

Instruments in Space

Overview:

Students become familiar with the types of satellites orbiting Earth and use this knowledge to edit and rewrite a paragraph about satellites.

Objectives:

The student will:

- read and recall information about satellites; and
- edit and correctly rewrite a paragraph about satellites.

Materials:

- *Aurora Alive* multimedia video playlist
- STUDENT INFORMATION SHEET: “Satellite Information Sheet”
- STUDENT WORKSHEET: “Instruments in Space”

Activity Procedure:

Distribute the STUDENT WORKSHEET: “Instruments in Space” and the STUDENT INFORMATION SHEET: “Satellite Information Sheet.” Ask students to read the information sheet then complete the worksheet.

Answers to Student Questions:

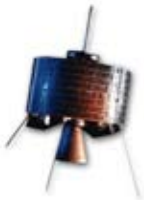
1. *the moon*
2. *Meteorologist*
3. *communications satellite*
4. *science research satellite*
5. *scientific equipment that allow it to gather information*
6. *GPS satellite*
7. *remote sensing satellite*
8. *The aurora **has** fascinated mankind for thousands of years, and many legends have tried to explain the source of the aurora. The very first satellite, Sputnik 1, **was** launched in 1957. **B**eginning in 1981, satellites **have** provided images of the aurora that help scientists understand **its** source. We now **know** that the aurora is the visible disruption of Earth’s electromagnetic field **due** to strong solar winds.*

Satellite Information Sheet

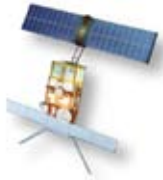
A **satellite** can be any object that orbits around another object. For example, the moon is a satellite that orbits around Earth, while Earth is a satellite orbiting around the sun.

There are over 2,500 man-made satellites now in orbit around Earth. All satellites have a **payload**, which is the amount of cargo or equipment it can hold. The payload of satellites is often scientific equipment that allows it to gather information. The payload might include cameras, antennas, or telescopes.

Many kinds of satellites orbit Earth. These include communications satellites, remote-sensing satellites, weather satellites, Global Positioning System (GPS) satellites, and science research satellites.



Communications Satellites send information from one place on Earth to another. This information can take the form of television images and sounds, telephone transmissions, and Internet connections. Sometimes the image or sound will transfer from one satellite to another before being sent back to Earth.



Remote-sensing Satellites use powerful cameras to photograph Earth's surface. The photographs can then be used to learn about Earth's environment. The photographs can show information such as the loss of vegetation in the world's rain forests, the range of flooding in rural villages, and the growth of mining in Africa.



Weather Satellites have several instruments that measure changes in temperature, moisture and atmospheric pressure. **Meteorologists** (scientists who study weather) use the information from these satellites to forecast the weather and to track storms.



Global Positioning System (GPS) Satellites relay exact location based on latitude, longitude and altitude to travelers anywhere in the world. GPS satellites are used as an important navigational tool for aircraft, boats, automobiles and people traveling in remote locations on foot.



Science Research Satellites are used to conduct a wide range of experiments and data collection. Research satellites are used to study solar events on the sun, the ozone layer, and changes in Earth's magnetic field caused by the aurora.

<h2>Instruments in Space</h2>

Directions: Read the STUDENT INFORMATION SHEET: “Satellite Information Sheet” and answer the following questions.

1. What is Earth’s only natural satellite? _____
2. What is the professional title of someone who studies weather? _____
3. What kind of satellite makes it possible to watch television? _____
4. What kind of satellite is used to study the aurora? _____
5. What is the common payload of satellites? _____
6. What kind of satellite could you rely on if you are boating up the Yukon River and want to know exactly where you are? _____
7. What kind of satellites would scientists use to learn where fires are burning in Alaska?

8. Read the following paragraph. As you read, look for errors. There are eight.

The aurora have fascinated mankind for thousands of years, and many legends have tried to explain the source of the aurora. The very first satellite, Sputnik 1, were launched in 1957. Beginning in 1981 satellites has provided images of the aurora that help scientists understand it’s source. We now no that the aurora is the visible disruption of Earth’s electromagnetic field do to strong solar winds.

Rewrite the paragraph on the lines below, making corrections as needed.
