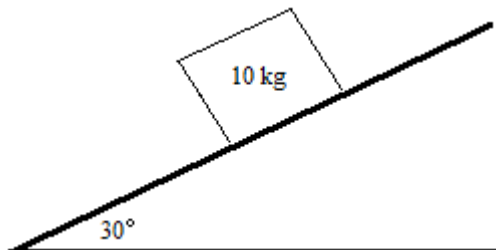


Name: \_\_\_\_\_ Block: \_\_\_\_\_

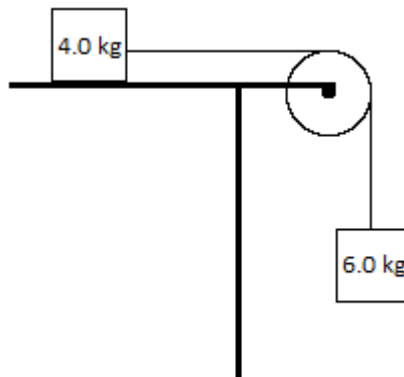
## Forces with Ramps & Pulleys

1. A 10. kg block sits on a frictionless ramp with an angle of inclination of  $30^\circ$ . What is the rate of acceleration of the block?



$$0.5 \frac{\text{m}}{\text{s}^2}$$

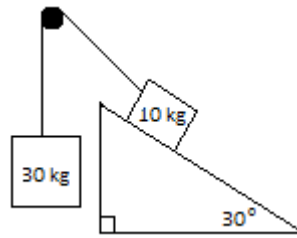
2. A block with a mass of 4.0 kg sitting on a frictionless horizontal table is connected to a hanging block of mass 6.0 kg by a string that passes over a pulley, as shown in the figure below.



Assuming that friction, the mass of the string, and the mass of the pulley are negligible, at what rate do the blocks accelerate?

$$5.88 \frac{\text{m}}{\text{s}^2}$$

3. A mass of 30. kg is suspended from a massless rope on one side of a massless, frictionless pulley. A mass of 10. kg is connected to the rope on the other side of the pulley and is sitting on a frictionless ramp with an angle of inclination of  $30^\circ$ . The system is shown in the following diagram:

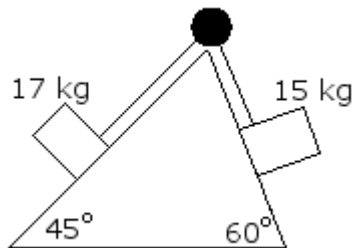


Determine the tension in the rope *and* the acceleration of the system.

$$6.125 \frac{\text{m}}{\text{s}^2}$$

$$110.25 \text{ N}$$

4. Two boxes with masses 17 kg and 15 kg are connected by a light string that passes over a frictionless pulley of negligible mass as shown in the figure below. The surfaces of the planes are frictionless.



When the blocks are released, which direction will the blocks move?

to the right

At what rate will the masses accelerate?

$$0.297 \frac{\text{m}}{\text{s}^2}$$