

Name: \_\_\_\_\_

**Quiz 3**  
Physics 105  
23 September 2002

- 1. An auto weighing 3000 newtons has a drive force of 1000 newtons. Air resistance on the car is 100 newtons and road resistance is 100 newtons. The auto moves along a straight level road. The net force on this auto is
  - (a) 200 newtons backward.
  - (b) 800 newtons backward.
  - ⇒ (c) **800 newtons forward.**
  - (d) 1000 newtons forward.
  - (e) 2000 newtons forward.
  
- 2. Satellites stay up because
  - ⇒ (a) **they are moving so fast that they are able to “fall” around the Earth.**
  - (b) they are away from Earth’s gravity and thus do not get pulled down toward Earth.
  - (c) their rocket engines hold them above Earth’s surface.
  - (d) there is no air resistance in outer space and thus no downward force on an orbiting satellite.
  - (e) centrifugal force pulls outward on them.
  
- 3. If you somehow increased Earth’s radius, without changing its mass, would this affect your weight?
  - ⇒ (a) **Yes, your weight would decrease.**
  - (b) Yes, your weight would increase.
  - (c) No, because your weight always remains the same regardless of how you change the external surroundings.
  - (d) No, because the force of gravity on your body depends only on your mass and on Earth’s total mass; it doesn’t depend on Earth’s size.
  
- 4. In the final phases of its “life”, our sun will
  - (a) blow up in a supernova explosion.
  - (b) collapse and continue to collapse, forever.
  - ⇒ (c) **collapse to become a white dwarf.**
  - (d) pass through the white dwarf state, then the neutron star state, and finally the black hole state.
  - (e) turn into a cockroach.