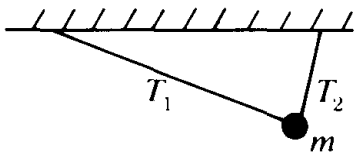
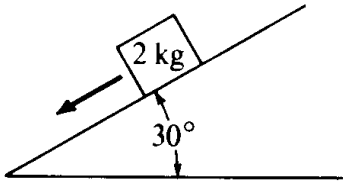
Group Members: _____

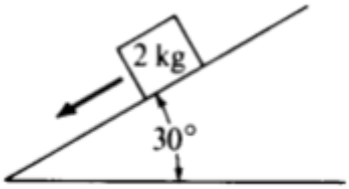


1. The mass *m* remains at rest. Draw a FBD the masss. Explain how your diagram shows that $T_2 > T_1$

■	*type your explanation here*



2. A 2-kg block slides down a 30° incline as shown above with an acceleration of magnitude 2 m/s².



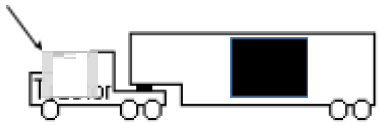
(b) Describe how the forces parallel to the plane add up to the net force.

type your explanation here

(c) Is there friction? How do you know?

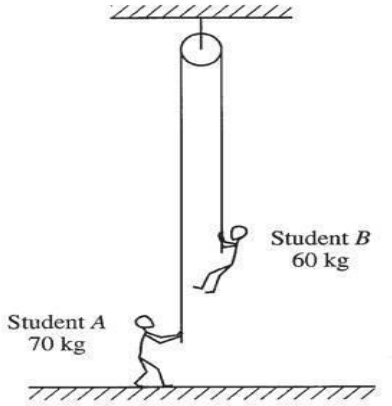
type your explanation here

3. Click on the canvas to draw separate force diagrams for the tractor and the trailer and name them Where are the 3rd Law pairs?



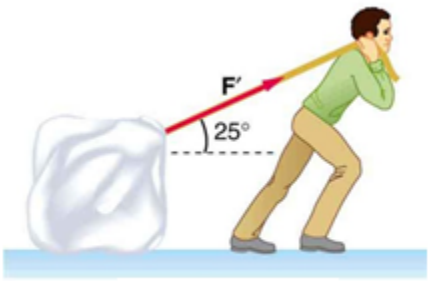
Draw two Free-body diagrams here	*type your explanation of the 3rd Law pairs here*
[redacted]	

4.



Two students are practicing rope tricks. They use a light rope and a frictionless pulley. Student *Albert* pulls on the rope and remains on the floor. The rope goes over the pulley and the other end is held by student *Bob*. What happens to the surface force of the floor on Student *Albert* when Student *Bob* climbs up the rope at a constant acceleration of 0.25 m/s^2?

type your explanation here
calculate the new surface force once Bob starts climbing. (Hints: First draw and label free-body diagrams for both students. Then, write and solve a force equation for Bob first. Finally, use what you find in Bob's equation in the equation for Albert).



Method 2

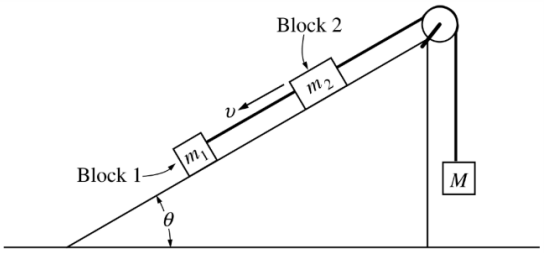
5. A man pulls a large block with a rope, maintaining a constant force **F′** at an angle of 25 degrees above the horizontal. There is considerable static and kinetic friction between the block and the ground.

Explain how the pull that the man exerts must change for him to move the block from rest across the yard with a constant velocity using Method 2. Be sure to carefully describe the magnitude and direction of the horizontal forces and components acting on the block.

type your explanation here

Explain how the man could move the block from rest across the yard with constant acceleration by constantly applying the minimum force necessary to start the block moving. Be sure to carefully describe the magnitude and direction of the horizontal forces and components acting on the block.

type your explanation here



6. Blocks 1 and 2 of masses m_1 and m_2, respectively, are connected by a light string, as shown above. These blocks are further connected to a block of mass M by another light string that passes over a pulley of negligible mass and friction. Blocks l and 2 move with a constant velocity v down the inclined plane, which makes an angle θ with the horizontal. Under what conditions will the blocks accelerate up the ramp? Down the ramp? Be sure to carefully describe the magnitude and direction of the forces and component forces acting on the blocks both perpendicular and parallel.

type your explanation here