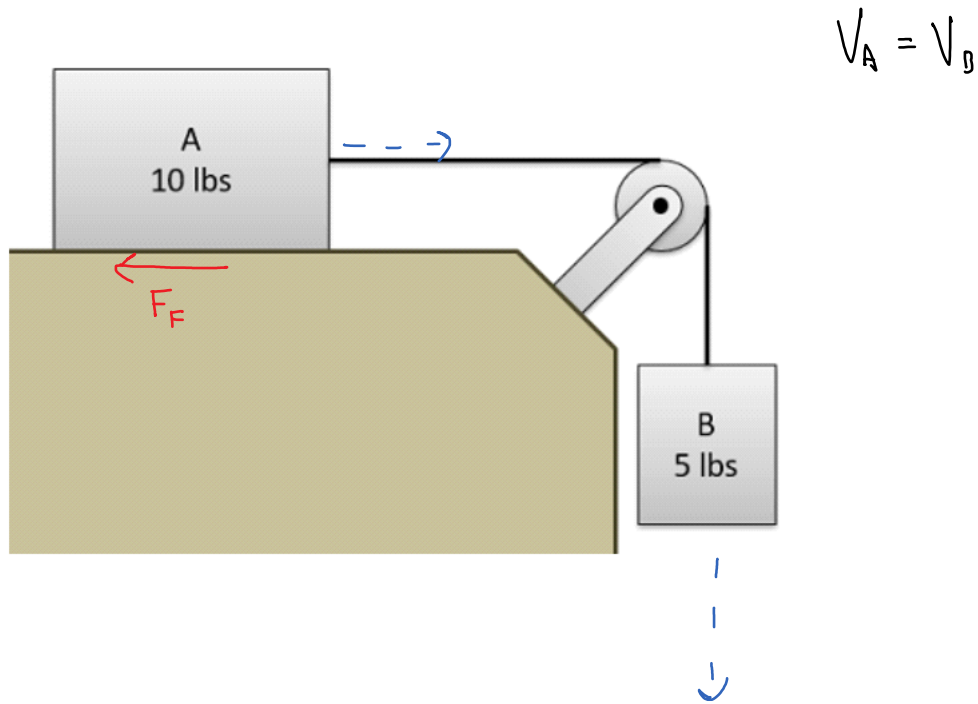# Problem 1

Two blocks are connected by a massless rope and a frictionless pulley as shown below. If the coefficient of friction between block A and the surface is .4, what is the speed of the blocks after block A has moved 6 ft?

$$V_A = V_B$$

$$W = \Delta KE + \Delta PE$$

$$mg$$
$$\downarrow$$

$$(-F_F)(6ft) = \underbrace{\frac{1}{2}\left(\frac{10}{32.2}\right)V_{A_f}^2 + \frac{1}{2}\left(\frac{5}{32.2}\right)V_{BF}^2 - 0}_{\Delta KE} + \underbrace{(5\,lbs)(-6ft)}_{\Delta PE}$$

$$F_F = (.4)(10\,lbs) = 4\,lbs$$

$$-24\,ft\cdot lbs + 30\,ft\cdot lbs = .233\,V_A^2$$

$$\boxed{V_A = 5.075\,ft/s}$$