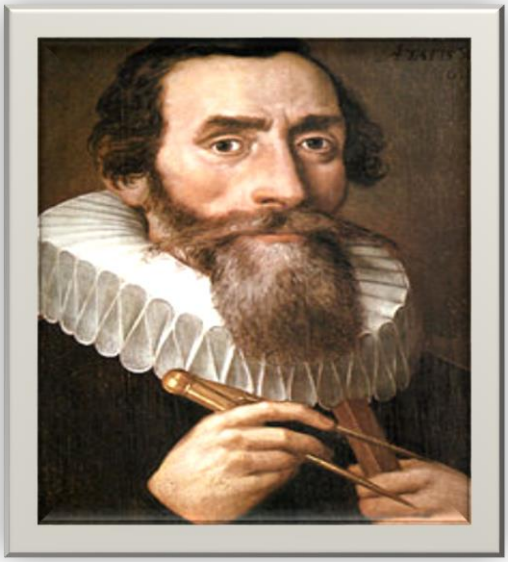
Johannes Kepler

(27 December 1571 – 15 November 1630)



Johan Kepler a German mathematician, astronomer, and astrologer. He is best known for his laws of planetary motion. His grandfather, Sebald Kepler, had been Lord Mayor of the city. By the time Johannes was born, he had two brothers and one sister. At the age of six, he observed the Great Comet of 1577, writing that he "was taken by [his] mother to a high place to look at it." In 1580, at age nine, he observed another astronomical event, a lunar eclipse, recording that he remembered being *called outdoors* to see it and that the moon appeared quite red. In 1589 he was a mathematics teacher at a seminary school in Graz. Kepler first major astronomical work, *Mysterium Cosmographicum* (The Cosmographic Mystery) in 1596, was the first published defense of the Copernican system. He also demonstrated the periodic conjunction of Saturn and Jupiter in the zodiac.

After Galileo's telescopic discoveries, in 1611, Kepler also started a theoretical and experimental investigation of telescopic optics. Kepler set out the theoretical basis of double-convex and double-concave lenses—and how they are combined to produce a Galilean telescope—as well as the concepts of real versus virtual images, upright versus inverted images, and the effects of focal length on magnification and reduction. He also described an improved telescope—now known as the *astronomical* or *Keplerian telescope.*

Kepler's laws of planetary motion are three scientific laws describing the motion of planets around the Sun: (i) The orbit of a planet is an ellipse with the Sun at one of the two foci (Law of orbit); (ii) A line segment joining a planet and the Sun sweeps out equal areas during equal intervals of time (Law of areas); and (iii) The square of the orbital period of a planet is proportional to the cube of the semi-major axis of its orbit (Law of periods).

Teachers may suggest students to make a collage of photographs of scientists in physics depicting the advancements in the subject.