Brake absorbs all energy as heat.

KEA + KEB + PEB = Friction Work

$$\frac{1}{2}I_a\omega^2 + \frac{1}{2}mv^2 + Wh = F\boldsymbol{\theta}$$

(0.5)(6.5)^2 + 0.5(40)(1.5)^2 + 40(9.81)(0.628) = F(1.256)

F = 814 N

F=μN   N = F/μ = 814/.1 = 8140 N

P has a 2:1 advantage as a lever, P = 4070 N or 4.07 KN