# Physics I

More dynamics problems

Newton's second law $\sum F_x = ma_x$ $\qquad$ $\sum F_y = ma_y$

Problem 1.- A coin is thrown sliding upwards on an inclined plane 30° and it decelerates at a rate of 6 m/s². What will be its acceleration when it slides down? Approximate g = 10m/s²

A) 2 m/s² $\qquad$ B) 3 m/s² $\qquad$ C) 4 m/s² $\qquad$ D) 5 m/s² $\qquad$ E) 6 m/s²

Problem 2.- The graph shows the velocity of a block as a function of time. Determine the friction coefficient of the block with surface 2. Approximate g = 10m/s²
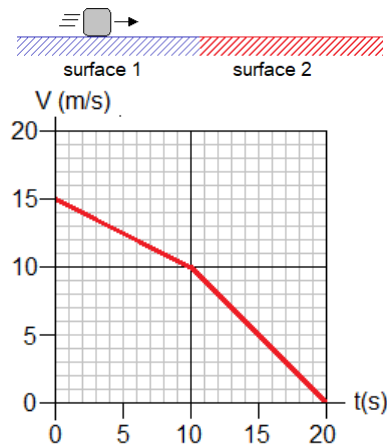
A) 0.01 $\qquad$ B) 0.02 $\qquad$ C) 0.03 $\qquad$ D) 0.05 $\qquad$ E) 0.10

Problem 3.- In the following cases there is no friction, and the force F is the same. Analyze in which case the tension of the string between the masses is maximum.

(1) $\qquad$ (2) $\qquad$ (3)
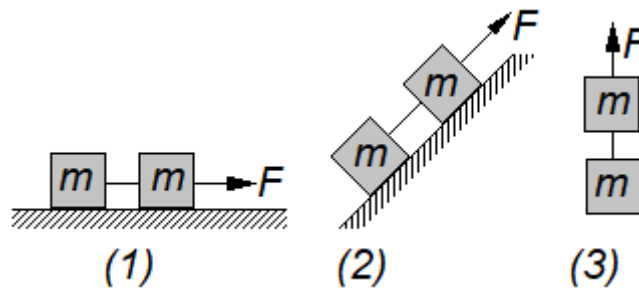
Problem 4.- In the following problem, m_1 = 2.0kg, m_2 = 5.0kg, μ_k = 0.25, and the angle of the incline is 45°. Calculate the tension in the string when mass m_1 is sliding to the right. Notice that there is only friction between m_1 and the horizontal surface.
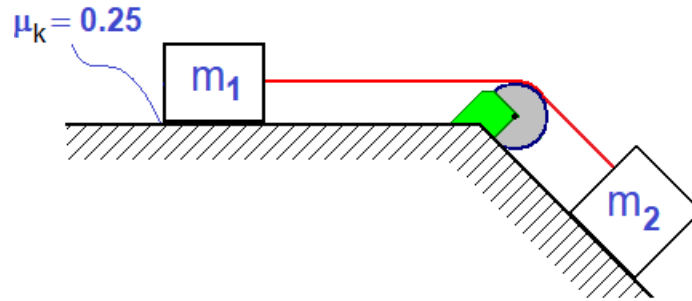
Problem 5.- When the system shown in the figure is let go from rest, the 120N weight goes down and the 200N solid cylinder rolls without slipping. Find the velocities of the weight and cylinder after the weight has dropped 3.88 meters.