

Our Sun is the most massive and luminous star in the Milky Way.  
-False

The invention of satellites advanced astronomy because telescopes on satellites can explore wavelengths of electromagnetic radiation, such as X-rays, that cannot penetrate the Earth's atmosphere.  
-True

Human beings are composed almost entirely of the same elements that were created in the Big Bang.  
-False

The word astronomy  
-means "**patterns among the stars**"

If there are about 6000 stars in the entire sky that can be seen by the unaided human eye, about how many stars would be seen at a particular instant on a given dark night from a single location with an uninterrupted distant horizon?  
-**3000**

If an event were to take place on the Sun, how long would it take for the light to reach us?  
-**8 minutes**

The distance to the nearest large spiral galaxy, Andromeda, is 2.5 million light-years. How long does it take light to travel from us to Andromeda?  
-**2.5 million years**

The early universe was composed mainly of which two elements?  
-**Hydrogen and helium**

A light-year is measured in units of:  
-**distance**

If you compared the diameter of the Earth (13,000 km) to 1 second, what unit of time would be equivalent to the size of our Galaxy, whose diameter is  $1.5 \times 10^{22}$  m \_\_\_\_\_, which is the length of time between now and when \_\_\_\_\_.  
-**3 million years; man's ancestors first began to walk upright**

The cosmological principle states that  
-**the universe looks the same everywhere as long as you look on large enough spatial scales**

Classify the following descriptions as either True or False:

**False:** An hypothesis is the same as a scientific theory.

**False:** Scientific theories are just guesses or hypotheses used to explain scientific subjects.

**False:** A scientific theory which has been proven to be true and is no longer subject to testing is a fact.

Classify the following statements about units of measurement as True or False.

**True:** A light year is a unit of distance in astronomy.

**True:** A millimeter is one thousandth of a meter.

**False:** There are a million nanoseconds in a second.

**True:** A basic unit of mass in the metric system is a kilogram.

The number  $6.41 \times 10^8$  is equal to \_\_\_\_\_  
**-641000000.**

Suppose you were writing to a pen pal in another universe. What address would you put on the envelope that included all the major structures in which we reside? Select the order from the list below in which you would put on your address, starting with your local location.

**-3: The Milky Way**

**6: The Universe**

**2: The Solar System**

**5: Virgo Supercluster**

**4: The Local Group**

**1: Earth**

The nightly motion of objects across our sky is caused by the  
**-rotation of Earth on its axis.**

Are the constellations seasonal?

**-Yes. On a summer night many of the constellations you can see are different from the constellations you can see on a winter night. But there are some constellations you can see all year long.**

Which of the following statements best represents the overall rationale for scientific investigation?

**:-Reality is comprehensible, and a limited number of fundamental principles governs the nature and behavior of the universe.**

## **HW2**

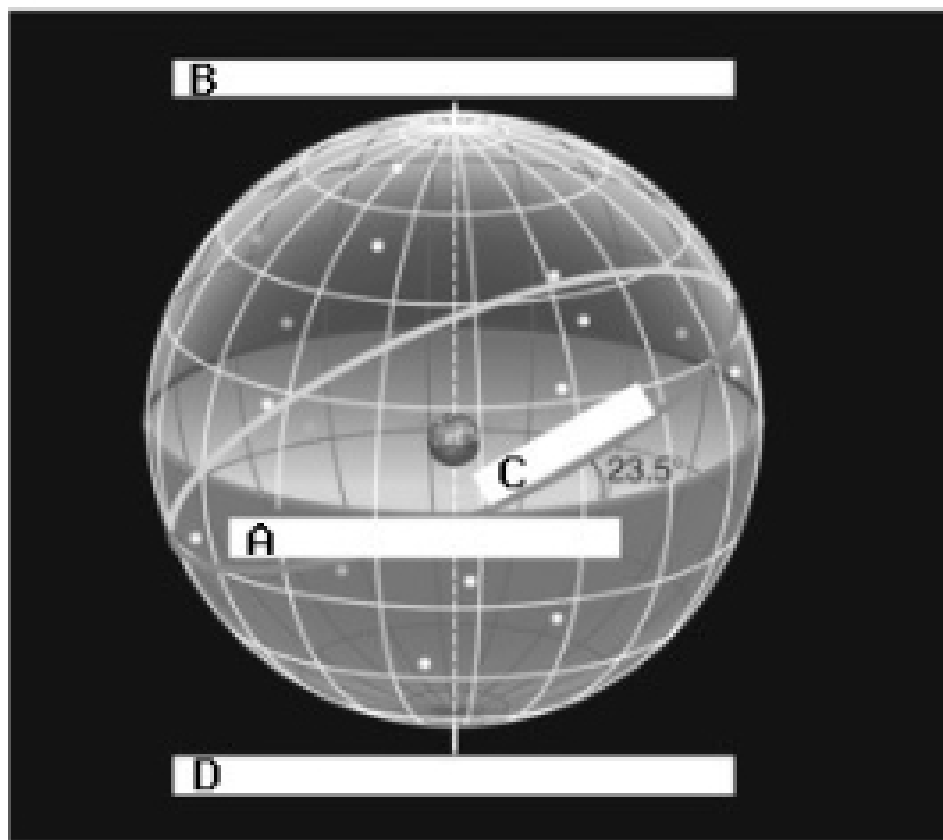
The nightly motion of objects across our sky is caused by the  
**-rotation of Earth on its axis.**

If the star Polaris has an altitude of  $35^\circ$  then we know that  
**-our latitude is  $+35^\circ$**

If you go out at exactly 9 P.M. each evening over the course of one month, the position of a given star will move westward by tens of degrees. What causes this motion?

**-The revolution of the Earth around the Sun**

- **A : celestial equator**
- **B : north celestial pole**
- **C : ecliptic**
- **D : south celestial pole**



Assume that the observer is in the continental United States. Match each statement with one of the terms at the top. (Some letters may be used more than once and some may not be used at all.)

- A Summer Solstice
- B Vernal Equinox
- C Winter Solstice
- D Autumnal Equinox
- E None of the Above

**A:** The beginning of summer occurs on what date.

**C:** The altitude of the sun at noon is least on what date?

**C:** The longest period of darkness occurs near which solstice or equinox?

**C:** The sun sets farthest south of west on what date?

In which month does Scorpius appears in the overhead position at midnight?

**-June**

When is the Earth closest to the Sun?

**-In the winter in the northern hemisphere.**

The picture below shows the position of the Earth at four times of the year. For each position, identify the transition to the correct season.