Answers to selected questions
Chapter 4

Q6 The larger mass has a smaller acceleration. For a given force, the ratio of the accelerations will be the inverse of the ratio of the masses.

Q12 Yes. There must be a net force directed opposite the motion to produce the observed negative acceleration.

Q18 Mass is not a force. As stated above it is a property of matter arising from the structure of matter. Weight, however, is a force. Weight is mass times acceleration (due to gravity).

Q24 No. A bath towel is very soft and textured, and not slippery, like a tablecloth. There will be a great deal more friction between the plates and the towel.

Q30 The normal force will be less than your true weight because the acceleration will be downward, making normal force a smaller arrow than the one representing the force of gravity; hence you will feel lighter.

Q36 The carts all move at the same speed and have the same acceleration, so the force needed to move the carts is proportional to their masses. The net force on each cart is proportional to the mass because the acceleration a = F/M is the same for each cart.