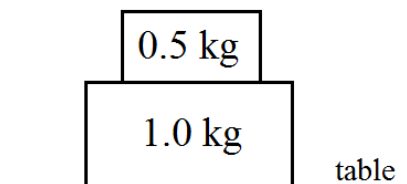


Friction

1. A 70 kg hockey player coasts along the ice on steel skates. The coefficient of kinetic friction is 0.010.
 - (a) What is the force of friction between the skates and the ice?
 - (b) How long will it take him to coast to a stop if he is initially traveling at 1.0 m/s?
2. A 10 kg box is pulled across a level floor, where the coefficient of kinetic friction is 0.35. What horizontal force is required for an acceleration of 2.0 m/s²?
3. A small 10 kg cardboard box is thrown across a level floor. It slides a distance of 6.0 m, stopping in 2.2 s. Determine the coefficient of friction between the box and the floor.
4. A 0.5 kg wooden box is placed on top of a 1.0 kg wooden block as shown.



The coefficient of static friction between the two blocks is 0.35. The coefficient of kinetic friction between the lower block and the level table is 0.20. What is the maximum horizontal force that can be applied to the lower block without the upper block slipping?

5. A boy pulls a 50 kg crate across a level floor with a force of 200 N. The force acts at an angle of 30° up from the horizontal and the coefficient of kinetic friction is 0.30. Calculate
 - (a) the normal force exerted on the crate by the floor.
 - (b) the horizontal frictional force exerted on the crate by the floor.
 - (c) the acceleration of the crate.
6. A can of pop is given a shove. It slides across a table, eventually coming to a stop. The initial velocity is 2.0 m/s and the coefficient of kinetic friction between the two surfaces is 0.20. How far will it travel across the table?
7. A skier skiing downhill reaches the bottom of a hollow with a velocity of 20 m/s and then coasts up a hill with a 10° slope. The coefficient of kinetic friction is 0.10. How far up the slope will she travel before she stops?

Numerical Answers

1. (a) 6.9 N
(b) 10 s
2. 54 N
3. 0.25
4. 8.1 N
5. (a) 390 N
(b) 117 N
(c) 1.1 m/s²
6. 1.0 m
7. 75 m