Main Idea

Earth and the Sun
I found this on page ________.

Details

Organize information about the Sun.

- about ________ km from Earth
- energy from ________

The Sun

- core temperature: more than ________ surface
- Sun's energy reaches Earth as ________ and ________

Complete information about Earth's revolution around the Sun.

<table>
<thead>
<tr>
<th>Earth Revolves Around the Sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of revolution</td>
</tr>
<tr>
<td>How long it takes Earth to make one revolution around the Sun</td>
</tr>
<tr>
<td>Definition of orbit</td>
</tr>
<tr>
<td>Force that keeps Earth in its orbit around the Sun</td>
</tr>
</tbody>
</table>

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Lesson 1 | Earth's Motion (continued)

Main Idea

I found this on page ________.

Details

Arrange facts about Earth's rotation.

Earth's Rotation
Rotation is a ______________ motion.

A rotation axis is

____________________________________

____________________________________

One complete Earth rotation is called a

____________________________ and
takes ________ hours.

Earth's rotation axis is always

______________ in the same direction by the
same amount.

Earth's rotation makes objects in
the sky appear to

______________

______________

Analyze the interaction of sunlight with Earth's surface.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curved surface of Earth</td>
<td>The energy in a beam of sunlight is spread out more at</td>
</tr>
<tr>
<td></td>
<td>__________ than at __________</td>
</tr>
<tr>
<td></td>
<td>This makes Earth __________ at the poles</td>
</tr>
<tr>
<td></td>
<td>and __________ at the equator.</td>
</tr>
</tbody>
</table>

Identify the direction of the north end of Earth's rotation axis for each of the four seasons. Put a check mark in the appropriate column.

<table>
<thead>
<tr>
<th>Direction in which Earth's rotation axis is leaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Season</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Winter</td>
</tr>
<tr>
<td>Spring</td>
</tr>
<tr>
<td>Summer</td>
</tr>
<tr>
<td>Fall</td>
</tr>
</tbody>
</table>
Define solstice and equinox.

Solstice: 

Equinox: 

Identify which season is beginning in the northern hemisphere for each point in Earth’s orbit. Then indicate whether the amount of solar energy received by the northern hemisphere is increasing or decreasing throughout each season.

<table>
<thead>
<tr>
<th>Point in Orbit</th>
<th>Season Beginning in the Northern Hemisphere</th>
<th>Change in Solar Energy Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>December solstice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March equinox</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June solstice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>September equinox</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe the height of the apparent path of the Sun through the sky in the northern hemisphere at each solstice.

December solstice: 

June solstice: 

Synthesize It Suppose that Earth’s axis were tilted 90 degrees instead of 23.5 degrees. What might the seasons be like?
Lesson 2  Earth's Moon

Scan Lesson 2 in your book. In your Science Journal, write three questions you have about the Moon. Try to answer your questions as you read.

Main Idea

Seeing the Moon
I found this on page ____________.

The Moon's Formation
I found this on page ____________.

Details

Explain why you can see the Moon.

Sequence events in the Moon's formation.

1. A collision between ______________________________________________ occurred.

2. ___________________________________ was ejected into space, and a ring formed ____________________________.

3. Material in the ring _____________________________________________ and formed ____________________________.

Describe three features of the Moon's surface.

The Moon's Surface

Craters  Maria  Highlands

Identify details about the 2 motions of the Moon.

<table>
<thead>
<tr>
<th></th>
<th>Revolution</th>
<th>Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period in days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of motion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Sun-Earth-Moon System  219
Lesson 2 | Earth's Moon (continued)

**Main Idea**

I found this on page __________.

**Details**

Explain why the same side of the Moon always faces Earth.

**Phases of the Moon**

I found this on page __________.

**Organize** information about the Moon's phases.

Phases of the Moon

- Definition:
- Caused by:
- Length of a complete lunar cycle:

**Categorize** information about the phases of the Moon.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waxing phases</td>
<td>Week 1: First Quarter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Week 2:</td>
<td></td>
</tr>
<tr>
<td>Waning phases</td>
<td>Week 3:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Week 4:</td>
<td></td>
</tr>
</tbody>
</table>

**Analyze It**

If you could live on the Moon through one lunar cycle, how would you experience the phases of the Moon? Would you see Earth going through phases? Explain.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

220 The Sun-Earth-Moon System
Lesson 3  Eclipses and Tides

Predict three things you will learn about in Lesson 3. Look at the illustrations in the lesson to give you some clues. Write your predictions in your Science Journal.

Main Idea  |  Details
--- | ---
Shadows—the Umbra and the Penumbra  |  Define umbra and penumbra. Then label the umbra and the penumbra on the diagram below.
I found this on page ________  |  Umbra: ________________________
  |  Penumbra: ________________________

Solar Eclipses  |  Compare information about solar eclipses.
I found this on page ________

Definition:  |  Phase during which a solar eclipse can occur:

Total eclipse:  |  Solar Eclipses

Partial eclipse:  |
Lesson 3 | Eclipses and Tides (continued)

Main Idea

I found this on page __________.

Details

Label the diagram of a solar eclipse. Use these terms:
- Sun
- Moon
- penumbra
- partial solar eclipse
- Earth
- umbra
- total solar eclipse

Explain why solar eclipses do not occur every month.

Lunar Eclipses

I found this on page __________.

Organize information about lunar eclipses.

- Definition:
- Phase during which it can occur:
- Total eclipse:
- Partial eclipse:
Lesson 3 | Eclipses and Tides (continued)

**Main Idea**

I found this on page __________.

**Details**

**Explain** why you can still see the Moon during a total lunar eclipse.

---

**Organize** information about tides.

<table>
<thead>
<tr>
<th>Tides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
</tr>
<tr>
<td>Force that causes tides</td>
</tr>
<tr>
<td>Where low tide occurs</td>
</tr>
<tr>
<td>Where high tide occurs</td>
</tr>
<tr>
<td>How often high tide occurs</td>
</tr>
</tbody>
</table>

**Compare** spring tides and neap tides. Draw the position of the Moon, the Sun, and Earth during a spring tide and a neap tide.

<table>
<thead>
<tr>
<th>Types of Tides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
</tr>
<tr>
<td>Moon phases during which they occur:</td>
</tr>
</tbody>
</table>

**Analyze It** Suppose that the Moon were smaller in size but greater in mass than it is now. How would that affect solar eclipses and tides?

---

The Sun-Earth-Moon System 223