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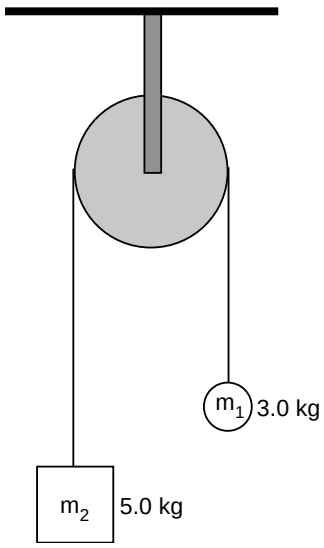
Name: _____

Physics 50
Spring 2008
Exam 2

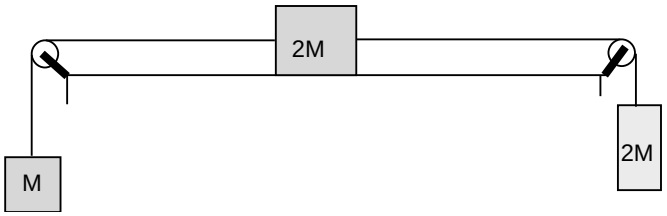
MAKE SURE TO SHOW ALL WORK IN COMPLETE DETAIL! NO CREDIT WILL BE GIVEN IF NO WORK IS SHOWN! EXPRESS ALL ANSWERS IN SI UNITS.

1. Consider the Atwood's Machine system shown below. Assume massless, frictionless pulley. (10 pts)



a) Calculate the acceleration of the blocks. Which direction does the 3.0 kg move?
b) Calculate the tension in the string.

2. For the system shown below, when the blocks are released from rest, they acquire an acceleration of 0.70 m/s^2. Calculate the coefficient of kinetic friction between the block and the table-top. (10 pts)



3. A 70 kg person goes on a Ferris Wheel ride in a vertical circle of radius 10.0 m and moving at a constant speed of 7.0 m/s. (15 pts)
    a) Calculate the period of rotation.
    b) Calculate the magnitude and direction of the normal force exerted on the person by the seat at the ***highest*** and ***lowest*** point on the ride.

4. A hockey puck of mass m = 200 g is attached to a string that passes through a frictionless hole in the center of a table, as shown below. The puck moves in a circle of radius r = 50.0 cm. Tied to the other end of the string, and hanging vertically beneath the table, is a mass M = 600 g. Assuming the tabletop is frictionless, calculate the speed the hockey puck must have if the mass M is to remain at rest.