FORCES REVIEW WORKSHEET

Concurrent & Parallel Forces

1. A box with a mass of 175 kg is pulled along a level floor with a constant velocity. If the coefficient of friction between the box and the floor is 0.340, what horizontal force is exerted in pulling the box? (583 N)

2. A 10.0 kg package is being pulled along a surface with a force of 40.0 N applied at an angle of 30.0°. What is the acceleration of the package? (3.46 m/s^2)

3. If the coefficient of friction between the package and the surface in problem 2 is 0.300, what would the acceleration of the package be? (1.12 m/s^2)

4. A hockey puck is given an initial speed of 20.0 m/s on a frozen pond. The puck remains on the ice and slides 120 m before coming to rest. Determine the coefficient of friction between the puck and the ice. (0.17)

5. Two paramedics are lifting a person on a stretcher. One of the paramedics exerts a force of 350 N at 58° above the horizontal and the other exerts a force of 410 N at 43° above the horizontal. What is the weight of the person in the stretcher? (580 N)

6. A 2.00×10^3 kg car is to be held on a 20.0° incline by a rope in which the maximum tension is 5.00×10^3 N. Will the rope support the car? (No, F_x = 6700 N)

7. A 75.0 kg baby carriage is <u>*pushed*</u> at a constant velocity along a level sidewalk by exerting force of 50.0 N on the handle, which makes an angle of 60.0° with the horizontal. What is the coefficient of friction between the carriage and the sidewalk? (0.0321)

8. A 3.00 kg wood box slides from rest down a 35.0° inclined plane. How long does it take the box to reach the bottom of the 4.75 m wood incline? The coefficient of friction between the box and the incline is 0.300. (1.72 s)

9. A 50.0 kg person stands on a scale in an elevator. What is the reading on the scale when the elevator rises at a constant velocity? The elevator descends, accelerating at 2.7 m/s^2 downward. What does the scale read? (490 N; 360 N)

10. 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? (0.600 m/s^2)

11. *If the coefficient of friction between a set of waxed skis and the snow is 0.10, at what angle will a 90.0 kg sled move at a constant speed down the slope? (5.7°)*