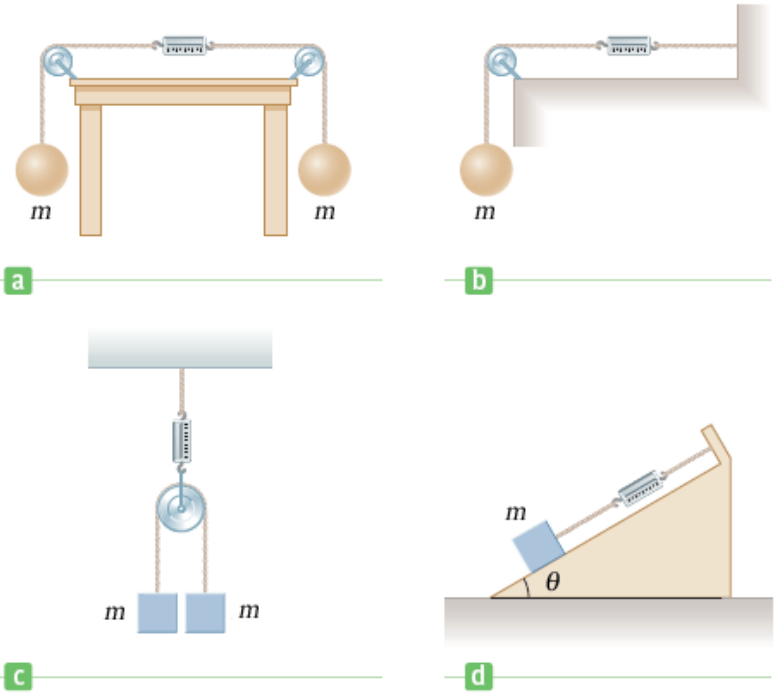
Description
Chapter 4 #'s 24, 36, 48, 54, 59

1. Question Details SerCP9 4.P.024. [1608087]

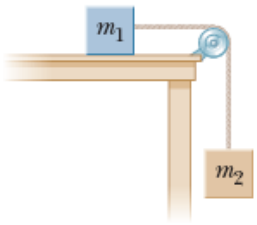
The systems shown below are in equilibrium (with m = 3.60 kg and θ = 31.0°). If the spring scales are calibrated in newtons, what do they read? Ignore the masses of the pulleys and strings and assume the pulleys and the incline are frictionless.



scale in (a) _____ N
scale in (b) _____ N
scale in (c) _____ N
scale in (d) _____ N

2. Question Details SerCP9 4.P.036.WI.soln. [1625407]

An object with mass m_1 = 4.70 kg, rests on a frictionless horizontal table and is connected to a cable that passes over a pulley and is then fastened to a hanging object with mass m_2 = 10.1 kg, as shown in the figure.



(a) Find the magnitude of the acceleration of each object.

a_1 = ☐ m/s^2

a_2 = ☐ m/s^2

(b) Find the tension in the cable.

☐ N

3. Question Details SerCP9 4.P.048. [1588395]

A student decides to move a box of books into her dormitory room by pulling on a rope attached to the box. She pulls with a force of 142 N at an angle of 29.0° above the horizontal. The box has a mass of 23.0 kg, and the coefficient of kinetic friction between box and floor is 0.300.

(a) Find the acceleration of the box.

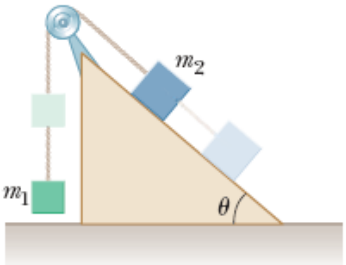
☐ m/s^2

(b) The student now starts moving the box up a 10.0° incline, keeping her 142 N force directed at 29.0° above the line of the incline. If the coefficient of friction is unchanged, what is the new acceleration of the box?

☐ m/s^2, up the incline

4. Question Details SerCP9 4.P.054. [1759234]

Objects of masses m_1 = 4.00 kg and m_2 = 9.00 kg are connected by a light string that passes over a frictionless pulley as in the figure below. The object m_1 is held at rest on the floor, and m_2 rests on a fixed incline of θ = 39.0°. The objects are released from rest, and m_2 slides 1.20 m down the slope of the incline in 5.00 s.



(a) Determine the acceleration of each object. (Enter the magnitude only.)

☐ m/s^2

(b) Determine the tension in the string. (Enter the magnitude only.)

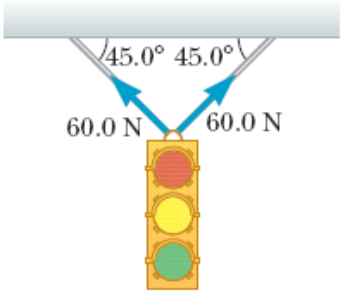
☐ N

(c) Determine the coefficient of kinetic friction between m_2 and the incline.

☐

5. Question Details SerCP9 4.P.059. [1594394]

Consider the figure below.



(a) What is the resultant force exerted by the two cables supporting the traffic light in the figure?

magnitude [ ] N

direction ---Select---

(b) What is the weight of the light?

[ ] N

Assignment Details

Name (AID): **Homework #4 -- Due Monday Sep. 24, 2012 (2831229)**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **No**
Author: **Segre, Phil (** psegre@physics.emory.edu **)**
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