Chapter 2: Newton’s First Law of Motion – Inertia

7) A space probe may be carried by a rocket into outer space. What keeps the probe going after the rocket no longer pushes it?

9) Your friend says that inertia is a force that keeps things in their place, either at rest or in motion. Do you agree? Why or why not?

15) Why do you lurch forward in a bus that suddenly slows? Why do you lurch backward when it picks up speed? What law applies here?

17) When you push a cart, it moves. When you stop pushing, it comes to rest. Does this violate Newton's law of inertia? Defend your answer.

23) Can an object be in mechanical equilibrium when only a single force acts on it? Explain.

24) When a ball is tossed straight up, it momentarily comes to a stop at the top of its path. Is it in equilibrium during this brief moment? Why or why not?

26) Can you say that no force acts on a body at rest? Or is it correct to say that no net force acts on it? Defend your answer.

42) Two forces act on a parachutist falling in air; weight and air drag. If the fall is steady, with no gain or loss of speed, then the parachutist is in dynamic equilibrium. How do the magnitudes of weight and air drag compare?