☐ Reading and Questions

In today's readings, you will find out about some of the important jobs that satellites and telescopes do and what they can tell us about planets (including our own) and other objects in space.

Read "Orbits R' Us" on NASA's *The Space Place* website. In this article, you will learn about satellites and the role they play in mapping the Earth. Once you are done, answer the following questions.

Web Link:
https://www.movingbeyondthepage.com/link/9319/

1. What are the GOES geostationary satellites used for?

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2. What are polar orbit satellites used for?

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☐ Reading and Questions

Read the information at the first web link from NASA to learn more about optical telescopes. Then visit the second web link from the University of Chicago. On that page, read the first paragraph and the graphic and then scroll through the list of telescope types and read the brief description of each one (you do not have to watch the videos). Answer the following questions.

Web Link:
https://www.movingbeyondthepage.com/link/9355/
https://www.movingbeyondthepage.com/link/9356/

1. How do refracting and reflecting telescopes differ?

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2. What are other types of telescopes (non-optical) used for?

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☐ Reading and Questions

See how satellite information from the Mars Orbiter Laser Altimeter allowed scientists to make a topographic map of the planet's surface. Next, answer the question below.

Web Link:
https://www.movingbeyondthepage.com/link/9318/

1. What do the colors on this map represent?

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Lesson 4: Satellites and Telescopes

Getting Started

? Big Ideas

- Is Earth unique in our solar system and the universe?
- How has human exploration of the universe led to amazing discoveries and inventions?

🕮 Facts and Definitions

- Any object, natural or man-made, that orbits around a planet, is called a **satellite**.
- A satellite that orbits Earth directly above the equator, making it circle the Earth only once per day, is said to be in **geostationary** orbit.
- A **topographic map** is a map often developed from satellite images having detailed information about the heights and depths of geographic features.
- **Spectral analysis** is a way of determining what chemicals are in a celestial body by comparing the spectral lines from different atoms and molecules.
- **Reflectance curves** are part of spectral analysis that help identify specific chemicals and compounds in celestial bodies by plotting how they reflect light.

⦿ Skills

- Describe space explorations and the understanding gained from them including NASA, historic timeline, Apollo mission to the Moon, space shuttle, International Space Station, and future goals. (S)
- Analyze satellite imagery including spectral analysis and reflectance curves. (S)

Introducing the Lesson

In this lesson, your child will learn more about satellites and telescopes, how they work, and what they do to give us more detailed information about the surface of Earth, the Moon, and other planets.

Reading and Questions (Answers)

1. What are the GOES geostationary satellites used for?
    - To watch weather over North America specifically.
2. What are polar orbit satellites used for?
    - To gather detailed information about weather, climate, oceans, volcanoes, and vegetation around the world. Also to help in search and rescue and forest fire fighting.

Reading and Questions (Answers)

1. How do refracting and reflecting telescopes differ?
    - Refracting telescopes are made with lenses and make objects that are far away appear closer. Reflecting telescopes use mirrors to reflect light.
2. What are other types of telescopes (non-optical) used for?
    - Answers may vary, but your child should understand that other types of telescopes pick up non-visible light/waves such as ultraviolet and infrared.

Reading and Questions (Answers)

1. What do the colors on this map represent?
    - Elevation