

# GEOGRAPHY OF RESOURCES

## II-M.Sc GEOGRAPHY

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Topic: Geographical Thought- Indian geographical contribution

Content - Indian geographical contribution-

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## **Indian contribution**

Bhugol (Bhu+gol) study of the earth, Khagol (study of the astronomy). Source: Ramayana Mahabharatha, Puranos, Buddisht and Jaina

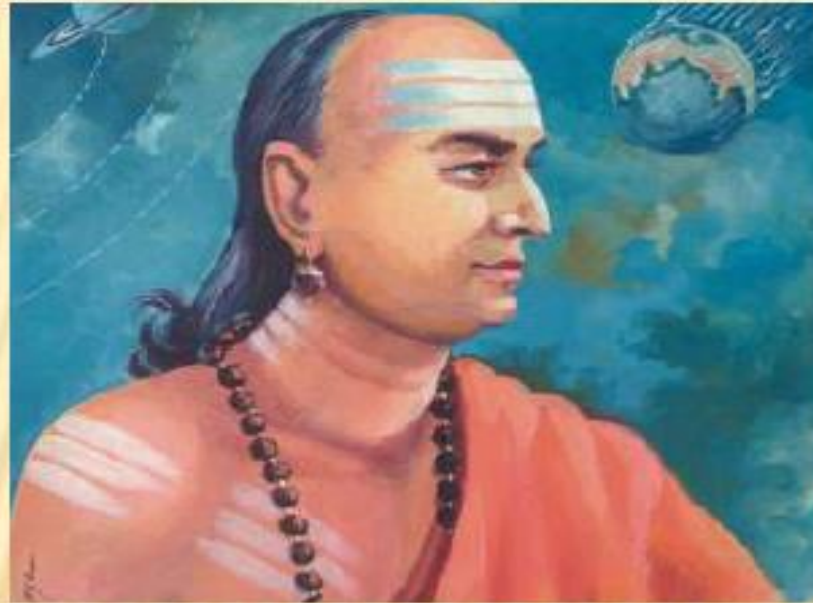
### **Main contribution of India geographers**

Aryabhatta, bhaskaracharia, Varahimithra, Brahmagupta

# INDIAN MATHEMATICIANS

## 1) Aryabhat

Aryabhat was an acclaimed mathematician–astronomer. He was born in Kusumapura (present day Patna) in Bihar, India.



His contribution to mathematics, science and astronomy is immense, and yet he has not been accorded the recognition in the world history of science. At the age of 24, he wrote his famed “Aryabhatiya”. He was aware of the concept of zero, as well as the use of large numbers up to  $10^{18}$ . He was the first to calculate the value for ‘pi’ accurately to the fourth decimal point.

He calculated the circumference of the earth as 62,832 miles, which is an excellent approximation, and suggested that the apparent rotation of the heavens was due to the axial rotation of the earth on its axis. He was the first known astronomer to devise a continuous Counting of solar days, designating each day with a number. He asserted that the planets shine due to the reflection of sunlight, and that the eclipses occur due to the shadows of moon and earth. His observations discount the “flat earth” concept, and lay the foundation for the belief that earth and other planets orbit the sun.

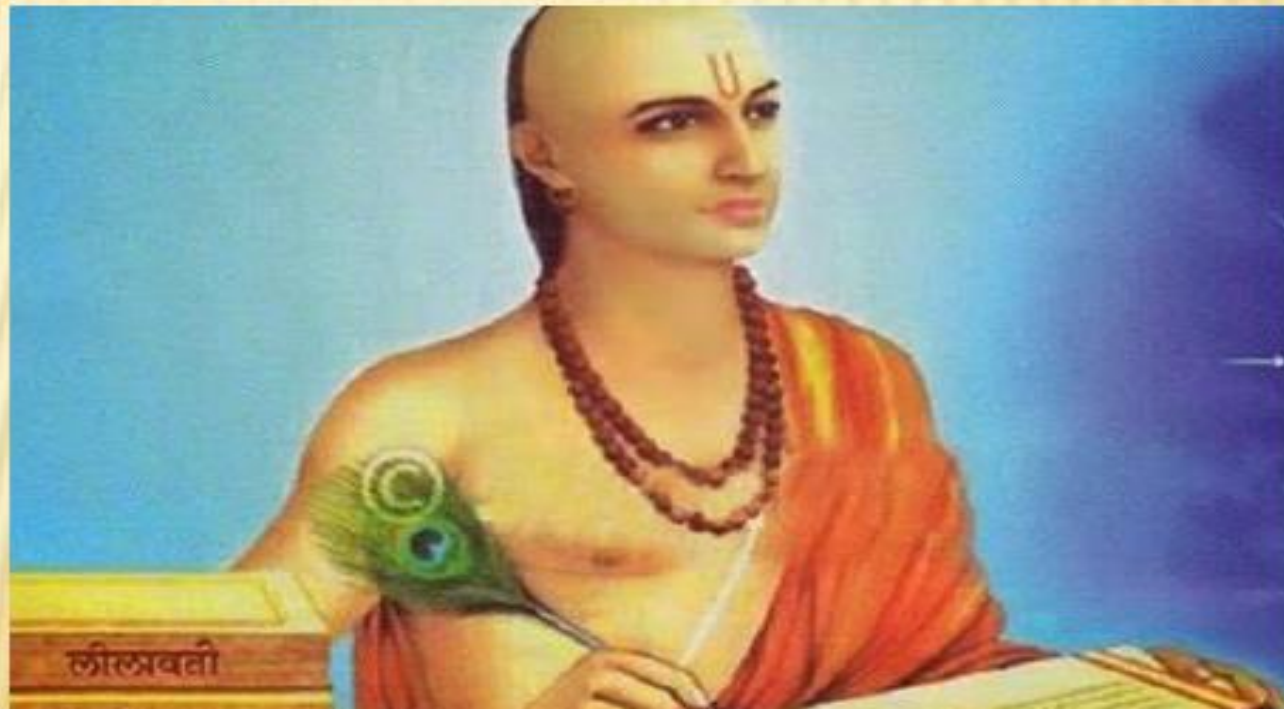
### Childhood & Early Life

Aryabhata's birthplace is uncertain, but it may have been in the area known in ancient texts as Ashmaka, which may have been Maharashtra or Dhaka or in

The Aryabhatiya is also occasionally referred to as Arya-shatas-aShTa (literally, Aryabhata's 108), because there are 108 verses in the text. It also has 13 introductory verses, and is divided into four pādas or chapters. Aryabhatiya's first chapter, Gitikapada, with its large units of time — kalpa, manvantra, manvantra, and Yuga — introduces a different cosmology. The duration of the planetary revolutions during a mahayuga is given as 4.32 million years. Ganitapada, the second chapter of Aryabhatiya has 33 verses covering mensuration (kṣetra vyāvahāra), arithmetic and geometric progressions, gnomon or shadows (shanku-chhAyA), simple, quadratic, simultaneous, and indeterminate equations. Aryabhatiya's third chapter Kalakriyapada explains different units of time, a method for determining the positions of planets for a given day, and a seven day week with names for the days of week.

## MAJOR WORKS

Aryabhata's major work, *Aryabhatiya*, a compendium of mathematics and astronomy, was extensively referred to in the Indian mathematical literature, and has survived to modern times. The *Aryabhatiya* covers arithmetic, algebra, and trigonometry.



# BRAHMAGUPTA

## Life and career

Brahmagupta was born in 598 CE according to his own statement. He lived in *Bhillamala* (modern Bhinmal) during the reign of the Chapa dynasty ruler Vyagrahamukha.



He was the son of Jishnugupta. He was a Shaivite by religion. Even though most scholars assume that Brahmagupta was born in Bhillamala, there is no conclusive evidence for it.

