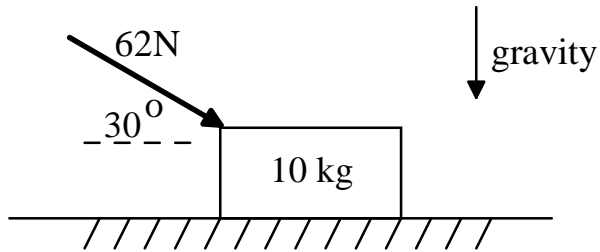


PHY 1350
EXAM #2

1.

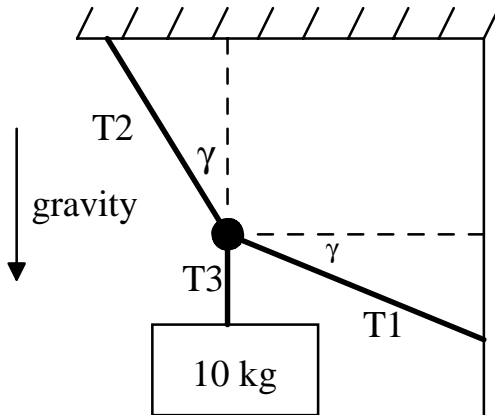


A force of 62N is applied to a 10 kg object at an angle of 30 degrees with respect to the horizontal, as shown. The coefficient of friction between block and floor is $1/3$.

(a.) Draw a free body diagram for the object.

(b.) Determine the acceleration of the object.

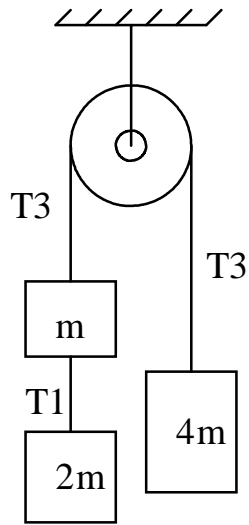
2.



$$\gamma = 30^\circ$$

Three cords support a 10 kg mass, as shown. Determine the tension in each cord assuming that the mass is not accelerating.

3.



Three masses are attached by a light, flexible cord wrapped over a frictionless pulley, as shown. The values of mass are known to be m , $2m$, and $4m$. The acceleration due to gravity has the value g .

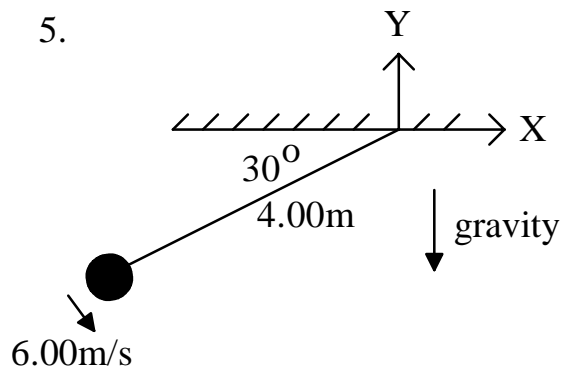
(a.) Draw a free body diagram for each mass.

(b.) Determine the acceleration of each mass.

(c.) Determine the tension T_1 in terms of m and g .

4. A 20.0 kg block rests upon a horizontal surface. The kinetic friction between the block and surface is 20.0N. The block is pushed along the surface and against a spring whose spring constant is 400.N/m. When the block has compressed the spring by 40.0 cm, the block is released from rest allowing the spring to slide the block along the surface in a straight line. How fast is the block moving when the spring is compressed only 30.0 cm?

5.



A bob of unknown mass is tied to the end of a 4.00m long light, flexible string. The other end of the string is tied to the ceiling. At the instant shown the bob has a speed of 6.00 m/s. What will the speed of the bob be when it reaches its lowest point?