

Abstract

This document lists a number of significant mathematical texts produced in China before 1500. The texts are organized chronologically by dynasty and demonstrate the sophistication and breadth of Chinese mathematical thought over many centuries. It includes the collection known as the “Ten Computational Canons,” which was assembled in the 7th century for the imperial examinations.

1. Pre-Han Dynasty (before 206 BCE)

- ***Suan shu shu* (A Book on Arithmetic)**: The oldest surviving mathematical book from ancient China. Discovered on bamboo strips in a tomb sealed in 186 BCE, it contains 69 problems covering fractions, proportion, square roots, and geometry.
- ***Zhoubi Suanjing* (The Arithmetical Classic of the Gnomon and the Circular Paths of Heaven)**: Compiled between 100 BCE and 100 CE, this astronomical text contains important mathematical sections, most notably a description and proof of the “gougu” rule, or what is known in the West as the Pythagorean theorem.

2. Han Dynasty (206 BCE–220 CE)

- ***Jiuzhang Suanshu* (The Nine Chapters on the Mathematical Art)**: The most influential Chinese mathematical text, compiled from earlier works during the Han dynasty. This book presents 246 practical problems covering topics from agriculture and engineering to systems of linear equations.
- ***Shushu Jiyi* (Notes on Traditions of Arithmetic Methods)**: A Chinese mathematical treatise attributed to the Eastern Han mathematician Xu Yue (c. 180–220 CE). It describes various calculation methods and was later included in the “Ten Computational Canons.”

3. Three Kingdoms and Southern and Northern Dynasties (220–589 CE)

- ***Haidao Suanjing* (Sea Island Mathematical Manual)**: Written by Liu Hui in 263 CE as an appendix to his commentary on the “Nine Chapters.” It presents nine surveying problems using the Pythagorean theorem.
- ***Sunzi Suanjing* (Master Sun’s Mathematical Manual)**: Written between the 3rd and 5th centuries CE, this treatise includes the earliest known example of the Chinese remainder theorem.
- ***Zhang Qiujian Suanjing* (Zhang Qiujian’s Mathematical Manual)**: Compiled between 466 and 485 CE, this book includes 92 problems, notably the classic “hundred fowls” problem solved using indeterminate equations.
- ***Xiahou Yang Suanjing* (Xiahou Yang’s Mathematical Manual)**: A 5th-century text known for its use of decimal notation for positive and negative powers of ten.
- ***Wucao Suanjing* (Mathematical Manual of the Five Administrative Departments)**: A 5th-century text for civil servants, containing formulas for calculating the areas of fields.
- ***Wujing Suanshu* (Arithmetic methods in the Five Classics)**: A 6th-century text authored by Zhen Luan.
- ***Zhui shu* (The Method of Interpolation)**: An advanced text by the 5th-century mathematician Zu Chongzhi. It was included in the original compilation of the “Ten Computational Canons” but was later replaced by the “Shushu Jiyi.”
- ***Sandeng shu* (Art of the Three Degrees)**: This text, also by Zu Chongzhi and his son, was included in some versions of the “Ten Computational Canons.”

4. Tang and Song Dynasties (618–1279 CE)

- ***Jigu Suanjing* (Continuation of Ancient Mathematics)**: Written in the 7th century by Wang Xiaotong. It deals with cubic equations and solving geometrical problems.

5. Song and Yuan Dynasties (960–1368 CE)

- ***Shushu Jiuzhang* (Mathematical Treatise in Nine Sections)**: Published in 1247 by Qin Jiushao, this book covers indeterminate equations, polynomial equations, and numerical methods.
- ***Siyuan yujian* (Precious Mirror of the Four Elements)**: Published in 1303 by Zhu Shijie, this work on advanced algebra introduced methods for solving systems of polynomial equations and included a version of Pascal's Triangle.