



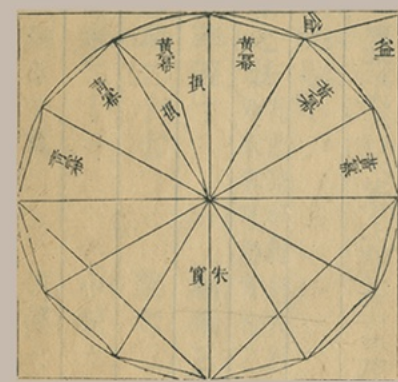
# HISTORY OF CHINESE MATHEMATICS

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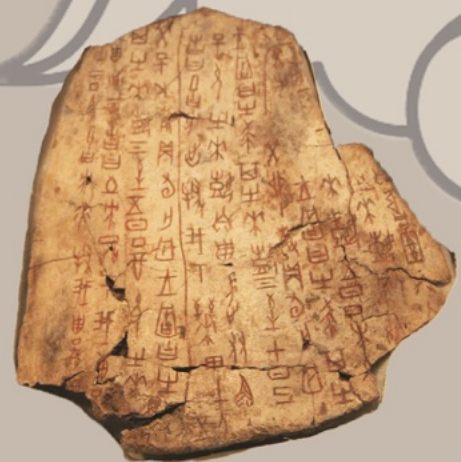
## LIU HUI'S ALGORITHM

At the time, Liu Hui was not happy with the existing approximations of  $\pi$ . His algorithm approximated  $\pi$  calculating the area of a polygon inscribed in a circle, and gradually increasing their sides for better accuracy. His calculation with a 96-gon yielded an accuracy of four decimal places:  $\pi \approx 3.1416$



## ORACLE BONES

These inscriptions, made out of ox bone and turtle shell, are the only source of information we have about the most ancient Chinese numerals. They were mainly used as a religious practice of divination to prophesise.



1400 BC

300 AD

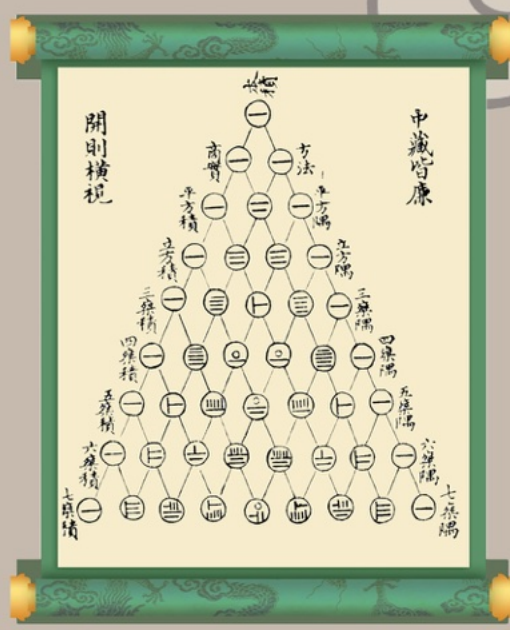
200 BC

1200 AD

## COUNTING ROD ARITHMETIC

132		≡	
5089	≡	⊥	≡
-704	⊥	≡	≡
-6027	⊥	=	⊥

Small bamboo counting rods represented digits by the number of rods, and five by horizontal line. These rods were used to perform calculations like addition and multiplication. Negative numbers were often used for accounting and debts on their counting board - red and black painted rods were used to represent positive and negative values respectively.



## YANG HUI'S TRIANGLE

This is the earliest depiction of "Pascal's triangle" from Yang's "Xiangjie Jiuzhang Suanfa". Each number is the sum of the two directly above it, with applications in algebra, combinatorics, and probability theory.



Yang Hui was a Chinese mathematician and writer during the Song dynasty. Very little is known about him but, his books endure as few lasting works in Chinese mathematics.

By Ximan Mao

Image references: Green scroll, [Image]. Available at: https://www.shutterstock.com/image-vector/61750041/chinese-style-green-shade-scroll.html; Dragon, [Image]. Available at: https://media.istockphoto.com/id/140122699/vector/illustration-set-of-long-dragons-jpg?i=612612&w=0&k=20&c=UJZJQ44834F7KZmdNuiPZO\_ZZyKcCg7ETaI0\_q6tyw; Traditional Chinese Clouds Set Line Style, [Vector image]. Available at: https://www.freepik.com/free-vector/traditional-chinese-clouds-set-line-style-17819635.html#query=asian%20clouds&position=8&from\_view=keyword&track=ais; Oracle Bone Script Numerals, [Image]. Available at: https://commons.wikimedia.org/wiki/File:OracleBoneScriptNumerals.png; Oracle Bones, [Image]. Available at: https://commons.wikimedia.org/wiki/File:OracleBones.jpg; Yanghui Triangle, [Image]. Available at: https://en.wikipedia.org/wiki/File:Yanghui\_triangle.jpg; Counting Rods, [Image]. Available at: https://media.springernature.com/lw685/springer-static/image/chp/33A10.1007%2F978-3-319-73396-8\_7/MediaObjects/334869\_1.En\_7\_Fig2\_HTML.png; Counting Rods, [Online]. Available at: https://en.wikipedia.org/wiki/Counting\_rods; Mathigon, Liu Hui, [Online]. Available at: https://mathigon.org/timeline/liu; Mathigon, Yang Hui, [Online]. Available at: https://mathigon.org/timeline/yang; Pi Symbol, [Image]. Available at: https://commons.wikimedia.org/wiki/File:Pi\_Symbol.png