

## Solar system junior

The **Sun**, a star that is much larger than the Earth, illuminates us with its light and warms us with its heat. For this reason it is important for all living beings because it enables the life of plants, animals and humans. The Sun is part of the Solar System together with eight other planets. The **planets** (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranium, Neptune) are solid bodies which, unlike the stars, do not have their own light, but receive the same from the Sun. Obviously the planets that are closest to the Sun are those with the highest temperature, and those which are further away from the Sun, instead, are colder.

The planet we live on is the **Earth**. While the Sun remains fixed in the centre of the solar system, the Earth goes around it carrying out two movements: rotation and revolution.

In the Earth's **rotation movement**, it moves around its own axis, and to do so it takes 24 hours, one whole day, during which it shows one of its halves to the Sun's rays, while the other half remains in the dark. The period of time in which the Earth is illuminated is called "day" while when it is dark it is called "night". In the Earth's **revolution movement**, it moves around the Sun, completing a full circle in 365 days and 6 hours (a solar year). This movement is the cause of the alternating seasons: spring, summer, autumn and winter, in other words periods of the year that differ in temperature and amount of light. The temperature and light depend on how the Sun's rays reach the Earth, and the inclination of the Earth's axis. This axis, which is inclined either away or towards the plane of the Sun, is an imaginary line drawn from one pole to the other, around which the Earth rotates on itself. Therefore there are areas of the Earth that receive the direct rays of the Sun, and are warmer and more full of light, while there are areas in which the Sun's rays are more oblique and therefore they receive less heat and light. Using a torch (the Sun) and your world globe, you can try to vary the seasons in the various areas of the Earth! The seasons change every 3 months: March 21 is the first day of spring, June 21 the first day of summer, September 23 the first day of autumn and December 21 the first day of winter in the Northern Hemisphere. Solid bodies known as satellites circle around the planets. Around the Earth, the **Moon** rotates, and with the Earth it circles around the Sun. Also the Moon has two different movements: one movement is around itself, known as rotation and the other movement is around the Earth, known as revolution. Both movements take approximately 27 days. As it moves around the Earth, the Moon may look round like a large ball, a semicircle, or a crescent shape; these shapes depend on the position of the Earth's satellite compared to the Earth and the Sun. If the Moon is between the Earth and the Sun, the face of moon that looks at the Earth is not illuminated, and therefore is not visible (new moon), when the Sun illuminates the face of the Moon that looks at the Earth, we can see the entire moon (full moon). If instead the Sun illuminates half of the Moon, we can see only a quarter of the entire surface of the moon (first quarter, last quarter)

In the Solar System, besides the planets and the satellites, there are also comets, asteroids and meteorites. **Comets** are masses of ice and fine dust that cross the Solar System. When these draw near to the Sun, the nucleus overheats and generates a cloud of dust and gas that the solar wind blows away, thus forming the comet's tail. **Asteroids** are rocky bodies: when the Solar System originated, they did not merge to form the larger planets, while **meteoroids** are particles of dust that travel in the comets' orbit. When they come into contact with the Earth's atmosphere at a high speed they burst into flames forming a luminous meteor or falling star. The larger ones cross the Earth's atmosphere and disintegrate on the ground, forming craters and are known as meteorites.

Many scientists believe that the impact of a comet or of an asteroid on the Earth could have played an important role in the extinction of dinosaurs 65 million years ago.