

HW2

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Started: January 30, 2006 11:25 AM 10 Questions

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1. (10 point(s))

The Sun rises due east in the sky when viewed from any site

- ☐ 1. only on the first day of spring and the first day of fall (the Equinoxes).
- ☐ 2. only the equator every day of the year.
- ☐ 3. only on the equator at midsummer and midwinter.
- ☐ 4. only on the first day of summer and the first day of winter (the Solstices).
- ☐ 5. Trick question. It happens every day, due to the diurnal motions of the Earth.

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2. (10 point(s))

In what region of Earth would you have to be to have the Sun pass through your zenith at some time during the year?

- ☐ 1. within the Arctic Circle
- ☐ 2. at any latitude during the Summer Solstice.
- ☐ 3. within $\pm 23.5^\circ$ of the equator—the tropics
- ☐ 4. only on the equator, nowhere else
- ☐ 5. at any latitude

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3. (10 point(s))

During one complete year, an observer at the South Pole would be able to see what fraction of the overall sky?

- ☐ 1. 50%

- ☐ 2. a variable amount, depending on which year
- ☐ 3. 100%
- ☐ 4. a variable amount, depending on the person's longitude

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4. (10 point(s))

Science Fiction Writing 101: After Astro 122 class, you and your friend Dumm somehow get thrown forward in time to the year 14000 AD. It looks like a major war wiped everyone out. You're lost on the future waste-scape of central Illinois, and you want to see if anyone is left in Chicago. Dumm says that you need to find Polaris so you can walk toward North. You say...

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5. (10 point(s))

The Earth's shadow falling on the Moon is the reason we see

- ☐ 1. solar eclipses.
- ☐ 2. The Earth's shadow cannot fall on the Moon due to a 5 degree offset.
- ☐ 3. lunar eclipses.
- ☐ 4. the phases of the Moon.
- ☐ 5. solar eclipses.

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6. (10 point(s))

Suppose that on a given evening you notice that the sunlit portion of the Moon has a crescent shape. This simple observation tells you

- ☐ 1. that at that particular time the Moon is closer to the Sun than you are.
- ☐ 2. that at that particular time the Moon is farther from the Sun than you are

- ☐ 3. that the line from you to the Moon is exactly at right angles to the line from you to the Sun.
- ☐ 4. nothing at all about where the Moon is in space compared to you and the Sun.

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7. (10 point(s))

While on Spring Break in Florida, you go to bed very late. As you hit the bed you notice that the Moon is rising at 5:25am. Before you fall into sleep you calculate the Moon's Phase. It is?



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8. (10 point(s))

How much of the total surface of the Moon is illuminated by the Sun when it is at quarter phase?

- ☐ 1. one quarter
- ☐ 2. very little
- ☐ 3. all of it
- ☐ 4. one half

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9. (10 point(s))

If an observer on Earth sees the Moon to be full, than at the same time an observer on the Moon would see the Earth to be at what phase?

- ☐ 1. full
- ☐ 2. new
- ☐ 3. It is impossible to tell.
- ☐ 4. third quarter

-
- ☐ 5. The Earth does not appear to go through phases when observed from the Moon.

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10. (10 point(s))

Explain how a solar eclipse occurs. If the Moon was 10% FURTHER away from the Earth, would we still see total Solar eclipses? Give a numerical argument.



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