1. . Each of the figures below shows a particle moving with velocity v, and with one or two forces of magnitude F acting upon it. In which of the figures will v remain constant? (A)  (B)  (C)  (D)  (E) 

2. . In which of the following examples is a net force of zero acting on the object in question? I. A car drives around a circular racetrack at a constant speed II. A person pushes on a door to hold it shut III. A ball, rolling across a grassy field, slowly comes to a stop (A) I only (B) II only (C) III only (D) I and II only (E) I and III only

3. . A force ***F*** is acting on an object of mass m to give it an acceleration of ***a***. If m is halved and ***F*** is quadrupled, what happens to ***a***? (A) It is divided by eight (B) It is divided by two (C) It remains unchanged (D) It is multiplied by two (E) It is multiplied by eight

4. . A force ***F1*** pushes on an object of mass 10 kg with a force of 5 N to the right. A force ***F2*** pushes on the same object with a force of 15 N to the left. What is the acceleration of the object? (A) 0.3 m/s2 to the left (B) 0.5 m/s2 to the left (C) 1 m/s2 to the left (D) 1.5 m/s2 to the left (E) 10 m/s2 to the left

5. . In the figure, a block is suspended from two ropes, so that it hangs motionless in the air. If the magnitude of ***T2*** is 10.0 N, what is the magnitude of ***T1*** ? Note that sin 30 = cos 60 = 0.500, and sin 60 = cos 30 = 0.866.  (A) 0.433 N (B) 0.500 N (C) 0.866 N (D) 10.0 N (E) 17.3 N

6. . In scenario 1, a person pulls with a force ***F*** on a string of length 2d that is connected to a spring scale. The other end of the spring scale is connected to a post by a string of length d. In scenario 2, the person pulls on the string of length 2d with a force of ***F***, and a second person stands where the post was in scenario 1, and also pulls with a force of ***F***. If the spring scale reads 50 N in scenario 1, what does the spring scale read in scenario 2?  (A) 50 N (B) 67 N (C) 100 N (D) 133 N (E) 150 N

7. . In the figure, a person is dragging a box attached to a string along the ground. Both the person and the box are moving to the right with a constant velocity, v. What horizontal forces are acting on the person?  (A) The tension force in the string is pulling the person to the left (B) The tension force in the string is pulling the person to the left, and the Earth is pushing the person to the right (C) The tension force in the string is pulling the person to the left, and the Earth is pushing the person to the left (D) The tension force in the string is pushing the person to the right, and the Earth is pushing the person to the right (E) The tension force in the string is pushing the person to the right, and the Earth is pushing the person to the left

8. . What is the weight of a man whose mass is 80 kg? (A) 8.1 N (B) 70.2 N (C) 80 N (D) 89.8 N (E) 784 N

9. . A 50 kg crate rests on the floor. The coefficient of static friction is 0.5. The force parallel to the floor needed to move the crate is most nearly: (A) 25 N (B) 50 N (C) 125 N (D) 250 N (E) 500 N

10. . A person is pushing an object of mass m along the ground with a force ***F***. The coefficient of kinetic friction between the object and the ground is . The object is accelerating, but then the person stops pushing and the object slides to a halt. The person then starts pushing on the object again with a force ***F***, but the object doesn’t budge. The maximum coefficient of static friction between the object and the ground is . Which of the following statements is true? (A) (B) (C) (D) (E) The scenario described is physically impossible