

The following are example test reworks for the student that answered the example test questions incorrectly. You must follow this structure precisely in order to receive credit (properly numbered question from exam, letter of correct answer, explicitly labeled and articulated diagnosis, explicitly labeled and articulated generalization, and citation that includes the *most relevant material used in the course*).

Example Test Reworks

24. correct answer = d

Diagnosis: I confused a one-dimensional distance with a two-dimensional area.

Generalization: I learned the difference between distance and area. I also now more fully understand Kepler's second law and how to apply it: a planet sweeps out equal areas in equal amounts of time which, in the case of an elliptical orbit, means that the planet must travel different distances in equal amounts of time throughout its orbit.

citation: Questions 3 through 7 of the LT "Kepler's Second Law."

35. correct answer = c

Diagnosis: I confused velocity with acceleration.

Generalization: I learned the difference between velocity and acceleration: a velocity is speed in a particular direction while an acceleration is a *change* in speed or direction or both. Additionally, I learned how to correctly apply Newton's second law: if there is a net force acting on an object then an acceleration will result. The acceleration is equal to the net force divided by the total mass and the acceleration must be in the same direction as the net force.

citation: Questions 6, 9, and 10 of the LT "Newton's Laws and Gravity."

47. correct answer = e

Diagnosis: I confused the laws of planetary motion for the general laws of motion.

Generalization: I realized that Kepler's laws apply only in the special case of objects orbiting each other under the influence of gravitation while Newton's laws apply universally – to all objects, anywhere at any time. In fact, Newton later derived Kepler's laws by starting with his more general laws of motion and solving for the special case of objects orbiting under the influence of gravitation.

citation: Sections 2-7 and 2-8 of the textbook reinforce and explain how these laws govern the motions of all bodies, on Earth and in the sky (not just planets).