

Phys11 Dynamics : Test - 70

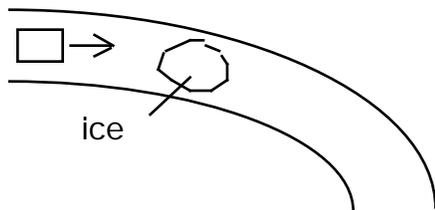
1) Write down Newton's three laws.

2) The velocity of the car increases as shown over a time of 10. seconds.



The net force on the car is _____ .

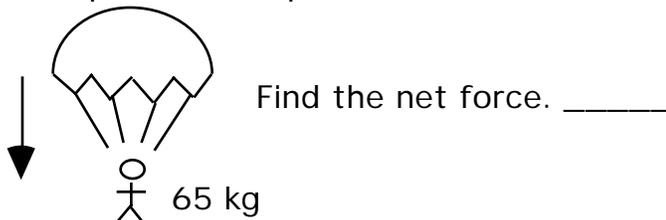
3)



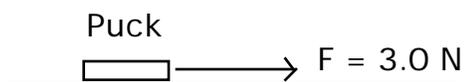
- What happens to the car?
- Which of Newton's laws explains this?
- If there was no ice and the car made it around the corner, would it be accelerating?
- If there was no ice, what force would keep the car from going off of the road?

4)

The speed of the parachutist is 2.0 m/s.



5)

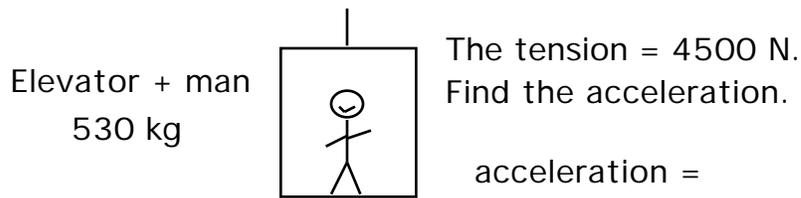


The mass of the puck is 0.50 kg. The initial velocity is 0.0 m/s. Friction is zero.

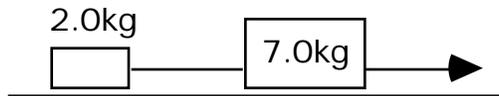
a) $a =$ _____ b) The velocity at 3.0 seconds = _____

c) The distance traveled in 3.0 seconds = _____ .
(use $d = 1/2 at^2$).

6)

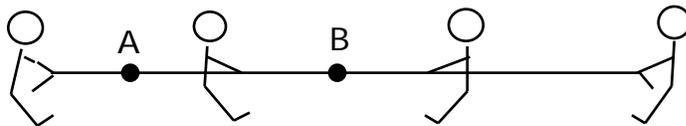


7)



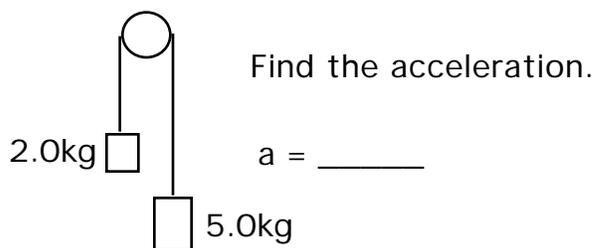
In the above system, the acceleration = 4.5 m/s^2 . Find the tension in the string between the two masses. $T =$ _____ . (friction is zero)

8)

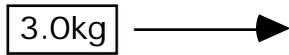


In the "tug-of-war", point B is not moving. One man can pull with a force of 50. N. a) The tension at A = _____ . b) The tension at B = _____ .

9)

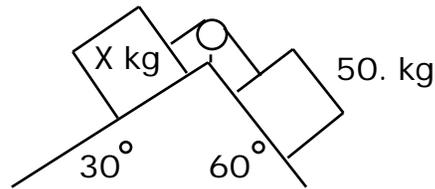


10)



If the initial velocity is 8.0 m/s, find the force of friction if the puck stops in 10. m. (Hint : use $V_f^2 - V_i^2 = 2ad$.)

11)



If the acceleration = 0.0 m/s², find the mass X. Assume friction is zero. X = _____ kg.

Answers : 1)i) If the net force on an object is zero, then the velocity is constant (or a = zero). ii) The net force on an object equals the mass multiplied by the acceleration. iii) For every action, there is an equal and opposite reaction. 2) 290 N, 3)a) The car skids off of the road. b) First law, (friction force is zero), c) Yes, d) The force of friction between the road and the tires, 4) 0.0 N (velocity is constant), 5)a) 6.0 m/s², b) 18 m/s, c) 27 m, 6) -1.3 m/s², 7) 9.0 N, 8)a) 50. N, b) 1.0x10² N, 9) 4.2 m/s², 10) -9.6 N, 11) 87 kg.