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**MAT 222**

**Spring 2019**

**Excel Lab 5: Ch. 12**

*“If I go back to the beginning, I could start it over again. I could go line by line, try and find a shorter way. I could try to make it. . . better.”*

*– Catherine, Proof*

A researcher is trying to determine if there is a difference in the murder rates between the various geographical locations on Earth. To do this, the researcher records the average murder rate per 100,000 persons for various countries on each continent. An ANOVA test would determine if there is a difference between these murder rates. Using the file `murder_rates.xlsx`, use Excel to perform an ANOVA test to determine if there is a difference between the murder rates on various continents. Provide a print off of the results of the analysis and discuss the results below. Be sure to discuss the conclusion of the  $F$ -test for this analysis and to discuss the means for the various groups.

*The  $F$ -value for the test was 27.168 and with degrees of freedom of the numerator 4 and degrees of freedom of the denominator 208, the  $p$ -value was approximately 0. Therefore, we reject the null hypothesis that the murder rates on each continent are the same. Therefore, at least one of the continents has a murder rate distinct from the others. Examining the means, it seems that Africa and North/South America & Caribbean have the highest murder rates, while the murder rate for Europe, Asia, and the Middle East are the lowest. Further analysis would be needed to determine if the murder rate between Europe and the Middle East is different. However, all the other average murder rates all seem to be distinct from each other.*