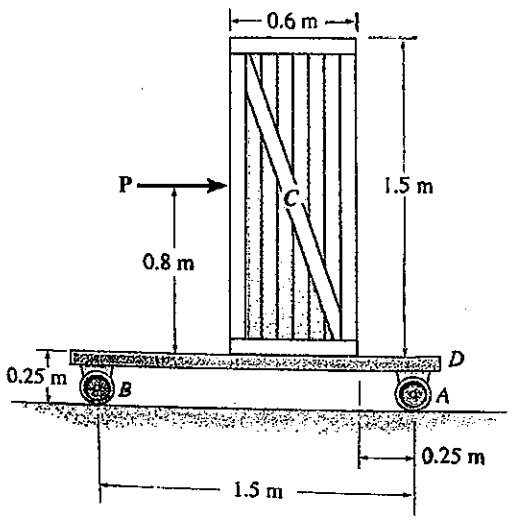
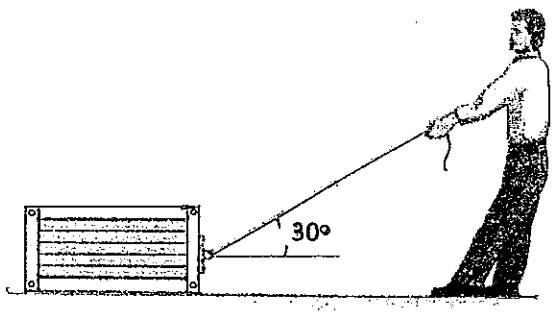
1. The uniform 60-kg crate *C* rests uniformly on a 10-kg dolly *D*. If the front casters of the dolly at *A* are locked to prevent rolling while the casters at *B* are free to roll, determine the maximum force **P** that may be applied without causing motion of the crate. The coefficient of static friction between the casters and the floor is $\mu_f = 0.35$ and between the dolly and the crate, $\mu_d = 0.5$ [25]




2. The coefficient of static friction between the 150-kg crate and the ground is $\mu_s = 0.3$, while the coefficient of static friction between the 80-kg man's shoes and the ground is not known. Determine the minimum coefficient of static friction between the man's shoes and the ground so that the man can move the crate. [25]




見背面

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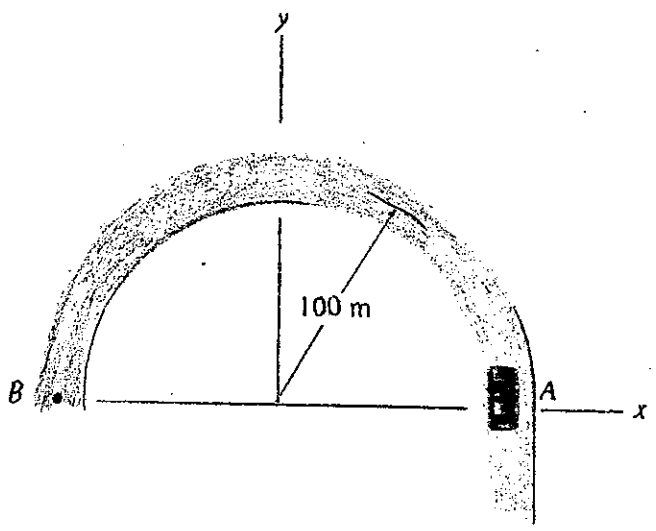
3. When the car reaches point *A* it has a speed of 4 m/s, which is increasing at a constant rate of 2 m/s$^2$. Determine the time required to reach point *B* and the magnitudes of its velocity and acceleration. [25]




4. The sports car, having a mass of 1700 kg, is traveling horizontally along a 20° banked track which is circular and has a radius of curvature of $\rho$ = 100 m. If the coefficient of static friction between the tires and the road is $\mu_s$ = 0.2, determine the minimum speed at which the car can travel around the track without sliding down the slope. [25]


試題隨卷繳回