1. A towrope is used to pull a 1750 kg car across a flat surface, giving it an acceleration of 1.35 m/s^2. What force does the rope exert? (F = 2360 N)

2. A racing car undergoes a uniform acceleration of 4.00 m/s^2. If the net force causing the acceleration is 3000 N, what is the mass of the car? (m = 750 kg)

3. A 5.2 kg bowling ball is accelerated from rest to a velocity of 12 m/s as the bowler covers 5.0 m of approach before releasing the ball. What force is exerted on the ball during this time? (F = 75 N)

4. A high jumper falling at a 4.0 m/s lands on foam pit and comes to rest compressing the pit 0.40 m. If the pit is able to exert an average force of 1200 N on the high jumper breaking the fall, what is the jumper's mass? (m = 60 kg)

5. When a 20 kg child steps off a 3.0 kg (initially) stationary skateboard with an acceleration of 0.50 m/s^2, with what acceleration will the skateboard travel in the opposite direction? – hint: apply Newton's third law (a = 3.3 m/s^2)

6. On Planet X, a 50 kg barbell can be lifted by only exerting a force of 180 N.
    a. What is the acceleration of gravity on Planet X? (a = 3.6 m/s^2)
    b. What minimum force is needed to lift this barbell on Earth? (F = 490 N)

7. An applied force of 20 N is needed to accelerate a 9.0 kg wagon at 2.0 m/s2 along a sidewalk.
    a. How large is the frictional force? (F_f = 2.0 N)
    b. What is the coefficient of friction? (μ = 0.023)

8. A 2.0 kg brick has a sliding coefficient of friction of 0.38. What force must be applied to the brick for it to move at a constant velocity? (F_a = 7.5 N)

9. In bench pressing 100 kg, a weight lifter applies a force of 1040 N. How large is the upward acceleration of the weights during the lift? (a = 0.59 m/s^2)

10. An elevator that weighs 3 000 N is accelerated upward at 1.5 m/s^2. What force does the cable apply to give this acceleration? (F_a = 3460 N)