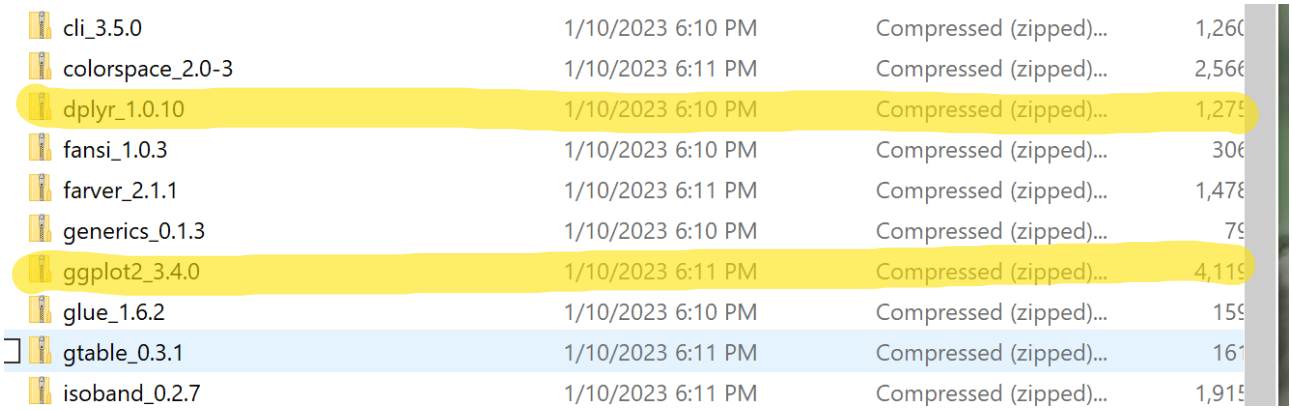
Assignment 1

Part I:



Part II:

During a long journey of society development, especially from barbarism to civilization, Chinese ancestors were gradually aware of the concept of numbers. Several books from the prior Qin dynasty indicate that our ancestors have started to use Knotting Notes to count significant events in life. The Knotting Notes method shows people beginning to realize the exitance of the quantity of things and created symbols for counting. During the 14th century BC, people in Shang Dynasty created 13 Chinese counting characters from the smallest number, one, to the largest number, thirty thousand. According to *Zhoubi Suanjing*, people in Shang Dynasty had started to use those numbers to measure the area of land, the height of a mountain, the depth of a valley, and the yield of grain, etc. At that time, people also used a tool called counting rods for calculation. According to *Shuowen Jiezi*, this tool eventually became a partial character of the word "number" in Chinese. The exponential growth of mathematics happened around 770 BC when the Eastern Zhou government lost its power. This is also a time for the raising of private schools. Learning mathematics is no longer a privilege for nobles. Around 470 BC, people had a complete decimal system, multiplication table, and elementary arithmetic and knew how to use fractions. One of the famous arithmetic workbooks, *JiuZhang Suanshu*, collected all the math knowledge at that time. This book contains 246 math problems and covers several topics, including the area of plane geometric figures, proportional and proportional distribution problems, square and cube extraction, volume calculation, linear equation, and the Pythagorean theorem. This book is the epitome of modern mathematics, but where are statistics and probability?

In ancient China, statistics is a tool for government management, especially in the census. The earliest census happened in Western Zhou Dynasty, but the earliest record of using the statistics method was written between 719 BC to 645 BC by Guanzhong, a prime minister of Qi. In his writing, he listed around 70 questions about population and

economy. He requested the government to check the population in Spring, verify existing records in Summer, and review them in Winter.

Like statistics, ancient Chinese also didn't categorize probability as science. Instead, they took probability as an attitude of life. Ancient Chinese observed the changes in Earth and classified those changes as a regular phenomenon or an irregular phenomenon. They understood that nothing is certain and stable, and people should pay attention to those changes. Therefore, they created many idioms for probability. One of the famous idioms shows the probability and life attitude is "no afraid to ten thousand certain cases, but beware of the one uncertain case." This idiom means that even if an event has 99% happening, there is still 1% that won't happen, and it ruins everything.

Statistics and probability haven't become science topics until modern society. People start to use western knowledge as the fundamental of statistics and probability and apply it to science. However, the concept of statics and probability already existed thousand years ago and is waiting for this exponential growth.

Worked Citation

"Ancient China Mathematics." *Biadu Baike*, https://baike.baidu.com/item/%E4%B8%AD%E5%9B%BD%E5%8F%A4%E4%BB%A3%E6%95%B0%E5%AD%A6/4124209.

Guan, Zhong. "Guanzi: LiZheng." Edited by Donald Sturgeon, *Chinese Text Project*, https://ctext.org/guanzi/li-zheng/zhs.

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