

Extra Practice Problems for Chapter 3

1. The floor is exerting a normal force of 152 N straight up. What mass is resting on the floor?
2. A 78.0-kg man is standing on a scale in an elevator. The scale reads 851 Newtons. What is the acceleration of the elevator?
3. A 372-g object is being pushed by a 1.0-N force at a constant velocity of 3.1 m/s west. What is the coefficient of kinetic friction?
4. A force of 439 N north is applied to a 95-kg box that is at rest. Will it move? If it does move and that same force continues to be exerted, what will be its acceleration? The coefficients of friction are 0.45 and 0.29.
5. A 24.3-kg box is being pushed south across a floor with a force of 57 N south. If it starts from rest, how much time will it take for the velocity to reach 3.4 m/s south? The coefficients of friction are 0.39 and 0.22.
6. A 115-kg box is being pushed north across the floor with a constant force of 390 Newtons. If it starts from rest, how far will it travel before reaching a velocity of 6.6 m/s north? The coefficients of friction are 0.34 and 0.19.
7. A 461-g block is being pushed west. It starts at rest and travels 9.1 m in 3.0 s. What force is pushing on it? The coefficients of friction are 0.39 and 0.22.
8. You want to hang a 15.0-kg object from the ceiling with a piece of string. How much tension must the string be able to withstand?
9. A man ties a rope to a rock that has a mass of 991 kg. If the coefficient of kinetic friction is 0.77, what tension will be in the rope if the rock moves at a constant velocity?
10. If the man loops the rope around the rock in problem 9 so that there are two segments of rope pulling on the rock, what will be the tension in each segment of rope?