

HOMEWORK QUESTIONS for exam 1 material

You will not turn in the answers. Some or all will appear on the exam, maybe worded a little differently. So if you do the homework, you will gain 1-3 percentage points on your exam score.

1. What if the Earth were 4 times as far from the Sun as it is now. Would our year be longer or shorter? By how much? In words (no equations), why?
2. We've seen how Kepler's 3rd law as modified by Newton applies to planets orbiting the Sun. But it applies to anything orbiting anything under gravity. Consider two stars orbiting each other (a binary star). What would you have to know in order to learn something about the masses of the stars?
3. If you wanted to discover a planet orbiting another star, a planet that was just like the Earth, what wavelength region should you try to observe in order to receive the most light? (First think: what will its temperature be?)
4. If you observe a star that is twice as hot as the sun, what color do you think it would be? How much more or less energy would be emitted by each square inch of its surface?