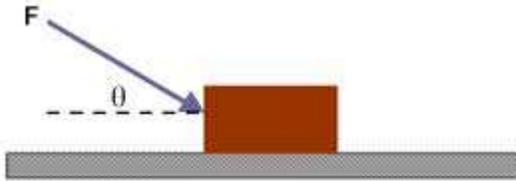
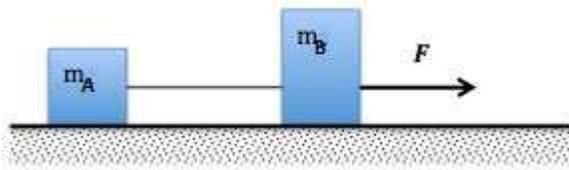


Problems in Dynamics

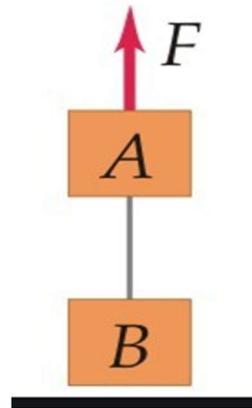
- 1) A 10Kg box is pulled along a horizontal surface by a force of 40N applied at a 30° angle above horizontal. We assume a coefficient of friction of 0.3 , calculate the acceleration



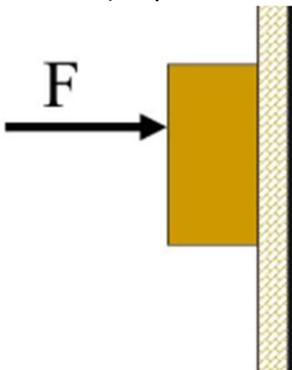
- 2) Two blocks made of different materials connected together by a thin cord. $m_A = m_B = 5\text{Kg}$ is the masses of the blocks and the coefficient of friction are $\mu_A = 0.2$ and $\mu_B = 0.3$ if the whole system is being pulled by a force of $F = 30\text{N}$ find



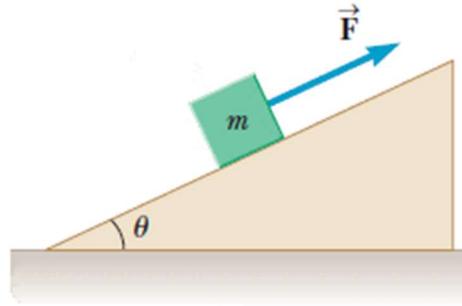
- a) The acceleration?
 b) Tension along the cord?
 3) One 3.2Kg paint bucket is hanging by a massless cord from another 3.2Kg paint bucket, also hanging by a massless cord as shown
 a) If the buckets are at rest what is the tension in each cord?
 b) If the two buckets are pulled upward with an acceleration of $1.25 \frac{\text{m}}{\text{s}^2}$ by the upper cord calculate the tension in each cord?



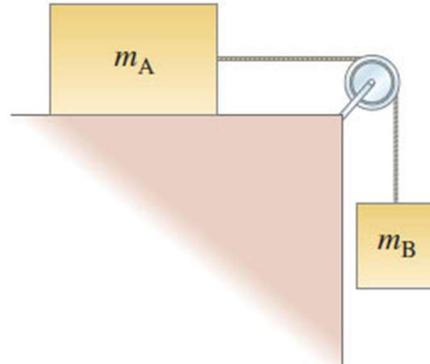
- 4) You can hold a box against a rough wall and prevent it from slipping down by pressing hard horizontally. If $\mu = 0.40$ and $mg = 20\text{N}$ what minimum force F will keep the box from falling?



- 5) A box of mass $m = 10\text{Kg}$ is placed on a smooth (frictionless) incline that makes an angle $\theta = 30^\circ$ with the horizontal if a force of $F = 50\text{N}$ is applied to slide the box up
- Determine the normal force on the box?
 - Determine the acceleration?



- 6) A block $m_A = 13\text{Kg}$ on a smooth horizontal surface, connected by a thin cord that passes over a pulley to a second block $m_B = 5\text{Kg}$ which hangs vertically.
- Draw a free-body diagram for each block?
 - Apply Newton's second law to find the acceleration of the system?
 - Find the tension in the cord?



- 7) Two masses are in contact and at rest on horizontal surface. A 650N force is exerted on the 65Kg crate. If the friction coefficient $\mu = 0.18$ find
- The acceleration of the system?
 - The force that each crate exerts on the other?

