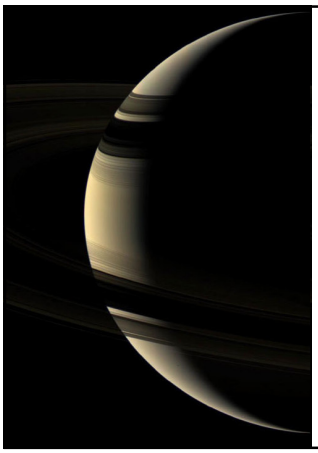

September 19, 2006

## Agenda

- Honor's Elective
- Announce:
  - Read/Quiz Chapter 3 for Thursday
  - Test is one week from Thursday
- Risk Analysis
- Questions over Ch. 2
- Stargazer Tutorial
- Sunspots Lab---weather dependent
  - Otherwise Newton Movie

## Everyday Risk Analysis

- Pay for bottled water or use tap?
- Artificial Sweetener versus Empty Calories of Sugar
- Let your kid use a cell phone?
- Drive somewhere or fly?
- Eat beef (mad cow) or veggies (E. Coli/Pesticides)?
- Large SUV (mash a small car) or Small Car (low flip risk and maneuverable)?

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- Miles
- Kilometers
- Light years
- Parsecs
- Degrees

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1. 1 degree
2. 10 degrees
3. 5 inches
4. 10 inches

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- How high something is in the sky, in units of degrees
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- The brightest star in the sky
- A star called Polaris
- 3 and 4

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- Are seen only in winter
- Are seen only in summer
- Never set
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## What makes Polaris a special star?

1. It is the brightest star in the sky
2. It is always directly overhead, no matter where you are
3. It is near the axis about which the sky turns
4. Its azimuth (direction) is always due north
5. 3 *and* 4

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- Circumpolar stars
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- The constellations of the zodiac
- The tropical constellations
- Solstice stars

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## Why are the Moon and planets seen only in the constellations of the zodiac?

- The planets all revolve in the same direction around the sun
- The planets all orbit in nearly the same plane, and the zodiacal constellations are in that plane.
- The constellations in the zodiac are the oldest, and the planets have been known from ancient times
- None of the above reasons

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## What causes the seasons?

- In summer the (whole) Earth is closer to the Sun
- In summer the tilt of the Earth's axis makes the part of the Earth we are on closer to the Sun
- In summer the Sun is up for more hours
- In summer the Sun climbs higher in the sky so its rays hit the ground more directly
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## If the tilt of the Earth's axis to its orbital plane was 40 degrees, instead of 23 ½, but its distance from the Sun remained the same, what would happen to the seasons?

1. They wouldn't change much
2. They would become less extreme–winter and summer would be more alike
3. They would become more extreme–winter colder and summer warmer
4. The whole Earth would get colder
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## If you had a very fast spaceship could you travel to the celestial sphere in about a month?

1. Yes, and the NASA Voyager spacecraft has already done so.
2. Yes, but once such a spacecraft crosses the celestial sphere it can never return.
3. No, the celestial sphere is so far away that, even moving at close to the speed of light, it would take tens of thousands of years to reach.
4. No, the celestial sphere moves away from us at the speed of light so we can never catch up with it.
5. This statement doesn't make sense because the celestial sphere is a concept and not a physical object.

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**If Earth's orbit were a perfect circle, we would not have seasons.**

1. True, because the Earth would be at the same distance from the Sun throughout its orbit, there would be no summer or winter.
2. True, it is the deviations from a circular orbit that create the seasons.
3. False, the seasons are due to the tilt of the Earth's axis, not its distance from the Sun.
4. False, the poles would still be cooler than the equator and seasonal variations would therefore still exist.
5. False, whether circular or not, the seasons depend on the precession of the Earth's axis as it orbits the Sun.

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