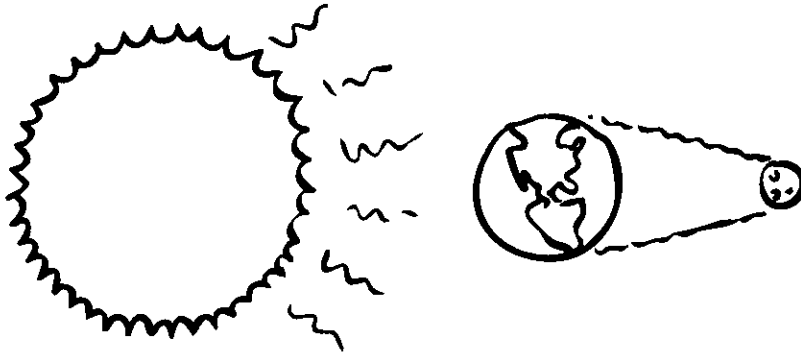


Astronomy



You are in Pataliputra, the capital of the Gupta Empire. The city is on the Ganga River, India's holiest river. Far to the north, you can see the snow-covered tops of the world's tallest mountains, the Himalayas. After a hot, humid day, you welcome the chill of the mountain breezes as you stand under the dark sky looking at the stars.

Astronomy



Gupta astronomers made many discoveries about the sun, moon, earth, and other planets. Although they were aware of the work of Greek astronomers, Gupta astronomers made many discoveries of their own and sometimes arrived at conclusions that were more accurate than those of the Greeks.

The most famous Gupta astronomer was Aryabhata, who lived in the late fifth century. Aryabhata calculated that the length of one year is 365.258 days, the figure we still use today. He also figured out that the planets are spherical, or shaped like balls. Aryabhata made a good estimate of the earth's size and proposed that the earth turns on its own axis. He also discovered that the planets Mercury and Venus revolve around the sun. Finally, he found that lunar eclipses are caused by the earth moving between the sun and the moon and casting its shadow on the moon.

Literature

पुराण

You are in Ujjain, a city in central India where many plays are performed. Today it is humid and warm, with a cloudless, sunny sky. The land is hilly and rocky, and to the south you can see the high mountains of the Vindhya range. The earth is dry and brown as the people wait for the rains of the summer monsoons.

Literature

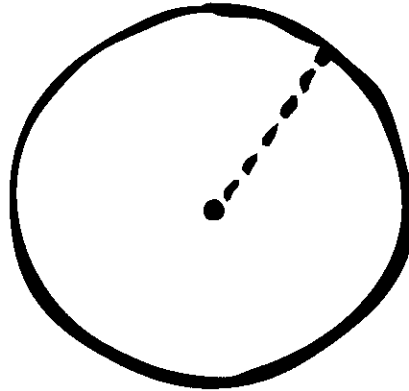
पुराण

The literature of the Gupta Empire is often considered to be one of its greatest achievements. Gupta writers created plays, poetry, and fables, as well as important religious and legal texts. Famous dramatists from the Gupta period include Shudraka and Vishakhadatta. The dramatists wrote comedies, satires, and historical and political dramas that were performed for large audiences. Gupta lawyers wrote important legal texts, called *Dharmasastras*, in which they recorded the basic laws Hindus were supposed to follow.

Some of the most important works of literature written in the Gupta era were the *Puranas*, sacred (holy) religious texts that include Hindu legends and information on the arts and sciences. One of India's classic poems, the *Mahabarata*, reached its final form during the Gupta era. The *Mahabarata*, which evolved over a thousand years, is one of the longest poems ever written, with over 100,000 couplets. To create it, poets combined ancient Hindu scriptures (writings) and another long poem called the *Bhagavad-Gita*.

Mathematics

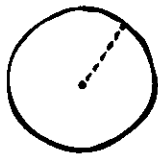
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You are in the northwest corner of the Gupta Empire, in Bakshali, near the shores of the Indus River. You are surrounded by three mountain ranges, and the land here in the foothills is rocky. Everything around you is dry and hot. Nearby you hear two Gupta officials discussing how they will collect one-fourth of the local peasants' harvest as taxes.

Mathematics

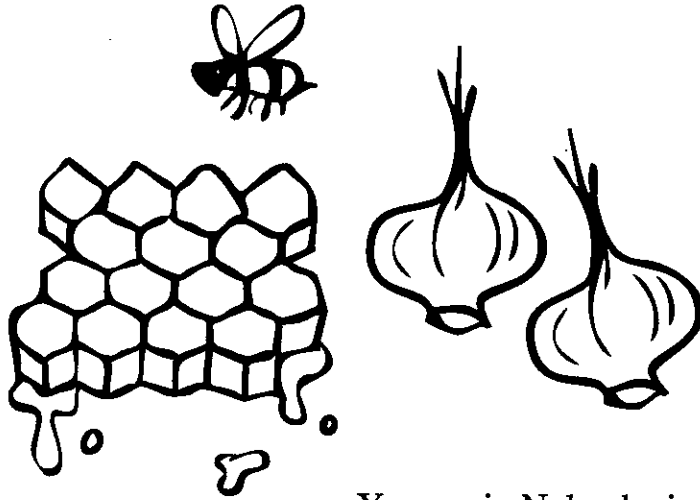
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The mathematicians of the Gupta era made incredible discoveries that have influenced human civilizations from that time forward. Aryabhata, a famous astronomer, was also an important mathematician. He further developed geometry and other advanced areas of mathematics such as algebra and trigonometry.

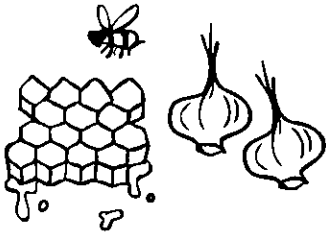
However, the mathematicians' greatest feats occurred before Aryabhata lived. Long before 400 C.E., Indian mathematicians had created the system of numbers from 1 to 9, as well as the concept of zero, that we still use today. Before this, each part of a specific number had to be written separately. For example, the number 153 was written as 100, 50, and 3. Mathematicians also invented the idea of using decimals and fractions to represent portions of whole numbers. Their system is often called the "Arabic" system of numbers because the Arabs learned this system from the Indians and brought it to Europe.

Medicine



You are in Nalanda, in northeast India. You can see a great university, where students learn about medicine and other subjects. The land is part of a flat, fertile plain of the Ganga River. Today the land is green from the rainy season, after a long, dry spell. The temperature is over 100 degrees Fahrenheit, and it is very humid.

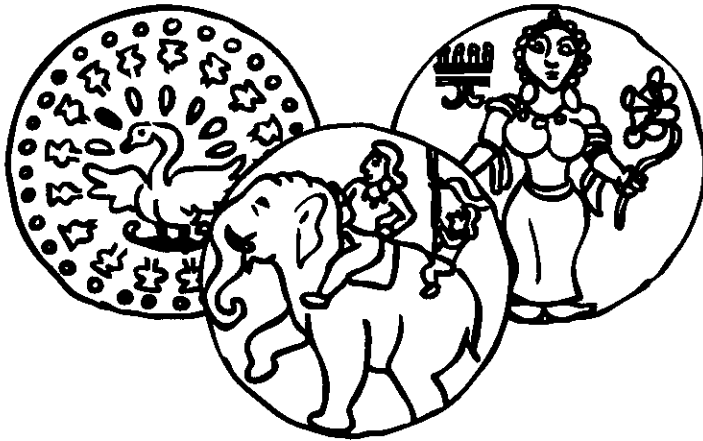
Medicine



Doctors in the Gupta Empire standardized the practices of ayurvedic medicine, an ancient system of healthcare and medicine that started in India. Ayurvedic medicine focuses on the balance of a person's mind, body, and spirit. Gupta treatments included the use of specific herbs and foods, such as garlic and honey, to heal the body and promote a long life. Yoga was another important feature of ayurvedic medicine. Yoga consists of special body positions, breathing exercises, and meditation that bring wellness by creating harmony among mind, body, and spirit.

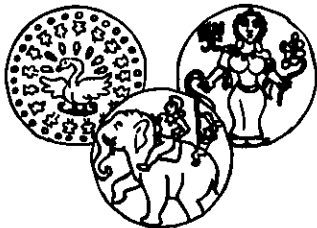
In many large towns, free hospitals were supported by the donations of pious (religious) citizens. In these hospitals, doctors looked at patients' physical problems and asked questions about their mental state. They often prescribed ointments, liquids, and powders that were made from bark, roots, leaves, and chemicals made from minerals. In addition, doctors performed many kinds of surgery, and even used the pincers of giant ants as stitches for open wounds. Gupta doctors were also pioneers in plastic surgery.

Metalwork



You are standing before a huge, solid iron pillar in the city of Meharauli in northern India. The city is between India's most fertile plain and the great Thar Desert. The landscape is dry and brown from the heat, and much of the land is flat. Today it is hot and humid, but in the winter this northern region can grow very cold.

Metalwork



One of the most astounding accomplishments of the Gupta Empire was its impressive metalwork. Gupta kings controlled huge mines of gold, copper, and iron. Metalworkers made many gold and copper coins to honor Gupta rulers' wealth and accomplishments in war, art, and politics.

Gupta metalworkers were experts in working with gold and copper, but they are best known for their skill in ironwork. The most amazing example of their skill is the 25-foot-tall, solid iron pillar at Meharauli, built about 400 C.E. The pillar, which weighs six and a half tons (13,000 pounds), is decorated with an inscription describing the achievements of Gupta Emperor Chandragupta II. After 1,600 years of standing in the rain and sun, it is still remarkably free of rust and corrosion. How the Gupta ironworkers acquired such advanced skills remains a mystery today.

Painting



You are in the Ajanta caves in central India, looking at murals showing scenes of noble life. High on the Deccan Plateau, the land here is fairly flat and you are surrounded by mountains. Everything around you is brown and dry from the intense summer heat. Luckily, you have entered a cave to escape the heat and humidity outside.

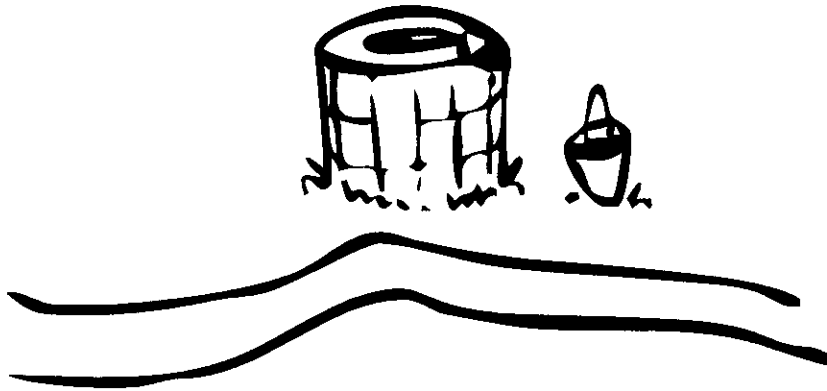
Painting



The Gupta Empire is famous for its wonderful paintings. Painting was an important part of noble life. An educated person was expected to know how to paint, and a painting board or easel was a common item in many Gupta nobles' homes. Members of the nobility painted religious subjects, such as Gods and religious stories. They also created portraits of royalty or loved ones and elaborate scenes that showed the richness of noble life.

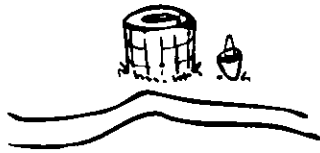
Many paintings were on long scrolls. Some of the most impressive paintings were murals that spanned the walls of temples and caves. The most famous murals are in a series of caves at Ajanta. They are painted in brilliant colors like red, purple, and green, using pigments made from minerals and clay. The murals at Ajanta feature delicate, graceful people—kings, queens, musicians, and dancers. They display woodland scenes with beasts and hunters, surrounded by elaborate decorations of flowers, trees, and fancy patterns.

Roads



You are on a road between the Gupta capital of Pataliputra and the port town of Tamralipti on the Bay of Bengal. The road is made of hard-packed dirt and is raised a little higher than the surrounding land. You can see that the flat plains near the Ganga River are covered with green crops. It is very hot and humid.

Roads



Gupta emperors controlled a huge system of roads, which were important for trade. Traders used the roads to move goods from the middle of the empire out to the port cities. The roads also connected India to China and the Middle East.

To build the roads, engineers first removed all the vegetation and rocks from a pathway. They then filled any holes and leveled the cleared ground to create a flat surface. The finished roads were made of hard-packed dirt. They were raised a few feet from the surrounding land so that rainwater would run off into the ditches or canals that were dug alongside. The roads were measured and marked with distance posts and signs at intersections. Rest houses were often built alongside the roads. The rest houses had wells with water that travelers could use to prepare a meal before spending the night.

Sculpture



You are in northeast India in Sarnath, a city with many famous sculptures. Sarnath is near India's holiest river, the Ganga. The land here is flat and green, and you can see crops growing nearby. Heavy rains come each day. At night, breezes from the distant Himalaya mountains in the north bring cooler air to relieve you from the heat of the day.

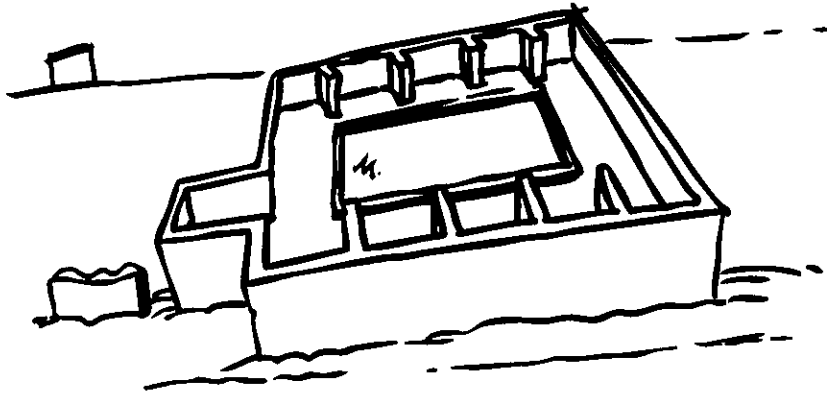
Sculpture



Sculpture is one of the most important artistic achievements of the Gupta Empire. Gupta sculptors worked in stone, wood, bronze, and a clay called *terra cotta*. Many of their sculptures were statues of the Buddha or particular Hindu Gods. Others told stories about important people's lives. Sculptures were sometimes carved into the wall of a temple or cave.

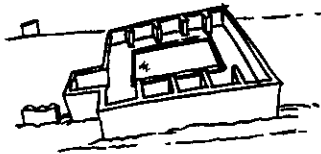
Gupta sculptors were concerned with portraying the human form simply and gracefully. One example of a graceful Hindu sculpture is a statue of Ganga, the Goddess of the Ganga River. Ganga is portrayed holding a water jug and riding on the back of a sea monster. The sculpture has rounded lines and shows elaborate details in the Goddess's dress, jewelry, and hair. Ganga's lowered eyes and calm expression give the impression of quiet thoughtfulness. A seated Buddha statue in the temple at Sarnath shows similar characteristics. Calm and peaceful, he is sitting on a highly decorated seat with his hands and legs crossed. The sculptor used lowered eyes and a peaceful expression to portray the Buddha's wisdom.

Universities



You are in Nalanda, in northeast India, where you can see the buildings of a great university. The land is flat and is part of a fertile plain of the Ganga River. Today, after a long, dry spell, the land is green from the rainy season. The temperature is over 100 degrees Fahrenheit, and it is very humid.

Universities



The Guptas built many colleges and universities, especially in the northern part of the empire. The universities were often near religious and political centers. Some universities were Hindu, while others were Buddhist. Only male children were permitted to enroll in colleges, but the students also included the daughters of instructors. The most famous Gupta university was at Nalanda. It was a Buddhist school that had eight colleges, three libraries, a monastery for monks, and a hospital. Buddhist students came to Nalanda to be trained in Buddhist and Hindu philosophy, logic, grammar, and medicine.

Male children from the first three Hindu classes, or *varnas*, attended Hindu universities. The sons of *brahmins* (religious leaders), *kshatriyas* (lawmakers and warriors), and *vaishyas* (merchants) were eligible for religious study in the universities. They also studied mathematics, astronomy, chemistry, and Sanskrit, the language spoken by educated nobility. In addition, *kshatriyas* were taught swordsmanship, archery, sculpture, painting, music, and dancing to prepare them for royal life.