Motions in the sky—10 Sep

- What motions of objects in the sky did Greek astronomers try to explain?
- Motions of the sky that we have seen with our naked eyes.
- Our model to explain the motions.

Changes in the Sky

- Name two motions of objects in the sky or changes in the sky that you have observed.

Changes in the Sky

- The sun sets south of west in winter.
- Winter days are short.
- Stars move east to west over a night.
- The constellations change over the months.
- The sun (and moon and stars) rises & sets.
- The sun is higher in the sky in summer than winter.
- Planets move with respect to the stars.
- Comets appear irregularly.

The Celestial Sphere

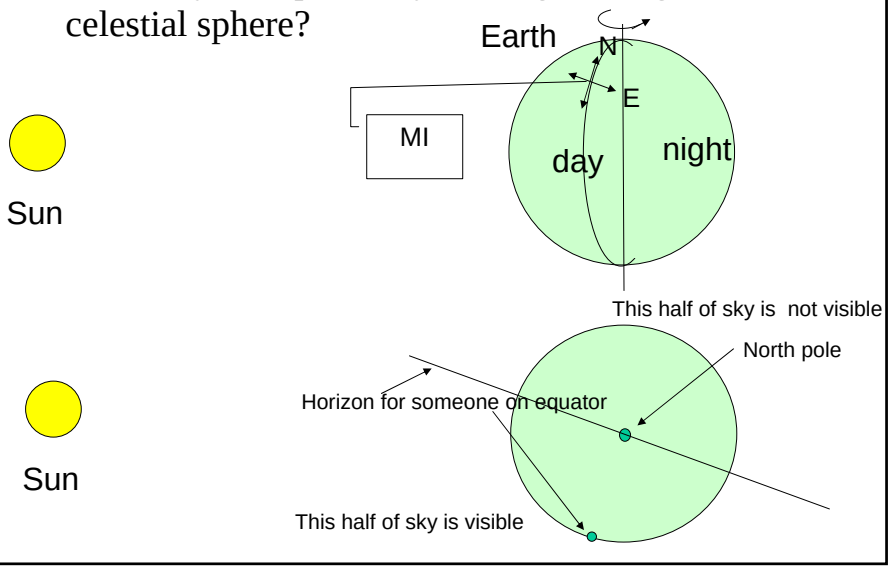
1. What movement explains observation A?
   a) The sun moves around the earth.
   b) The earth moves around the sun.
   c) The earth turns.

What motions have you observed?

A. Night & day. Sun rises & sets.
B. Stars rise & set.
C. Different stars are seen at different times of the year. Eg., Orion is seen in early evening in March. The "Summer Triangle" is seen in early evening in the summer.

The Celestial Sphere

2. How do you explain day and night using the celestial sphere?



The Celestial Sphere

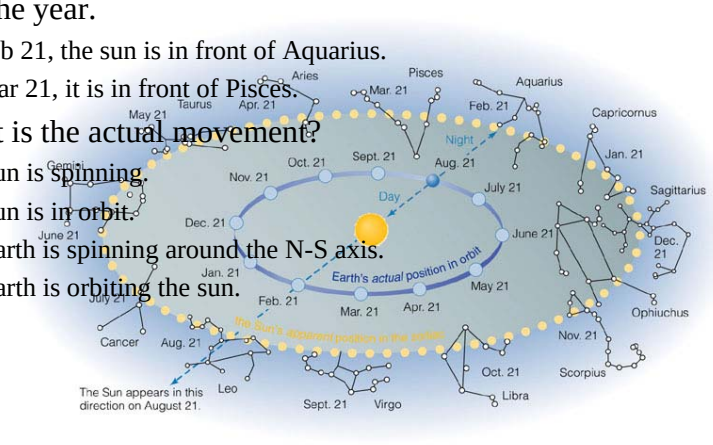
2. What movement explains observation B?
   a) The sun moves around the earth.
   b) The earth moves around the sun.
   c) The earth turns.
3. What movement explains observation C? Use same foils.

What motions have you observed?

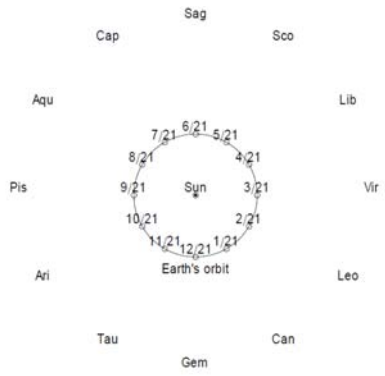
A. Night & day. Sun rises & sets.
B. Stars rise & set.
C. Different stars are seen at different times of the year. Eg., Orion is seen in early evening in March. The "Summer Triangle" is seen in early evening in the summer.

The Celestial Sphere

- The sun "moves" into different constellations of the zodiac during the year.
  - On Feb 21, the sun is in front of Aquarius.
  - On Mar 21, it is in front of Pisces.
- Q: What is the actual movement?
  A. The sun is spinning.
  B. The sun is in orbit.
  C. The earth is spinning around the N-S axis.
  D. The earth is orbiting the sun.



- Q: At midnight tonight, which constellation of the zodiac will be high in the sky?
  A. Pisces
  B. Virgo
  C. Sagittarius
  D. Gemini
- Q: At midnight tonight, which constellation will be rising? (Earth spins counter-clockwise when viewed above north pole.) Same foils.



Celestial sphere

- Greek astronomers modeled the sky.
  - Earth is in the center.
  - Stars are pasted on a celestial sphere.
  - We will figure out what they did about the Sun and moon.
- Our model has Earth, sun, stars on plastic celestial sphere. You may move the sun, turn the earth.