

Chapter Nineteen: Exploring Space

Lesson 2: Early History of Space Exploration

Rocket: a vehicle designed to propel itself by ejecting exhaust gas from one end.

- Fuel burned builds up pressure and the force thrusts the rocket forward
- Rockets don't draw in oxygen so they carry it with them
- Are launched from Florida's Cape Canaveral Air Force Station or Kennedy Space Center

Satellite: any small object that orbits a larger object

- Made by people and launched by rockets
- Transmit radio signals back to Earth
- 1st artificial satellite was *Sputnik 1* launched by the former Soviet Union
- United States launched its first satellite *Explorer 1* a year later
- Today, thousands of satellites orbit Earth
- Satellites were first used by military for navigation and to gather information

NASA – National Aeronautics and Space Administration – in 1958 the U.S. Congress started

- Oversee all U.S. space missions

Space probe: an uncrewed spacecraft sent from Earth to explore objects in space

- Robots that work automatically or by remote control
- Gather data and take pictures
- Cheaper to build and make trips that are too long or dangerous for humans
- Not designed to return to Earth
- Orbiter: orbit a planet/star
- Launcher: touch down on a surface (sometimes release rovers)
- Flyby: do not orbit or land; when they are done, they will leave the solar system
 - *Mariner 2:* first flyby to gather information from another planet

Lunar: refers to anything related to the Moon

- Lunar probes are probes to the Moon
- 1959 – first probe to the Moon by the U.S. and Soviet Union

Scientists were worried about radiation and weightlessness so they first sent dogs, monkeys, and chimpanzees into space

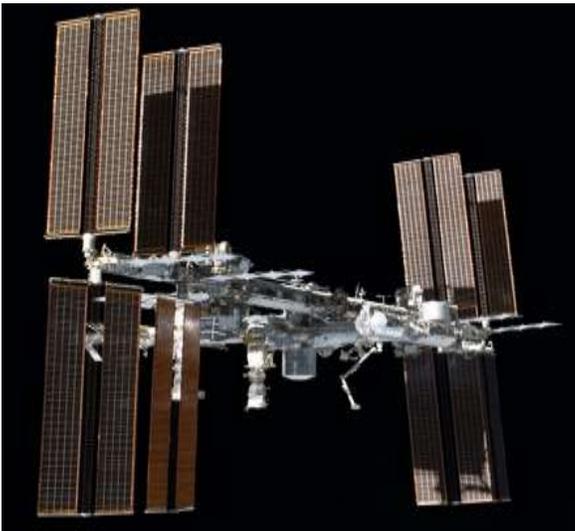
- 1961 – first human was launched into Earth's orbit

Project Apollo: a series of space missions designed to send people to the Moon

- 1969 – Neil Armstrong and Buzz Aldrin (Apollo 11 astronauts) were the 1st to walk on the Moon

Space Shuttles: reusable spacecraft that transport people and materials to and from space

International Space Station: the United States and other countries' astronauts work and live in a research laboratory while it orbits Earth



- Traveling around 17500 miles per hour and orbits Earth every 90 minutes.
- Astronauts must work out 2 hours every day to combat losing muscle and bone mass.
- ISS weighs 930,000 pounds
- ISS consists of Canada, Japan, The Russian Federation, United States, Belgium, Denmark, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden, Switzerland, and The United Kingdom

Space Technology:

- Material for spacesuits are used for racing suits for swimmers, lightweight firefighting gear, running shoes, and other sports clothing.
- Parachute cords for spacecraft are used to make radial tires for cars.
- Artificial limbs, infrared ear thermometers, and robotic surgery along with braces material have been used from material used for heat resistance on space shuttles.