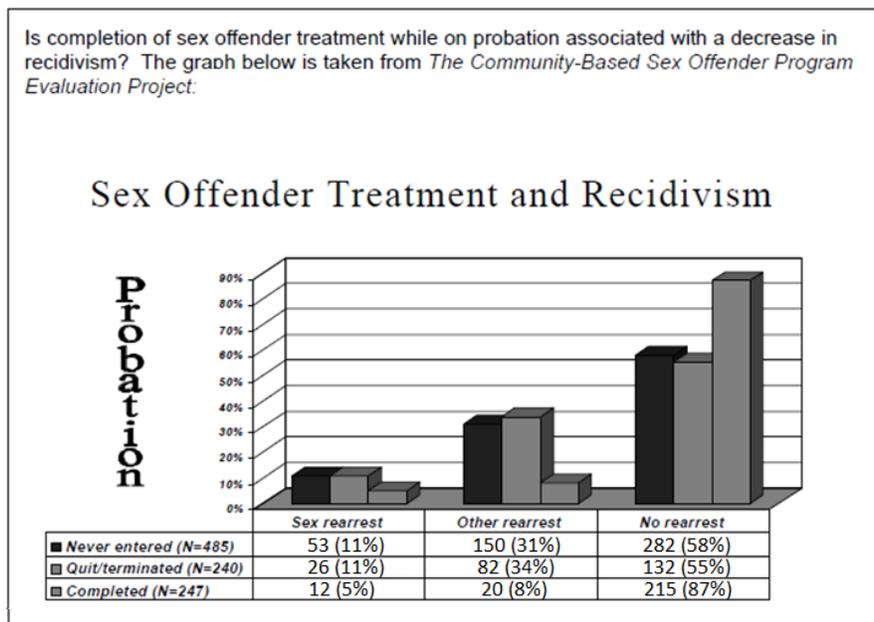STAT 110: Section 4.4 Practice Quiz   Name: <u>SOLUTION</u>

Note: This quiz is coming directly from p61 of the Chapter 4 notes.

<u>Example 4.4.6</u> The Minnesota Department of Corrections often creates reports for the Minnesota State Legislature to identify the importance of funding programs that are known to improve public safety. The following data was presented in one such report. The following question and supporting data were provided on p17 of their report.

Is completion of sex offender treatment while on probation associated with a decrease in recidivism? The graph below is taken from *The Community-Based Sex Offender Program Evaluation Project:*

Sex Offender Treatment and Recidivism

	Sex rearrest	Other rearrest	No rearrest
■ Never entered (N=485)	53 (11%)	150 (31%)	282 (58%)
▨ Quit/terminated (N=240)	26 (11%)	82 (34%)	132 (55%)
▨ Completed (N=247)	12 (5%)	20 (8%)	215 (87%)

1. Use the data provided above in the table to construct the more appropriate 100% stacked column graph for this data.
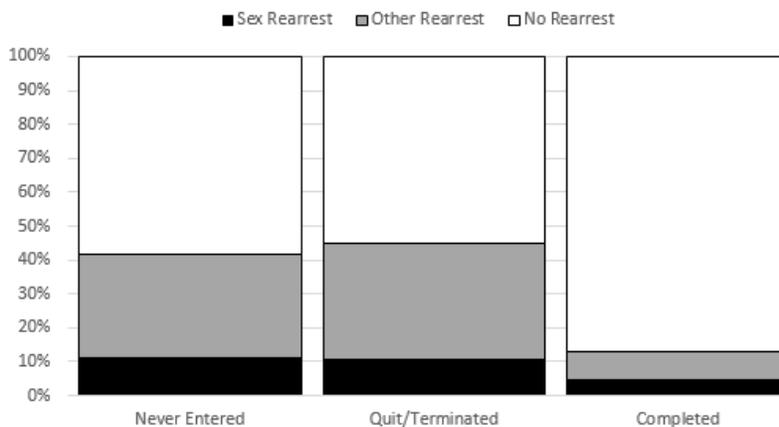
2. Obtain the Expected Counts, p-value, decision, and conclusion for this investigation.

Research Question	Is completion of sex offender treatment while on probation associated with a change in the recidivism rate?
Analysis in Excel	Conduct the appropriate analysis in Excel. You must calculate the Expected Counts for each cell in the table. Use the =CHITEST() function in Excel to obtain the appropriate p-value. (8 points)

	Sex Rearrest	Other Rearrest	No Rearrest	Total
Observed Counts				
Never Entered	53	150	282	485
Quit/Terminated	26	82	132	240
Completed	12	20	215	247
Total	91	252	629	972
Expected Counts				
Never Entered	45.41	125.74	313.85	485
Quit/Terminated	22.47	62.22	155.31	240
Completed	23.12	64.04	159.84	247
Total	91	252	629	972

P-Value =CHITEST(C4:E6,C11:E13) = 2.94989E-15

What is the p-value from your test?

P-Value = $2.95E-15 \approx 0$

Decision

Make the appropirate statistical decision.
Decision: If the p-value < 0.05, then data is said to support the research question.

- ⦿ Data supports research question
- • Data does not support research question

Conclusion

Write an appropriate conclusion in context and in laymen's terms.

There is enough statistical evidence to say that completion of sex offender treatment program while on probation associated with a decrease (or change) in the recidivism rate (p-value very small).

3. Suppose the Completed group was removed from consideration and only the Never Entered group was compared against the Quit / Terminated group. Would you expect the p-value from this analysis to increase, decrease, or not change? Briefly explain.

The p-value would (Increase) | Decrease | Not Change
Explain:
The p-value would increase (above 0.05) because the patterns for the Never Entered and Quit / Terminated groups are nearly identical, i.e. close to the no difference situation.