

Predict three facts that will be discussed in Lesson 1 after reading the headings. Record your predictions in your Science Journal.

Main Idea

Observing the Sky

I found this on page _____.

Electromagnetic Waves

I found this on page _____.

I found this on page _____.

Details

Define each term in the organizer below.

Term	Definition
Earth	One of eight _____ _____
Sun	One of billions of _____ in the _____ galaxy
Milky Way	One of billions _____ in the _____

Relate wavelengths of the electromagnetic spectrum to types of stars.

Type of Wave	Wavelength	Energy	Temperature of Star
Gamma rays	shortest	highest	
X-rays			
Visible light			
Infrared waves			
Radio waves		lowest	coolest

Describe what scientists learn about stars using the electromagnetic spectrum.

Main Idea

Earth-Based Telescopes

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I found this on page _____.

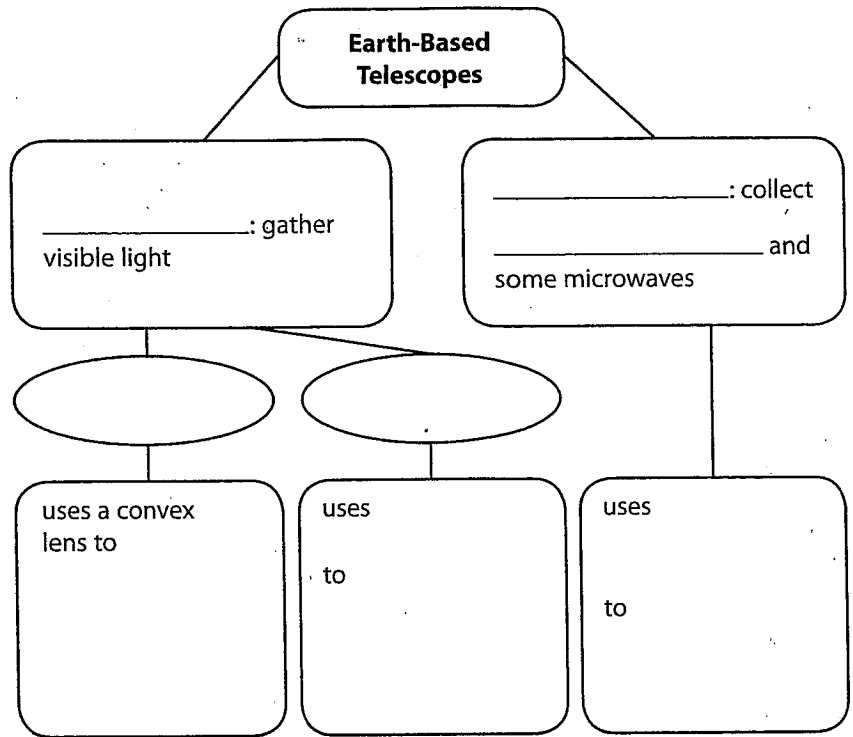
Space Telescopes

I found this on page _____.

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Details

Key Categorize and describe *Earth-based telescopes*.



Evaluate the placement of most Earth-based telescopes.

Type	Placement	Reason
	mountain	
	desert	

Differentiate the collection of electromagnetic radiation.

Can be collected by telescopes on Earth's surface	Cannot be collected by telescopes on Earth's surface
1.	1.
2.	2.
3.	3.

Main Idea

I found this on page _____.

I found this on page _____.


Details

Contrast the quality of optical telescopes that are Earth-based with those that are in space.

Location	Image Quality	Explanation
Space		
	can be distorted	

 **Differentiate** space telescopes.

	Hubble	Spitzer	James Webb
Wavelength Observed			
Launch Date			
Orbit			
Size Mirror		(1/50x Webb's)	(7x Hubble's)

 **Synthesize It** Explain how scientists conclude the ages and distances of stars by observing their electromagnetic energy.

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Lesson 2 Early History of Space Exploration

Scan Lesson 2. Read the lesson titles and bold words. Look at the pictures. Identify three facts you discovered about space exploration. Record your facts in your Science Journal.

Main Idea

Rockets

I found this on page _____.

Artificial Satellites

I found this on page _____.

Early Exploration of the Solar System

I found this on page _____.

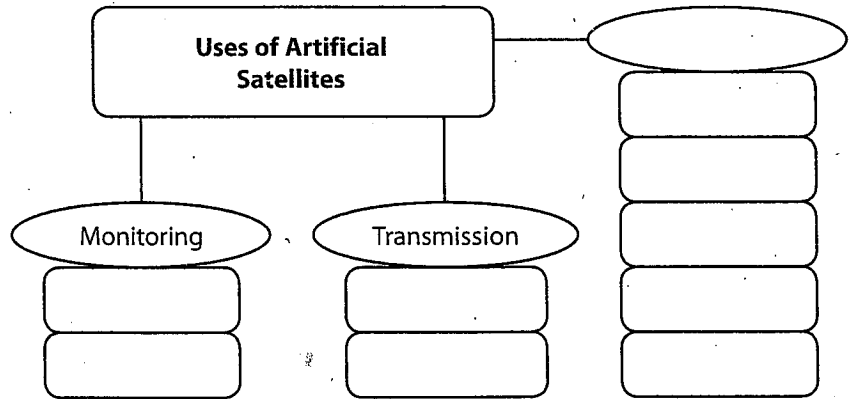
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Details

Contrast how rockets and jet engines get oxygen to burn fuel.

rocket	Thrust from exhaust forces the engine forward.	
jet		

Characterize artificial satellites.



Differentiate space probes. Give an example of each.

Orbiter	Lander	Flyby

Distinguish lunar from planetary probes.

Main Idea

Human Spaceflight

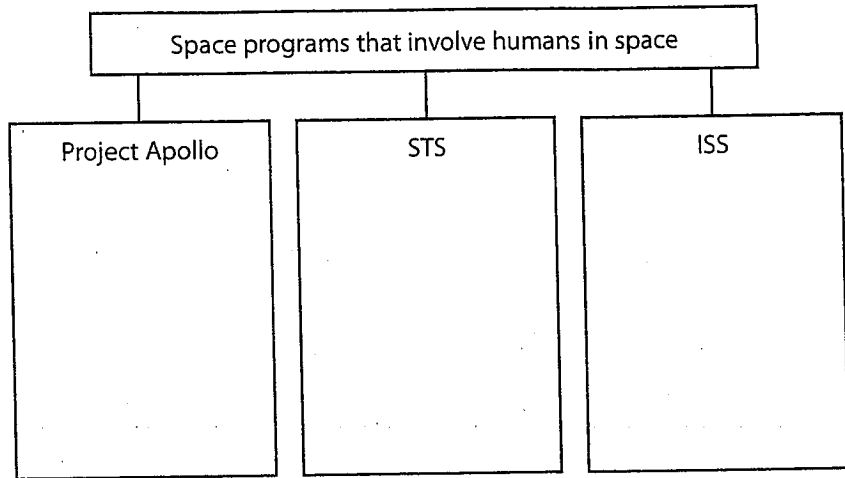
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Space Technology

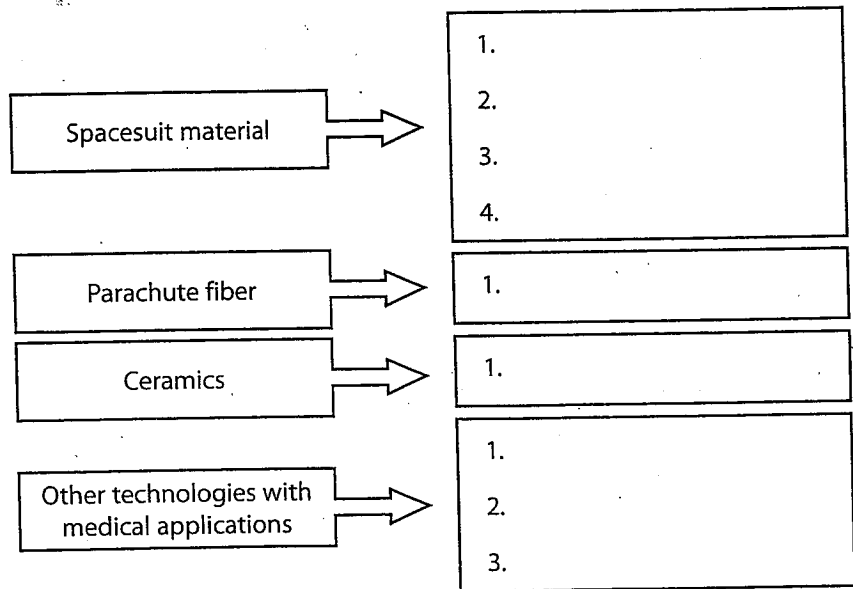
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Details

Key Contrast the differences among three programs that involved putting people in space.



Key Relate technology developed for the space program to applications in everyday life on Earth.



Key Analyze It Imagine that you are a scientist planning a space mission. What factors must you consider when deciding whether to send humans or robots on the mission?

Lesson 3 Recent and Future Space Missions

Skim Lesson 3 in your book. Read the headings and look at the photos and illustrations. Identify three things you want to learn more about as you read the lesson. Record your ideas in your Science Journal.

Main Idea

Missions to the Sun and the Moon

I found this on page _____.

I found this on page _____.

Missions to the Inner Planets


I found this on page _____.

I found this on page _____.

I found this on page _____.

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Details

 **State** the goal of future space exploration.

Explain the purposes of the types of probes.

Solar	Lunar

Identify the 4 inner planets.

- | | |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

Express what scientists hope to learn from probes sent to study the inner planets.

1. _____
2. _____
3. _____

Detail the inner planetary missions described in the lesson by adding information to the timeline.

1964	
1975	
2003	
2004	
2008	
2011	

Main Idea

Missions to the Outer Planets and Beyond

I found this on page _____.

I found this on page _____.

Future Space Missions

I found this on page _____.

The Search for Life

I found this on page _____.

Details


Identify the 4 outer planets.

1. _____ 3. _____


2. _____ 4. _____


Identify the outer planetary missions discussed in the lesson by adding details to the timeline.

1997	
2004	
2006	
2015	
2029	

 **Differentiate** between previous space missions and future visits Mars.

Spirit and Opportunity landings	
Future Mars missions	

 **Define** extraterrestrial life.

 **State** the definition of astrobiology.

Main Idea

I found this on page _____.

Understanding Earth by Exploring Space

I found this on page _____.

I found this on page _____.

I found this on page _____.

Details

Characterize 3 basic needs of all life on Earth.

1.	2.	3.
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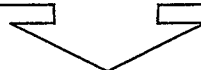
State three insights scientists have gained about Earth by studying information gathered in space.

1. _____
2. _____
3. _____

Contrast Earth with the planets that astronomers have detected outside the solar system.

Explain how Earth-orbiting satellites help scientists study our planet.

Earth-orbiting satellites



- 1.
- 2.

Connect It Explain why scientists search for water in the solar system.
