Japan Studies Institute 2015

Preliminary report by John Watson

I intend to use things I have learned about Japan and Japanese culture in the general education mathematics course for non-stem majors at ATU. Picking this course has the distinct advantage of reaching more students and those at the early stage of their college education. This course is part of the ACTS (Arkansas course transfer system) and therefore has state guidelines about course content. Therefore, I can't teach my course using only topics we have covered here, but there are several places where I intend to insert Japanese topics.

The first unit in my course is titled "art and mathematics". I was particularly enthused to visit the Japanese Friendship Garden and view the magnificent ceramic work by Ichiyo Yamamoto. All of the pieces in the display showed mathematical form. There is another Japanese artist whose name escapes me, I have that information in my office, whose sculpture is based on mathematical principles. His work will also be a part of my course.

Over the course of the past days we have been presented with a lot of data: charts, tables, graphs.   When I cover the unit on statistics, I will include some of this information.

I have been trying to find a topographical map of the city of Rikuzentakata, in the Iwate prefecture. This town was devastated by the 3-11 tsunami, about 90% destroyed with loss of about 10% of the population. Dr. Atsushi Nara, who presented on the geography of Japan, has pointed me to some resources and has 4 gigabytes of data he will transfer to my computer at the closing dinner. I plan to assign a group project concerning the work of the city to raise the area on which the city was located by 9 meters before rebuilding. That is a lot of dirt to be moved. I want my students to estimate the amount it will take. This will involve computing the area of an irregular shaped area by estimating using narrow width rectangles. Although I do not plan to mention this to my students, the process is one that is basic to the study of calculus.

There are other topics which at least deserve a brief mention, such as Ikebana. My reading on this indicates that the basic form of an Ikebana arrangement is the form of a scalene triangle.

Finally, I plan to include topics related to Japan as "side topics". For example, when we study Rear Admiral Grace Hopper, PhD in Mathematics at Yale in 1934, and her influence on the development of computer science, I will also point out that her team working on the Mark I computer in 1944 solved a problem for Jon Von Neuman and the others working on the Manhattan Project in Los Alamos, leading of course, to the development of the A-bomb. This demonstrates that mathematics can be used for good or bad. I want my students to think about their beliefs on whether the use of the bomb was justified and point them to the documentary "White light/Black Rain" for their consideration as they ponder their thoughts on the issue of nuclear arms.