

NAME: _____

DATE: _____

PHYS 1040 Homework #2

1. What does Newton's first law of motion tell you about the difference between straight-line motion and motion along a curve?
2. Calculate your weight on the moon.
3. Name the regions of the electromagnetic spectrum from short to long wavelength.
4. Given that water absorbs microwaves very strongly, can you explain why a Pop-Tart gets very hot inside while its crust stays cool if you heat it in a microwave oven?
5. Sketch an atom emitting light. Does the electron end up in a higher or lower orbit? Repeat for an atom absorbing light.

6. How is resolution affected by the size of a telescope's mirror or lens?

7. What is the difference between a reflecting and a refracting telescope? What are the advantages and disadvantages of each?

8. An astronomer finds that the visible spectrum of a mysterious object shows bright emission lines. What can she conclude about the source?
 - (a) It contains cold gas
 - (b) It is an incandescent solid body
 - (c) It is rotating very fast
 - (d) It contains hot, relatively tenuous gas
 - (e) It is moving toward Earth at high speed

9. The strength of the gravitational force exerted by the Sun on the Earth is the same as the strength of the gravitational force exerted by the Earth on the Sun.
 - (a) True
 - (b) False

10. If the distance between two bodies is quadrupled, the gravitational force between them is:
 - (a) increased by a factor of 4
 - (b) decreased by a factor of 4
 - (c) decreased by a factor of 8
 - (d) decreased by a factor of 16
 - (e) decreased by a factor of 64

11. A telescope's resolving power measures its ability to see
 - (a) fainter sources
 - (b) more distance sources
 - (c) finer detail in sources
 - (d) larger sources
 - (e) more rapidly-moving sources