Name \_\_\_\_ Date \_\_\_

The scientific study of the universe is called \_\_\_. Astronomers have discovered new planets, stars, black holes, and nebulas, learning more about the \_\_\_\_ of the earth and the \_\_\_ involved in formation of our solar system. Studies of how stars shin may lead to improved or new \_\_\_ sources. Astronomers may learn how to protect us from potential catastrophes, such as \_\_\_ between asteroids and Earth.

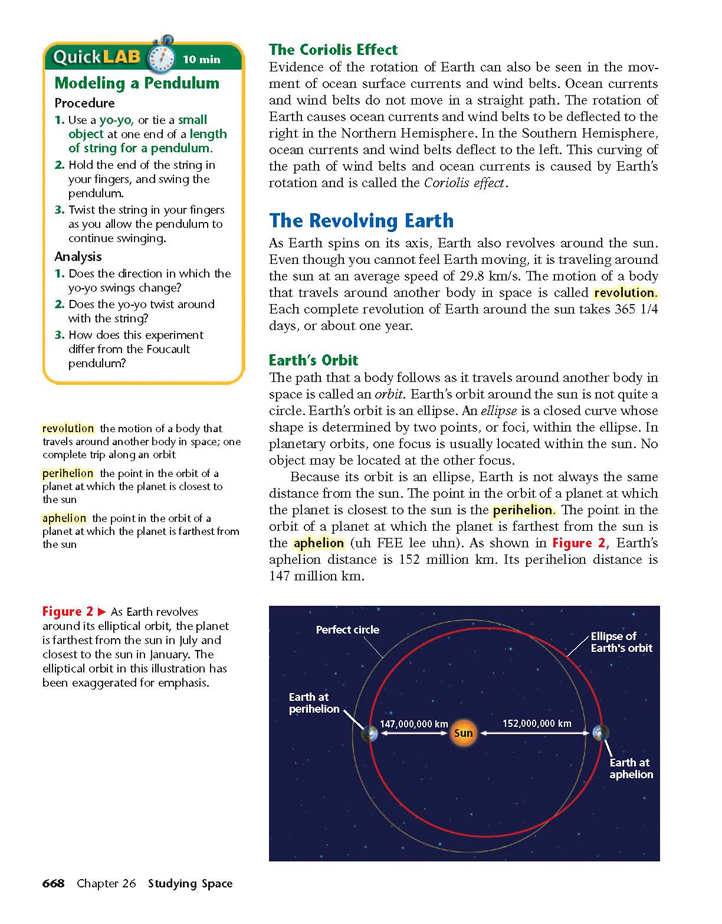
Movements of the Earth

The two major earth motions are \_\_\_\_ and \_\_\_\_. The spinning of the Earth on its axis is called \_\_\_. Each complete rotation takes about \_\_\_ day. The most observable effects of Earth’s rotation on its axis are \_\_\_\_ and \_\_\_\_. The curving of the path of \_\_\_\_ belts and \_\_\_\_ currents caused by Earth’s rotation is called the \_\_\_ Effect.

The motion of a body that travels around another body in space is called \_\_\_\_. Each complete revolution of Earth around the sun takes \_\_\_\_ ¼ days or about one year.

Earth’s orbit is an \_\_\_\_. Earth is not always the same \_\_\_\_ from the sun. As Earth revolves around its elliptical orbit, the planet is farthest from the sun in \_\_\_\_ (month) and closest to the sun in \_\_\_\_ (month).

The point at which Earth’s orbit is farthest away from the sun is called \_\_\_\_\_. The point at which Earth’s orbit is closest to the sun is called \_\_\_\_\_.



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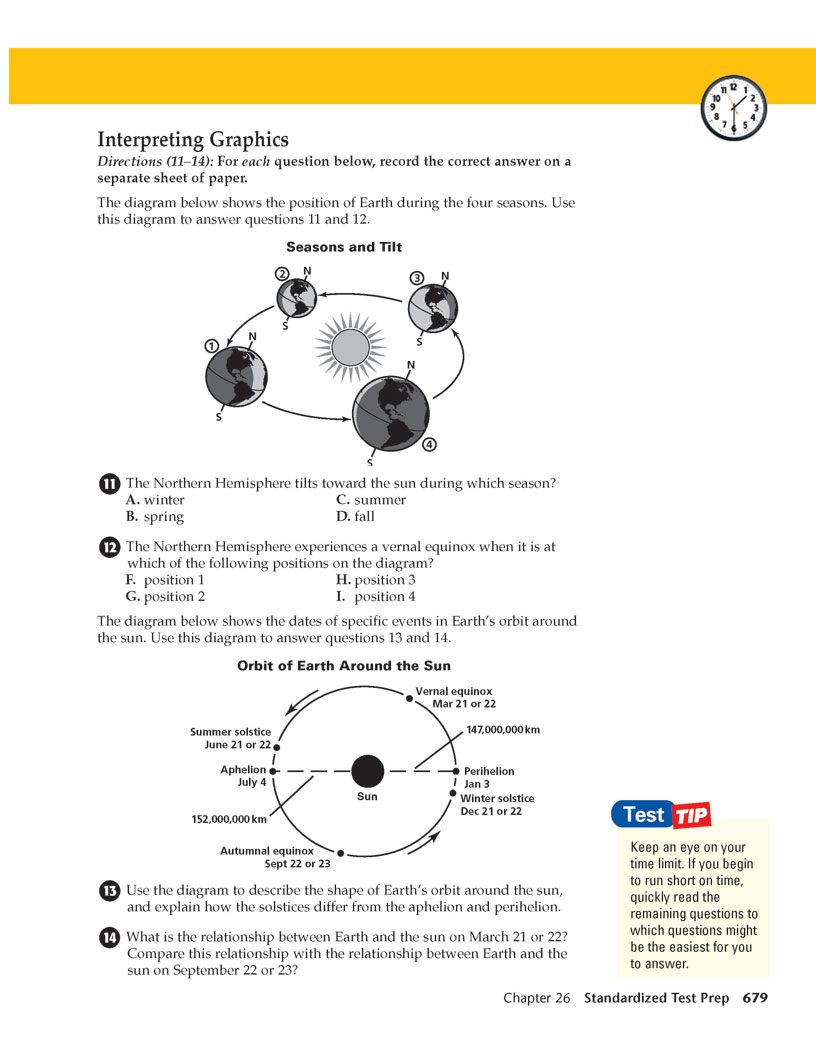
What evidence do we have for Earth revolution (orbit)?

a.

b.

Seasons

Label the seasons in the diagram next to the numbered earth. 🡪

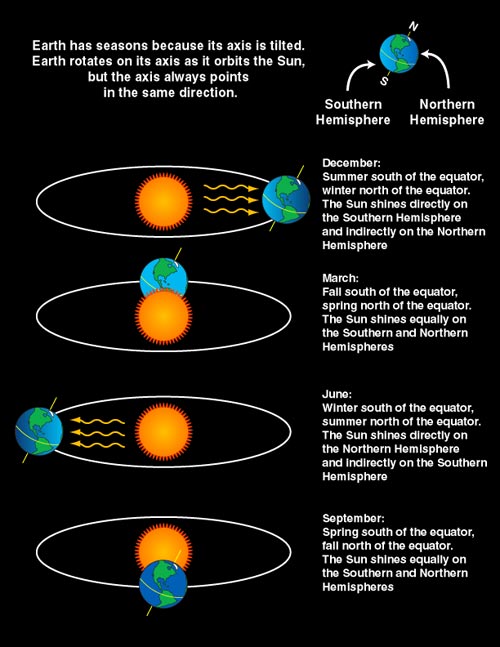


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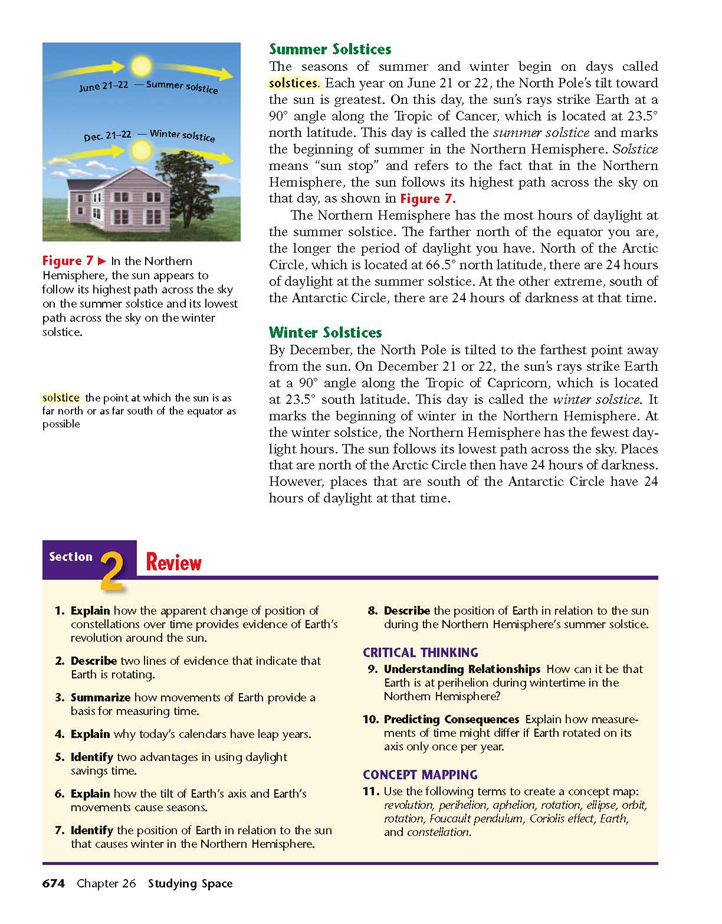
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Earth’s axis is tilted at \_\_\_°. As Earth revolves around the sun, its axis always points toward the \_\_\_ Star. Thus, during each revolution, the North Pole sometimes tilts toward the \_\_\_\_ and sometimes tilts \_\_\_ from the sun. When the North Pole tilts toward the sun, the sun’s rays strike the Northern Hemisphere more directly, giving that region a \_\_\_\_ concentration of solar energy and is \_\_\_\_ (summer).

When the North Pole tilts \_\_\_\_ from the sun, the angle of the sun’s rays falling on the Northern Hemisphere is \_\_\_\_. As a result,the sun’s rays spread solar energy over a large area, which leads to lower \_\_\_\_. The tilt of the North Pole away from the sun also causes the Northern Hemisphere to experience \_\_\_\_ daylight hours. Fewer daylight hours also mean less \_\_\_\_ and lower temperatures (winter).

The seasons fall and spring begin on days called \_\_\_\_. At an equinox, the sun’s rays strike Earth at a \_\_\_° angle along the \_\_\_\_. The hours of daylight and darkness are about \_\_\_\_ everywhere on Earth on that day.



Summer S\_\_\_\_

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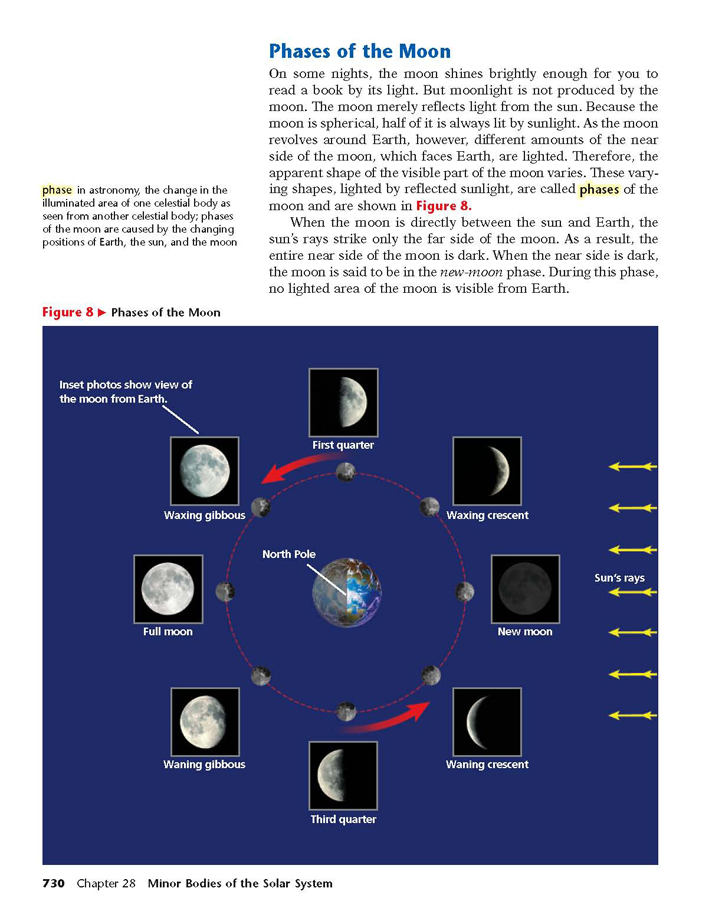
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The North Pole’s tilt toward the sun is \_\_\_\_. Solstice means “\_\_\_\_ \_\_\_\_” & refers to the Northen Hemisphere, the sun follow its \_\_\_\_ path across the sky on that day.

W\_\_\_ Solstice

By \_\_\_\_; the North Pole is tilted to the \_\_\_\_ point away from the \_\_\_\_\_. The sun’s rays strike Earth at a angle along the Tropic of Capricorn. The sun follows its \_\_\_\_ path across the sky. Places that are north of the Arctic Circle then have \_\_\_\_ hours of \_\_\_\_. Places that are south of the Antarctic Circle have 24 hours of \_\_\_\_ at that time.

Moon Phases [*label the diagram*]



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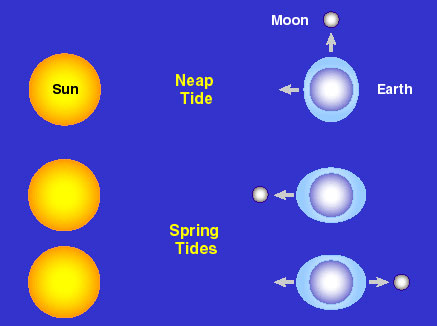
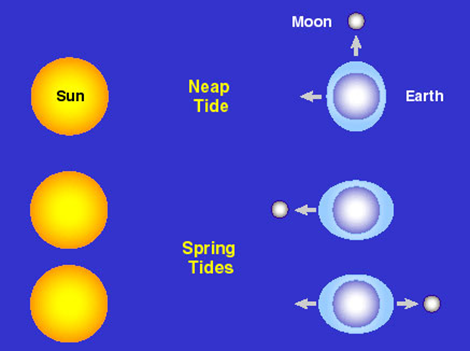
As the moon moves in its \_\_\_\_ around Earth, part of the \_\_\_\_ side becomes illuminated. When the \_\_\_\_ of the lighted part of the moon is i\_\_\_\_, the moon is \_\_\_\_. When a sliver is illuminated, the moon enters its \_\_\_\_-\_\_\_\_ phase. When the moon’s lighted part is larger than a semi-circle, the moon enters its \_\_\_\_-\_\_\_\_ phase.

After the \_\_\_\_ moon phase, when the lighted part of the near side of the moon appears to \_\_\_\_ in \_\_\_\_, the moon is \_\_\_\_\_. When the moon’s lighted part is still larger than a semi-circle, but \_\_\_\_, the moon enters its \_\_\_\_-\_\_\_\_ phase. When a sliver is left illuminated, the moon enters its \_\_\_\_-\_\_\_\_\_ phase.

The gravitational force of the moon causes \_\_\_\_\_. Tides are commonly \_\_\_\_ (two high waters and two low waters each day), or \_\_\_\_ (one tidal cycle per day).

Explain the difference between a neap tide and a spring tide

Identify the type of tide that is shown in each diagram below:



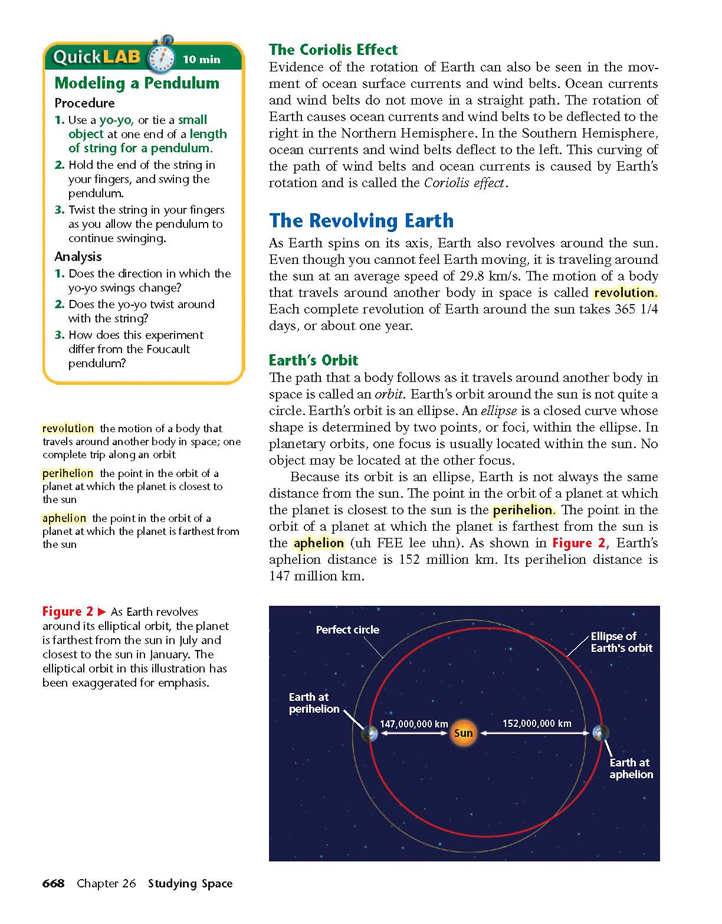
Show a diagram of “high” versus “low” tides:

ANSWERS

The scientific study of the universe is called astronomy. Astronomers have discovered new planets, stars, black holes, and nebulas, learning more about the origin of the earth and the processes involved in formation of our solar system. Studies of how stars shine may lead to improved or new energy sources. Astronomers may learn how to protect us from potential catastrophes, such as collisions between asteroids and Earth.

Movements of the Earth

The two major earth motions are revolution and rotation. The spinning of the Earth on its axis is called rotation. Each complete rotation takes about one day. The most observable effects of Earth’s rotation on its axis are day and night. The curving of the path of wind belts and ocean currents caused by Earth’s rotation is called the Coriolis Effect.



The motion of a body that travels around another body in space is called revolution. Each complete revolution of Earth around the sun takes 365 ¼ days or about one year.

Earth’s orbit is an ellipse. Earth is not always the same distance from the sun. As Earth revolves around its elliptical orbit, the planet is farthest from the sun in July and closest to the sun in January.

The point at which Earth’s orbit is farthest away from the sun is called aphelion. The point at which Earth’s orbit is closest to the sun is called perihelion.

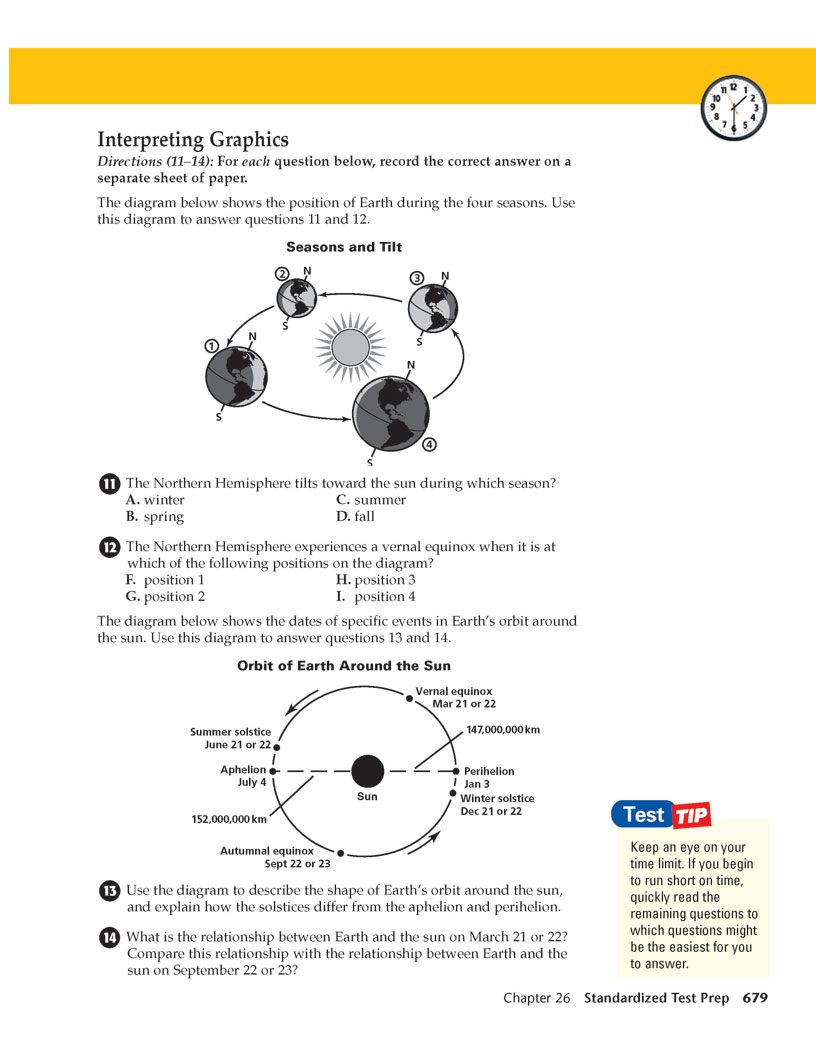
What evidence do we have for Earth revolution (orbit)?

a. seasons

b. constellations

Seasons

Earth’s axis is tilted at 23.5°. As Earth revolves around the sun, its axis always points toward the North Star. Thus, during each revolution, the North Pole sometimes tilts toward the sun and sometimes tilts away from the sun. When the North Pole tilts toward the sun, the sun’s rays strike the Northern Hemisphere more directly, giving that region a higher concentration of solar energy and is warmer (summer).

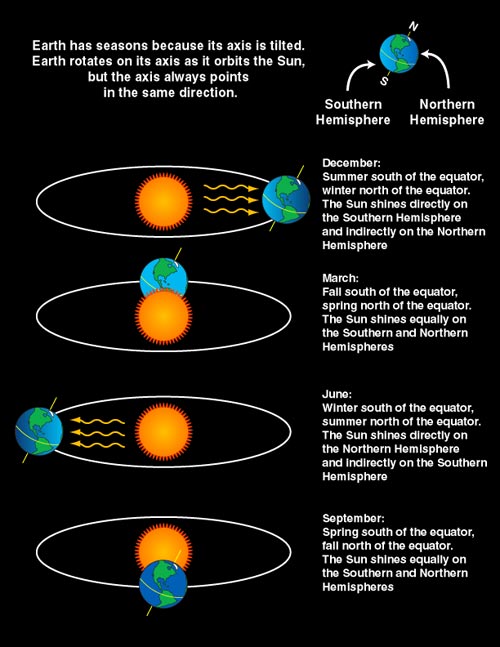


When the North Pole tilts away from the sun, the angle of the sun’s rays falling on the Northern Hemisphere is low. As a result,the sun’s rays spread solar energy over a large area, which leads to lower temperatures. The tilt of the North Pole away from the sun also causes the Northern Hemisphere to experience fewer daylight hours. Fewer daylight hours also mean less energy and lower temperatures (winter).

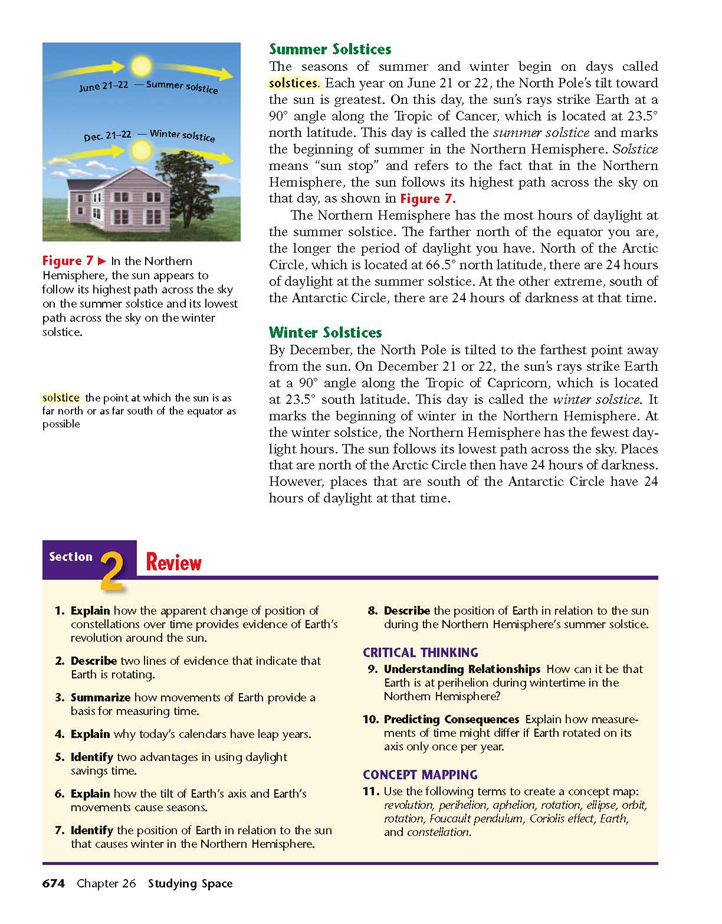
Label the seasons in the diagram to the right

1. summer 3. winter

2. spring 4. Fall



The seasons fall and spring begin on days called equinoxes. At an equinox, the sun’s rays strike Earth at a 90° angle along the equator. The hours of daylight and darkness are about equal everywhere on Earth on that day.



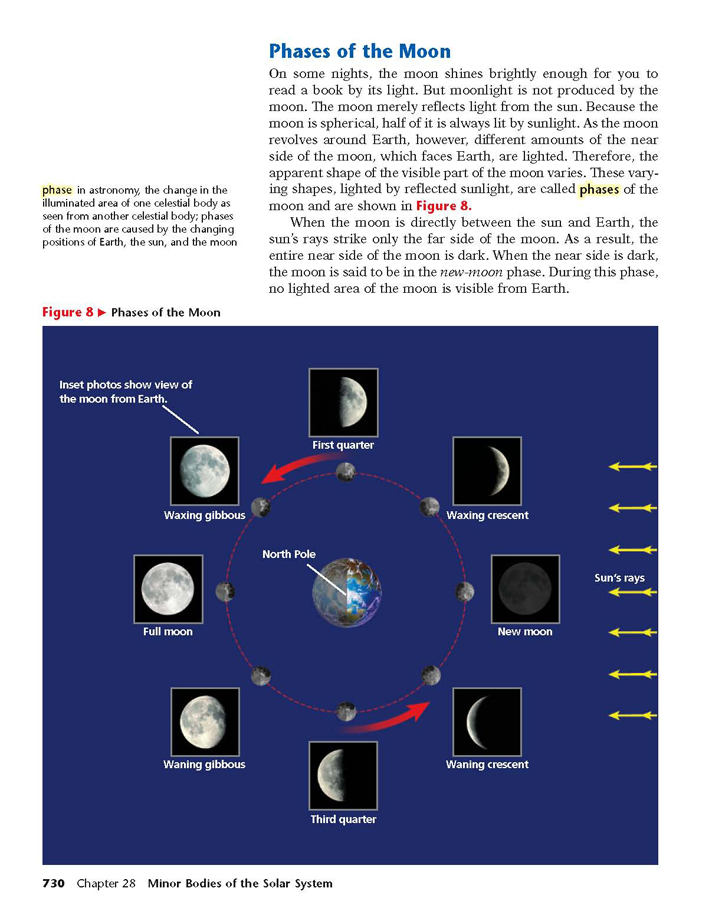
Summer Solstice

The North Pole’s tilt toward the sun is greatest. Solstice means “sun stop” and refers to the fact that in the Northen Hemisphere, the sun follow its highest path across the sky on that day.

Winter Solstice

By December; the North Pole is tilted to the farthest point away from the sun. The sun’s rays strike Earth at a angle along the Tropic of Capricorn. The sun follows its lowest path across the sky. Places that are north of the Arctic Circle then have 24 hours of darkness. Places that are south of the Antarctic Circle have 24 hours of daylight at that time.

Moon Phases

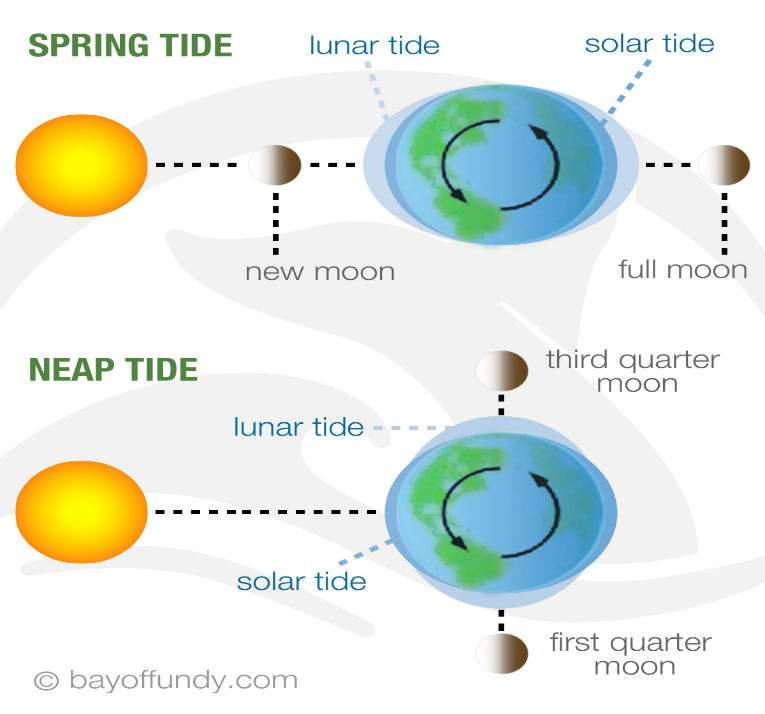


As the moon moves in its orbit around Earth, part of the near side becomes illuminated. When the size of the lighted part of the moon is increasing, the moon is said to be waxing. When a sliver is illuminated, the moon enters its waxing-crescent phase. When the moon’s lighted part is larger than a semi-circle, the moon enters its waxing-gibbous phase.

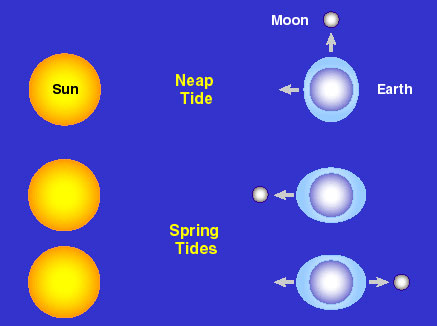
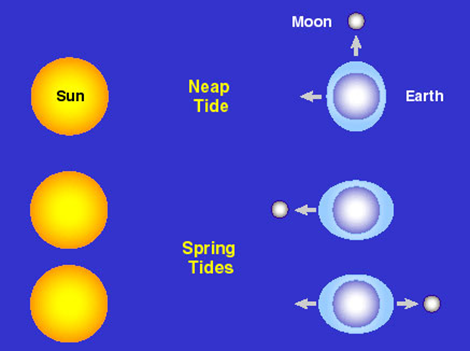
After the full moon phase, when the lighted part of the near side of the moon appears to decrease in size, the moon is waxing. When the moon’s lighted part is still larger than a semi-circle, but shrinking, the moon enters its waning-gibbous phase. When a sliver is left illuminated, the moon enters its waning-crescent phase.

The gravitational force of the moon causes tides. Tides are commonly *semi-diurnal* (two high waters and two low waters each day), or *diurnal* (one tidal cycle per day).

Explain the difference between a neap tide and a spring tide



Identify the type of tide that is shown in each diagram below:



Spring Tide

Neap Tide

Show a diagram of “high” versus “low” tides:

