

# The Sun Earth-Moon System

## Section 1 Earth

- A) Properties of Earth -- people used to think that Earth was flat and at the \_\_\_\_\_ of the universe.
- 1) Earth is now known to be a round, three-dimensional \_\_\_\_\_
    - a) \_\_\_\_\_ imaginary vertical line around which Earth spins
    - b) \_\_\_\_\_ the spinning of Earth around its axis that causes day and night
  - 2) Earth has a \_\_\_\_\_ field with north and south poles.
  - 3) Magnetic \_\_\_\_\_ is an imaginary line joining Earth's magnetic poles
    - a) Earth's magnetic axis does not \_\_\_\_\_ with its rotational axis.
    - b) The \_\_\_\_\_ of magnetic poles slowly changes over time.
- B) Causes of-seasons
- 1) \_\_\_\_\_ is the Earth's yearly orbit around the Sun
    - a) Earth's orbit is an \_\_\_\_\_, or elongated, closed curve.
    - b) Because the Sun is not centered in the ellipse, the \_\_\_\_\_ between Earth and the Sun changes during the year.
  - 2) Earth's \_\_\_\_\_ causes seasons,
    - a) The hemisphere tilted toward the Sun receives more \_\_\_\_\_ hours than the hemisphere tilted away from the Sun.
    - b) The \_\_\_\_\_ period of sunlight is one reason summer is warmer than winter.
  - 3) Earth's tilt causes the Sun's radiation to strike the hemispheres at different \_\_\_\_\_
    - a) The hemisphere tilted toward the Sun receives more total \_\_\_\_\_ than the hemisphere tilted away from the Sun.
    - b) In the hemisphere tilted toward the Sun, the Sun appears \_\_\_\_\_ in the sky and the radiation strikes Earth more directly.
- C) \_\_\_\_\_ is the day when the Sun reaches its greatest distance north or south of the \_\_\_\_\_.
- 1) \_\_\_\_\_ solstice occurs June 21 or 22 in the northern hemisphere.
  - 2) \_\_\_\_\_ solstice occurs December 21 or 22 in the northern hemisphere.
- 1.

D) \_\_\_\_\_ the day when the Sun is directly over Earth's equator

1) Daylight and nighttime hours are \_\_\_\_\_ all over the world.

a) VERNAL ( \_\_\_\_\_ ) equinox occurs on March 20 or 21 in the northern hemisphere.

b) AUTUMNAL ( \_\_\_\_\_ ) equinox occurs on September 22 or 23 in the northern hemisphere.

## **Section 2    *The Moon-Earth's Satellite***

A) Motions of the Moon

1) The Moon \_\_\_\_\_ on its axis.

2) The Moon's rotation takes \_\_\_\_\_ days with the same side always facing Earth.

3) The Moon seems to shine because it reflects \_\_\_\_\_ .

B) Moon \_\_\_\_\_ the different forms. the Moon takes in its appearance from Earth

1) \_\_\_\_\_ when the Moon is between Earth and the Sun and cannot be seen.

2) \_\_\_\_\_ phases is when more of the illuminated half of the Moon that can be seen each night after the new moon.

a) First visible thin slice of the moon is a \_\_\_\_\_

b) \_\_\_\_\_ phase is when half the lighted side of the Moon is visible.

c) \_\_\_\_\_ is when more than one quarter is visible.

d) All of the Moon's lighted side is visible during a \_\_\_\_\_ moon.

3) \_\_\_\_\_ phases is when less of the illuminated half of the Moon is visible after the full moon.

a) \_\_\_\_\_ starts after a full moon when more than half of the lighted side is still visible

b) Only half the Moon's lighted side is visible during the \_\_\_\_\_ phase.

c) The last visible slice before a new moon is called the \_\_\_\_\_ .

4) The Moon completes its cycle of phases in about 29.5 days instead of 27.3 days because it is keeping up with Earth's \_\_\_\_\_ around the Sun.

- C) \_\_\_\_\_ is when Earth or the Moon casts a shadow on the other.
- 1) \_\_\_\_\_ is when the Moon moves directly between Earth and the Sun, shadowing part of Earth.
    - a) Under the \_\_\_\_\_ or darkest part of the shadow, a total solar eclipse occurs.
    - b) A partial solar eclipse happens in the lighter shadow on Earth's surface called the \_\_\_\_\_.
    - c) A total solar eclipse is visible only on a small area of \_\_\_\_\_.
  - 2) \_\_\_\_\_ is when Earth's shadow falls on the Moon
    - a) If the Moon is completely in Earth's umbra, a \_\_\_\_\_ lunar eclipse occurs.
    - b) \_\_\_\_\_ lunar eclipse-when only part of the Moon moves into Earth's umbra, or the moon is totally in the penumbra.
    - c) A total lunar eclipse is visible on the \_\_\_\_\_ side of Earth when the night is clear.
- D) The Moon's surface has many depressions, or \_\_\_\_\_ formed from meteorites, asteroids, and comets.
- 1) Cracks in the Moon's crust caused lava to fill large craters, forming \_\_\_\_\_ or dark, flat areas \_\_\_\_\_.
  - 2) Igneous maria rocks are 3 to 4 \_\_\_\_\_ years old, indicating craters formed after the surface cooled.
- E) Data from \_\_\_\_\_ suggest that under the Moon's crust might lie a solid mantle, then a partly molten mantle and a solid core.
- F) \_\_\_\_\_ of Moon origin
- 1) \_\_\_\_\_ HYPOTHESE is when the Moon formed billions of years ago from Earth material thrown off when a large Mars size object called (Theia or Orpheus) collided with Earth.
  - 2) \_\_\_\_\_ THEORY in which the Moon was roped in by Earth's gravitational pull
  - 3) \_\_\_\_\_ THEORY which suggests that the Moon formed in tandem with the Earth, each morphing out of the same basic materials.
  - 4) \_\_\_\_\_ THEORY in which Earth was spinning so fast in its infancy that our planet could have ejected enough of its own mantle into space to form the Moon.
  - 5) Another model theorizes that a nearly identical object to Earth collided with our young planet and when they smashed together, their chemical compositions mixed to a point where they became indistinguishable from each other.