

Astronomy 115-06, Fall 2007
Homework #2
Due Friday October 5, 2007

SHOW YOUR WORK TO GET FULL CREDIT!

Chapter 3: Review Question (pg. 42)

#3. What would the seasons be like if Earth were tipped 35° instead of 23.5° ? What would they be like if Earth's axis were perpendicular to its orbit?

Chapter 3: Problems (pg. 43)

#3. Identify the phases of the moon if, at sunset, the moon were

- a) near the eastern horizon
- b) high in the south
- c) in the southeast
- d) in the southwest

#6. Phobos, one of the moons of Mars, is 20 km in diameter and orbits 5,982 km above the surface of the planet. What is the angular diameter of Phobos, as seen from Mars? (Hint: See Reasoning with Numbers 3-1.)

Chapter 4: Problems (pg. 71)

#4. If a planet had an average distance from the Sun of 10 AU, what would its orbital period be?

#5. If a space probe were sent into an orbit around the Sun that brought it as close as 0.5 AU and as far away as 5.5 AU, what would its orbital period be?

Electromagnetic Spectrum Question:

Why do you think gamma rays and x-rays can be very harmful to human beings, UV radiation is a little harmful, and radio waves are not harmful at all? (Hint: you should talk about frequency, wavelength, and energy of different forms of light in your answer.)

Chapter 5: Problems (pg. 97)

#2. What is the wavelength of radio waves transmitted by a radio station broadcasting with a frequency of 100 MHz?

#7. How does the resolving power of the 5-m telescope compare with that of the Hubble Space Telescope? Why does the Hubble Space Telescope outperform the 5-m telescope?

#8. If you build a telescope with a focal length of 1.3 m, what focal length should the eyepiece have to give a magnification of 100 times?