

**A Special Question (10 points).**

In Assignment #5 you read and reviewed the paper by Regina Nuzzo. (2014). Statistical Errors. *Nature*. 506. 150 – 152. For this assignment, please read the article by Sponberg, et al., and a supplement to the Sponberg article on our Canvas website under **Files > Assignments > Assignment 6 > Paper for Review Exercises**.

Skim the following article: Simon Sponberg, Jonathan P. Dyhr, Robert W. Hall, and Thomas L. Daniel. (2015). Luminance-dependent Visual Processing Enables Moth Flight in Low Light. *Science*. 348. 1245 – 1248. Also scan pp. 4 – 5 of the associated Supplementary Materials for the article; starting with “Data Analysis and Statistics” through “Testing for Significant Tracking”.

Using the article by Regina Nuzzo, you read above as a basis, critically evaluate the authors’ reporting of the statistical procedures and tests they employed. Please type no more than two paragraphs of well written English sentences in answering this. You will not have seen all of the test procedures the authors use, so do not worry about what they are. Instead, focus on how they present the results of those procedures in the paper.

Please note, you DO NOT have to read the entire article (only the pages I cite), nor do you need to read it for an understanding of experiments conducted. You need only the answer the question posed, but I would encourage those of you who plan to go on in the study of the biological sciences to read the article and the supplementary materials, as best you can, to get a glimpse of where biology is today in terms of the use of quantitative methods.

**There are many possible answers as long as you defend your conclusions well.**

**Shorter answers (13 points).**

1. (6 points; 3 points for each) For count data, we consider two different problems. Please describe them and distinguish between them.
2. (4 points) For each problem, explicitly state the hypotheses tested in words and mathematically.
3. (3 points) State the formula for the test statistic and the decision rule (test criterion). Please define all variables and symbols that you use.

**Q SCI 381: Introduction to Probability and Statistics**  
**S. Scherba, Jr.                      Assignment #6: Review Exercises**

**Problems from the text. You should not fail to do these, but they are NOT TO BE TURNED IN FOR GRADING. My solutions will be posted.**

From F & P, please do, in good mathematical form the following problems. Draw a picture to help you visualize the problem wherever possible, e.g., draw probability distributions to help yourself determine the area under the curve the problem is requiring you to determine. Use the tables in the back of the text; not R. We will be using R in the analysis section of this assignment.

13.1, 13.2, 13.5, 13.6, 13.7, 13.8, 14.16, 14.18, 14.38, and 14.40.