

# PHYS UN1601 Recitation Worksheet 7

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## Problem 1

A loaded spring gun, initially at rest on a horizontal frictionless surface, fires a marble at angle  $\theta$ . The mass of the gun is  $M$ , the mass of the marble is  $m$ , and the muzzle velocity of the marble is  $v_0$ . What is the final motion of the gun?

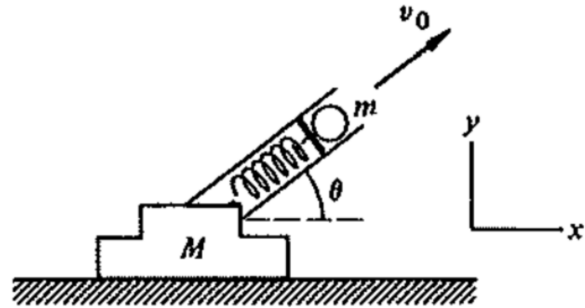


Figure 1

## Problem 2

A circus acrobat of mass  $M$  leaps straight up with initial velocity  $v_0$  from a trampoline. As he rises up, he takes a trained monkey of mass  $m$  off a perch at a height  $h$  above the trampoline. What is the maximum height attained by the pair?