and women, the ad has to appeal to men and women equally. Before the company spends $250,000 to run the ad across a number of computer sites, it wants to make sure that it appeals equally to men and women. More specifically, the company wants to know whether the way that men and women "engage" with the ad is the same. To achieve this, the advertisement is shown to 20 men and 20 women, who are then asked to fill out a questionnaire that measures their time of engagement with the advertisement. The following Minitab output shows the results of this survey. Use these results to determine if there was a statistically significant difference in mean engagement minutes between males (group 1) and females (group 2). Does the company need to plan on creating different advertisements for their product? Defend your answer with statistics. Assume all necessary conditions have been met. [10 pts]

Two-Sample T-Test and CI: Engagement, Gender

Two sample T for Engagement

Gender	N	Mean	StDev	SE Mean
1	20	5.565	0.346	0.077
2	20	5.302	0.348	0.078

Difference = mu (1) - mu (2)
Estimate for difference: 0.263
95% CI for difference: (0.041, 0.485)
T-Test of difference = 0 (vs not =): T-Value = 2.40 P-Value = 0.022 DF = 37

Hypothesis in Words

H$_o$:

H$_a$:

Conclusion based on computer output including correct statistical values to justify answer.

➢ Use this computer output to answer #2 - #4.

Chi-Square Test: Fairly_Important, Not_Important, Very_Important

```
        Fairly_important  Not_Important  Very_Important
  1
              56               32              39

  2
              43               31              25


  Chi-Sq = 1.337, DF = 2, P-Value = 0.512   α = .05
```

The computer output above gives the results of a questionnaire given to males (1) and females (2) asking the question "Do you consider physical appearance important when choosing whether to date someone?" Use this information to answer the following questions. Assume all necessary conditions have been met.

2. What is the **expected value** for males who consider this "fairly important"? **Show the correct algebraic work used to calculate this value.** [5 pts]

3. What is the x^2 **component** for females who consider this "not important"? **Show the correct algebraic work used to calculate this value.** [5 pts]

3. Define the null and alternative hypotheses for this problem. Based on the results of this survey, would you conclude that the distribution for level of importance in terms of appearance is different for males and females? Defend your answer with **valid statistics values.** [10 pts]

H_o:

H_a:

Based on the results of this hypothesis test, would you conclude that the distribution for level of importance in terms of appearance is different for males and females? Defend your answer with **valid statistics values**.

Conclusion

5. A study of 150 randomly selected cities wanted to determine if crime rate is associated with outdoor temperature. The results of the study are summarized in the table below:

CRIME RATE

		Below Normal	Normal	Above Normal
	Below Normal	12	8	5
TEMPERATURE	Normal	35	41	24
	Above Normal	4	7	14

Do these data provide statistical evidence, at a 5% level of significance, that there is an association between crime rate in a city and the outdoor temperature in that city at the time of the crime? [20 pts]

- State:

- Plan:

- Do:

Conclusion: