

Solar system exploration junior

Three jet engines and two auxiliary rockets, and power equal to 140 jumbo jets, lift the shuttle from the launching pad and take it into orbit at a speed of 28,175 kilometres per hour. Two minutes after launching, the shuttle is already 45 kilometres above the Earth, the two auxiliary rockets are separated and they fall back to the ground. 112 kilometres from the ground, the main fuel tank is separated and burns away, while the shuttle continues its voyage and goes into orbit!

Step by step, man has conquered the **technology** required to face space explorations: in 1926, the first rocket propelled by liquid fuel was successfully launched; in 1957 the Sputnik was the first satellite to orbit the Earth; and in 1961, Yuri Gagarin was the first man to travel into space on the spaceship Vostok 1. Everyone remembers that on 20 July 1969, at 9.39 pm, Neil Armstrong started slowly descending the steps of the ladder outside the Lunar Excursion Module, or LEM. Soon after the commander of the space mission Apollo 11 was the first man to walk on the **Moon**.

From the mid '70s, planet **Mars**, our neighbour, has become the destination of a number of missions: the Viking probes, the European probe Mars Express, which carried the rover Beagle 2 and two NASA rovers, Spirit and Opportunity, and the American mission Phoenix. From the very start the red planet which had been imagined as a place with luxuriant vegetation, was discovered to be a desert land with no signs of life. Exploration of Mars was substantially stalled for over twenty years, and was interrupted only by the American mission, Mars Global Surveyor, that was launched in 1996, and began to send its first images of the Red Planet at the end of '97. From this moment onwards, the search of water, on the surface or trapped in the form of ice or in the subsoil as permafrost, became the principal aim of all the missions to the Red Planet. "But did life exist on Mars in the past?", this is a question scientists are trying to give an answer to.

What do you want to be when you grow up? An astronaut?

Astronauts are not supermen, rather, they must prove to have a level of patience that is better than average. For every hour in space, they must face hundreds or thousands of hours of training. Approximately half of the astronauts begin their career in aviation, accumulating a consistent number of flight hours, and have further concentrated on studies on subjects like science or aerospace engineering. The other half of the astronauts are mostly physicists who work or have worked at very high level Research Centres. A small part has an experience in the medical field with great interest in aerospace.

And what happens once on board the shuttle? A **typical day** of an astronaut is rather repetitive, broken down in a very precise manner by various activities that each member of the crew must complete: besides working so that everything functions correctly and completing the scientific experiments, each one must take care to maintain an excellent physical condition. For this, in turn, many times a day, for at least a couple of hours, the astronauts are subjected to sessions of gymnastics, exercise bike and other physical activities. Before going to sleep, the astronauts take a relaxing shower, but watch the drops! The crew must always make sure that the water does not invade the living spaces, sticking to the walls, creeping in between the electronic and mechanical elements. Therefore each astronaut enters a separate cabin, that is well isolated from the outside, where a kind of rain-mist is created. The drops of water are literally pressed against the skin so that they stick to the body. After having washed oneself, each and every droplet must be eliminated, rubbing one's body accurately with a special cloth. This is certainly not what we would define a relaxing moment!

Finally at rest. In space there is no up or down, therefore there is no lying or standing position. To sleep, the astronauts slip into special sleeping bags that have been attached to some point of the station previously, so that while they sleep they do not float around suspended in air, and thus avoid hitting against the walls of the module.