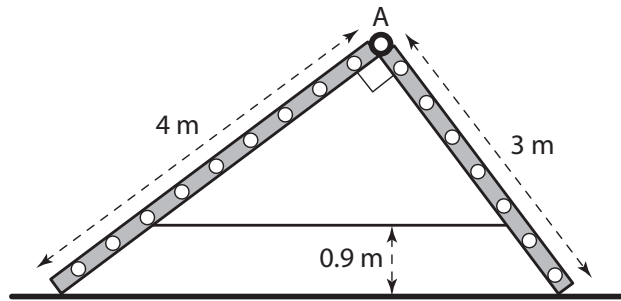


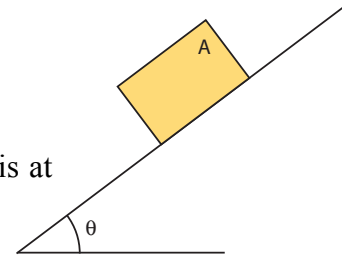
Static Equilibrium

Bodies in contact, using Newton's third law

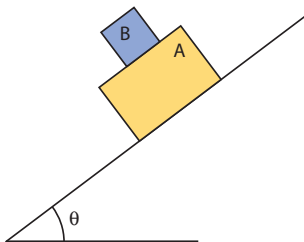
1. Two ladders, 4.00 m and 3.00 m long, are hinged at point A, forming a 90° angle, and tied together by a horizontal rope 0.90 m above the floor. The ladders weigh 480 N and 360 N respectively, and the center of gravity of each is at its center. Assume that the floor is freshly waxed and frictionless. **Hint:** The force exerted by one ladder on the other is not horizontal.



- a) Find the upward force at the bottom of each ladder.
 - b) Find the tension in the rope.
 - c) Find the magnitude of the force one ladder exerts on the other at point A
2. Block A ($W_A = 10\text{ N}$) in the figure below is at rest on the incline plane. If $\mu_s = 0.3$, find the maximum angle of inclination before it starts to slip.



3. A second block B is added on top the first block when the angle is at its maximum. Does the system start to slip?



4. Block A in the figure below is held in place on the 36.9° incline while plank B, with weight 5 N rests on top of A. Find the maximum weight for block A, that can be held in place, assuming that $\mu_s = 0.3$ for all surfaces.

