Name_____ Date_____

Homework

Physics – Free Body Diagrams

Instructions: **First draw a free body diagram labeling all forces**. Then solve for the problem.

1. A 15 kg box is resting on a frictionless table

a.) Determine the weight of the box and the normal force acting on it.
(assume g = 10 m/s^2)

2. A 16.5 kg box is sitting on the floor.

a.) What minimum force is needed to lift the box?

b.) If an upward force of 250 N is applied to the box, what will be its acceleration?
(answer: 5.35 m/s^2)

3. A crate which has a mass of 55.0 kg is being lifted straight up by a rope at a constant speed. What will be the tension in the rope?

4. A crate, which has a mass of 55.0 kg., is being pushed along a horizontal surface crate by a force of F = 85.0 Newtons so that the crate is moving to the left at a constant speed.

a. Complete the free body diagram showing all the forces acting on the crate.
b. What will be the magnitude of the normal force acting on this crate?
c. What will be the magnitude of the gravitational force acting on the crate?
d. How much frictional force will be acting on the crate as it is pushed along this horizontal surface at a *constant speed*?