

## ACRONYMS

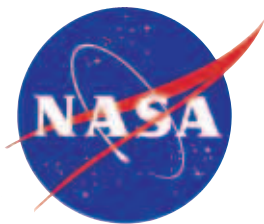
**ATV:** Automated Transfer Vehicle; an unmanned spacecraft that is used to bring equipment and supplies to astronauts on board the International Space Station. After six months the ATV is loaded with waste from the ISS and heads back to Earth burning up in the Earth's atmosphere upon re-entry.



ESA logo

**ESA:** European Space Agency; an intergovernmental organisation responsible for Europe's contribution to space research and development. The people who work for ESA come from its 17 Member States.

**ISS:** International Space Station; a huge science laboratory orbiting the Earth with astronauts on board from all countries that build it. They perform experiments in many different disciplines and assemble the Station that is scheduled to be finished in 2010.



NASA logo

**NASA:** National Aeronautics and Space Administration, the space agency of the United States of America.



Astronaut – Spacewalk

## GLOSSARY

**Acceleration:** An increase in the speed of a moving object.

**Astronaut:** An astronaut is a person who flies to space to work and live there for periods of time. Astronauts can be anything from pilots and scientists to doctors or teachers and have to train for a long time before their first flight.

**Atmosphere:** A layer of gases around the Earth and other planets. The Earth's atmosphere is made up of nitrogen, carbon dioxide and oxygen, which together form air.



The Orion constellation – “hunter”

**Automatic:** Used to describe something that works by itself or with little or no human control.

**Constellation:** A group of stars that seem to form a pattern in the sky. The stars in the sky are divided into 88 constellations often named after a mythological god, hero, or animal. For example, the Cassiopeia constellation is named after a mythological Queen, Orion means “hunter” and Ursa Major is the great bear constellation – “ursus” is Latin for bear.

**Diameter:** The longest distance that can be measured between two points on a circle (or a sphere) passing through the centre.

**Friction:** a force that is produced when two surfaces move against each other, causing the motion to slow down and the surfaces to heat up. When you rub your hands together, the heat that you feel is caused by friction.

**Gravity:** Gravity is the force that attracts or pulls objects towards each other. Every bit of mass attracts all other masses. The more mass an object has, the stronger the force it exerts. For example, the Sun attracts the Earth and all the other planets, and we fall back to the ground when we jump because of the Earth’s gravity.

**Laboratory:** A room or building with scientific equipment specially built for research and experiments.

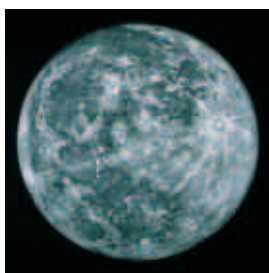
**Mass:** Every thing has a mass. You could say that mass means how much matter is contained in an object. It is measured in kilograms.

**Matter:** Matter is what things are made of. Matter occupies space and comes in different form, for example water, iron, oxygen, chocolate – and many more. Matter is made up of tiny parts that are invisible to the naked eye. Scientists call them atoms.

# Glossary

**Meteorites:** A piece of rock or dust from space that enters into Earth's atmosphere and lands on the ground. Some rocks and dust grains don't land on the ground but burn up completely because of the friction in the atmosphere, causing a streak of light in the sky. We call them meteors, but you probably know their other name better: shooting stars.

**Mission log:** A written record, like a journal or a travel diary of events and thoughts during missions. Astronauts keep a mission log on the ISS.



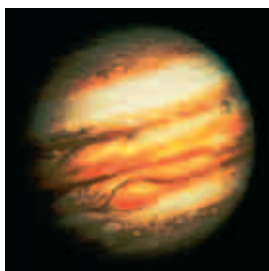
The Moon

**Moon:** A natural satellite that moves around a planet. For example, the Moon (with a capital M) moves around the Earth. Other planets also have moons: Mars has two, Saturn has eighteen and Jupiter has as many as 63 - and scientists keep finding more!

**Nutrition:** The food we eat and what it does to us, like helping us grow, making us feel better and keeping us healthy

**Orbit:** To circle a planet, star or other celestial body. Earth orbits the Sun, as do all other planets of the Solar System. The Moon and many man-made satellites orbit the Earth. An orbit is the closed path that an object makes around another object.

**Organisation:** A group of people who work together for the same purpose, like ESA, NASA or the fire brigade.



Jupiter – a planet

**Planet:** A large body made of gas or rocks that orbits a star. A planet doesn't produce light by itself and can be seen only because it reflects the light of a star.

**Rays:** Beams of light or energy. We can see the Sun and the other stars because we receive the light rays they emit. The light rays have to travel from the stars to our eyes, and because the Universe is so huge the stars we see now emitted their light millions of years ago.

# Glossary



A satellite

**Recycle:** To process used or waste material such as paper, glass, plastic, etc so that it can be made into something new to be used again.

**Robot:** A machine, often controlled by a computer, that can move, assemble things, make films or repeat the same movement thousands of times without getting tired. Robots are mostly used where people cannot reach or where it is too dangerous.

**Satellite:** A smaller object that orbits a bigger object. The Earth has a natural satellite, the Moon, and many artificial ones, pieces of equipment sent into space to collect information, take pictures and make measurements. The ISS is a also satellite of the Earth. Planets can be considered as satellites. They orbit stars like our Sun.

**Solar System:** The Sun and the group of nine planets which move around it form our Solar System. Scientists believe that our Solar System is over 4.6 billion years old. Smaller bodies orbiting the Sun called asteroids and comets also belong to the Solar Systems.

**Soyuz:** The Soyuz is a Russian type of spacecraft both for manned and unmanned missions. In Russian, “soyuz” means “union”.

**Space Shuttle:** An American spacecraft that can go into space and return to Earth. There have been over 100 Space Shuttle flights into orbit.

**Spacewalk:** Astronauts wearing special protective spacesuits can go outside of a Space Shuttle or the Space Station to do repairs, construct things or do research. This is called “spacewalking”. They are still attached by safety cables so that they do not fly away from the spacecraft because there is no gravity to pull them back.

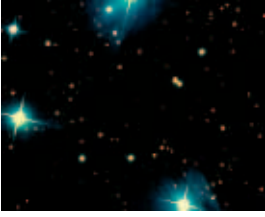


Soyuz



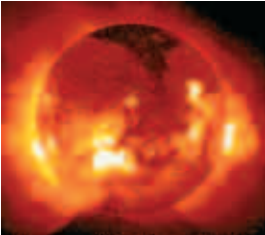
The Space Shuttle

# Glossary



Stars

**Star:** A bright globe of gas producing light that you see as a point of light in the sky at night. Our Sun is a star. It looks so much bigger compared to others in the night sky because we are so close to it. It is actually only a medium-sized star.



The Sun

**Sun:** The medium-sized yellow star in our Solar System. The Sun is the star that the Earth and other planets of the Solar System orbit around. We get our light and energy from the Sun.

**Tides:** The regular rises and falls in the level of the sea. Tides are caused by the gravitational pull of the Moon.

**Time zones:** The world is divided into 24 equal sectors called time zones. Within each zone the Sun has nearly the same height above the horizon (for example at sunrise, midday, sunset) so we can assign the same hour of the day to all the clocks inside it. If you move over to the next time zone it will either be an hour in front or behind, depending on which way you travel.

**Universe:** Everything that exists: the Earth and other planets, the stars, galaxies and everything in them; the entire cosmos. These are the things that we know of, but there are still many things in the Universe that haven't been discovered yet.

**Weight:** How much weight someone or something has depends on the mass and gravity. Your weight on Earth is greater than on the Moon because the Earth's mass is greater than the Moon's mass. Your own mass always stays the same.

**Weightlessness:** A condition under which gravity seems to have disappeared, making things weightless. Astronauts on board the ISS are weightless because they are in free fall around the Earth. You can also feel weightless in a rollercoaster.



Weightlessness

# Web references and relevant sources

ESA Education pages

[www.esa.int/education](http://www.esa.int/education)

Human Spaceflight Education

[www.esa.int/spaceflight/education](http://www.esa.int/spaceflight/education)

## Chapter 1

Human spaceflight

[www.esa.int/spaceflight](http://www.esa.int/spaceflight)

The European Astronaut Corps

[www.esa.int/esaHS/astronauts.html](http://www.esa.int/esaHS/astronauts.html)

Profiles of European astronauts

[www.esa.int/esaHS/eurastronauts.html](http://www.esa.int/esaHS/eurastronauts.html)

Newton's three laws of motion:

[www.physicsclassroom.com/Class/newtlaws/newtltoc.html](http://www.physicsclassroom.com/Class/newtlaws/newtltoc.html)

Video clips of astronauts on board the International Space Station:

[www.esa.int/esaHS/SEMSMWZ990E\\_education\\_0.html](http://www.esa.int/esaHS/SEMSMWZ990E_education_0.html)

## Chapter 2

2.1

How to become an astronaut:

[www.esa.int/esaHS/ESA1RMGBCLC\\_astronauts\\_0.html](http://www.esa.int/esaHS/ESA1RMGBCLC_astronauts_0.html)

Mayan numbers (and link to other numeral systems):

[en.wikipedia.org/wiki/Maya\\_numerals](http://en.wikipedia.org/wiki/Maya_numerals)

2.3

Making a simple animation:

[apps.discovery.com/animaker.html](http://apps.discovery.com/animaker.html)

## Chapter 3

### 3.1

Tracking stars, satellites etc in the night sky anywhere in the world

[www.heavens-above.com](http://www.heavens-above.com)

Seeing the International Space Station:

[www.esa.int/seeiss](http://www.esa.int/seeiss)

### 3.3

Build your own ATV:

[esamultimedia.esa.int/docs/atv\\_model/ATV\\_2002\\_Intro.htm](http://esamultimedia.esa.int/docs/atv_model/ATV_2002_Intro.htm)

Astronauts and food :

[www.nasa.gov/audience/foreducators/k4/features/F\\_A\\_Matter\\_of\\_Taste.html](http://www.nasa.gov/audience/foreducators/k4/features/F_A_Matter_of_Taste.html)

## Chapter 4

### 4.2

Times zones and time around the world

[www.timeanddate.com/worldclock](http://www.timeanddate.com/worldclock)

[www.worldtimezone.com](http://www.worldtimezone.com)

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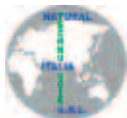
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