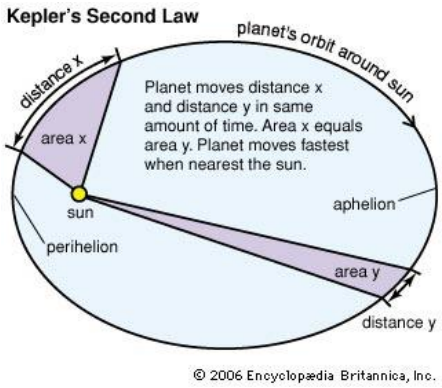
Epreuve orale spécifique
Baccalauréat général
Académie d'Amiens
durée : 20min

SECTION EUROPEENNE
Sciences Physiques
Langue anglaise

Kepler's third law

Kepler's third law, which is often called the harmonic law, is a mathematical relationship between the time it takes the planet to orbit the Sun and the distance between the planet and the Sun. The time it takes for a planet to orbit the Sun is its orbital period, which is often simply called its period. For the average distance between the planet and the Sun, Kepler used what we call the semi-major axis of the ellipse. Think of it as the longest radius of the ellipse.



Kepler's third law states that the square of the period, *P*, is proportional to the cube of the semi-major axis, *a*. In equation form Kepler expressed the third law as: $P^2=ka^3$. k is the proportionality constant. To Kepler it was just a number that he determined from the data.

Significance of Kepler's Third Law

Kepler's third law is extremely important to astronomers. Because it involves the mass it allows astronomers to find the mass of any astronomical object with something orbiting it. Astronomers find the masses of all astronomical objects by applying Kepler's third law to orbits. They measure the mass of the Sun by studying the orbits of the planets. They measure the mass of the planets by studying the orbits of their moons. Moons have nothing orbiting them, so to find the mass of the moons astronomers need to send a probe to be affected by their gravity. In all these cases astronomers use Kepler's third law.

Extrait du site: http://www.suite101.com/content/johannes-kepler-1571-1630-a84571, le 23/01/11

Thanks to Kepler's laws you will explain how the astronomers can have a better knowledge of the universe.