

Chapter 4 Problems

- 1.) A 2.3 kg wood block on the lab table is pulled along at a constant speed with a force of 11 N. Calculate the coefficient of friction between the table and the wood.

The wood block is then coated with rubber cement that makes it sticky. A force of 18 N is now required to pull the block along the table. What did the coefficient of friction change to?

- 2.) A boy pulls his dog in a sled up a 12° hill. The boy applies 85 N of force to the sled. The combined mass of the dog and sled is 19.3 kg. Calculate the frictional force between the snow and sled.

The boy changes the force he pulls with to 120 N. What is the new acceleration rate?

- 3.) Jim tries to move his refrigerator across the floor in his kitchen. The mass of the refrigerator is 238.4 kg. The static coefficient of friction between the refrigerator and the floor is 0.74 and the kinetic coefficient of friction is 0.52. How much force is required to get the refrigerator to move?

How much force is required to keep the refrigerator moving at constant speed?

- 4.) You want to lift a 6.3 kg bowling ball by a rope attached to it. How much force is required to accelerate it upward a height of 0.50 m in 1.4 s?

- 5.) A weightlifter does the bench press with a 500 kg mass while applying 4900 N of force. Does the mass accelerate upward, accelerate downward or remain stationary?

Now the weightlifter applies 4912 N of force. What is the acceleration of the mass this time? Which direction does the mass move?