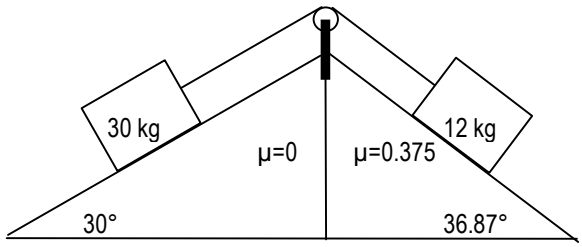
W3.15

F = ma Systems - Key

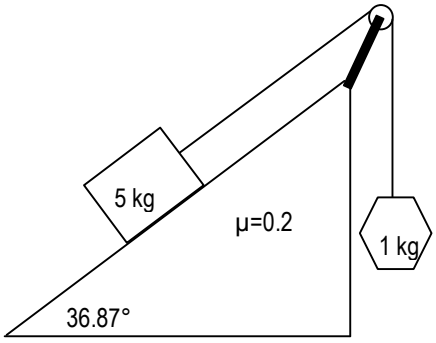
Find the acceleration of the system and tensions in all ropes. All systems accelerate from rest.

[1]



a = 1 m/s^2 30-kg down incline, 12-kg up incline
T = 120 N

[2]

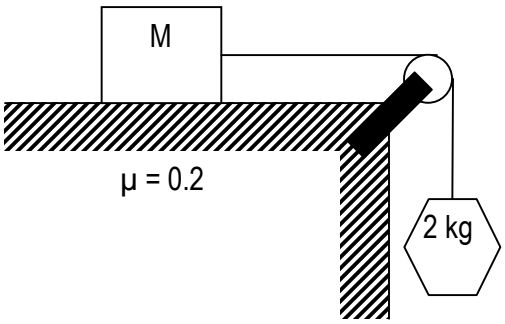


a. Find a. 2 m/s^2 down the incline/up
b. Find T. 12 N
c. How far does the 3 kg block slide in 2 seconds? 4 m
d. How high should μ be to let the 3 kg block slide down at a constant v? 0.5

[3] A car, initially at traveling at 30 m/s, slides to a stop. What μ is required for the car to stop in 75 meters?

μ = 0.6

[4]



The 2-kg mass accelerates from rest. It falls 8 meters in the first 4 seconds. What is the mass of block M?
M = 6 kg