

Name: _____ Block: _____

Friction

To solve these problems, you will need to look up coefficients of friction in your Physics Reference Tables.

1. A student wants to slide a steel 15 kg mass across a steel table. What force must the student apply in order to start the box moving? (*I.e.*, to overcome the static friction between the mass and the table)

108.8 N

2. What force must the student apply to keep the mass in question #1 moving at a constant velocity? (*I.e.*, to overcome the kinetic friction between the mass and the table)

83.8 N

3. A wooden desk has a mass of 74 kg. What minimum force must be applied to the desk to start it moving across a wooden floor?

304.6 N

4. Once the desk from question #3 above is in motion, what force must be used to keep it moving at a constant velocity?

217.6 N

5. A Chevy Blazer has a mass of 1850 kg. If the car is traveling at $(15 \frac{m}{s})$ (about 30 MPH) and the driver slams on the brakes, causing the vehicle to skid, how far would the car travel before it stops on dry asphalt? (You will need to find the force of friction and then use $F = ma$ to find the acceleration. Then you have a , $v_o = 15 \frac{m}{s}$ and $v = 0$, and you can find d .)

17 m

6. How far would the car from problem #5 travel if it were skidding to a stop on ice?

77 m

7. A curling stone with a mass of 18 kg slides 38 m across a sheet of ice in 8.0 s before it stops because of friction. What is the coefficient of kinetic friction between the ice and the stone? (Note: you will need to calculate the acceleration of the stone first.)

0.12