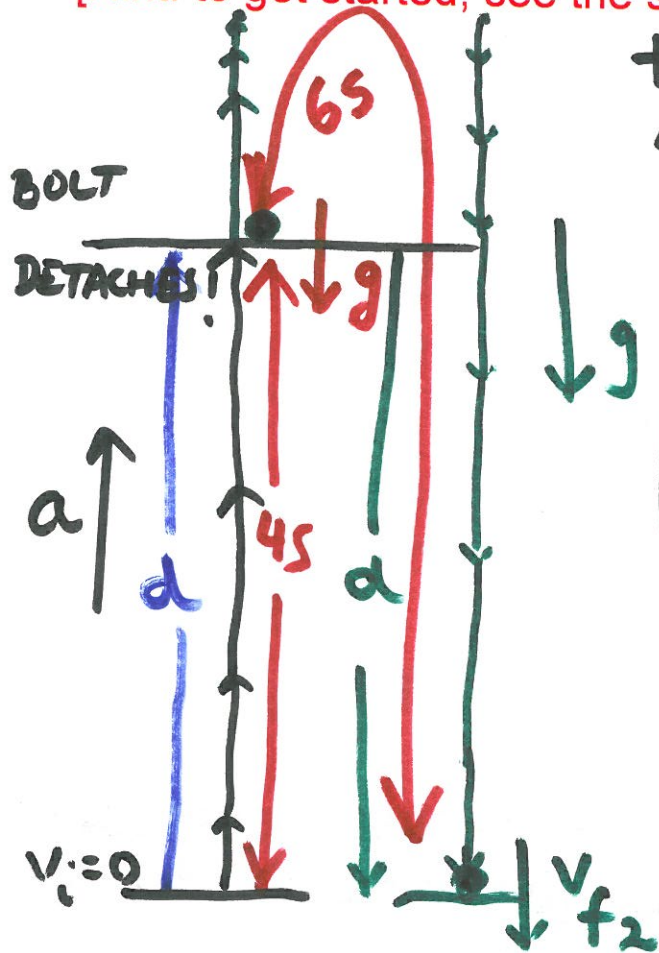


Discuss HW challenge problem Ch2 #77

A rocket is launched straight up with constant acceleration. Four seconds after liftoff, a bolt falls off the side of the rocket. The bolt hits the ground 6.0 s later. What was the rocket's acceleration?

[Hint: to get started, see the solution to Quiz1 (Green) posted on the Course schedule]

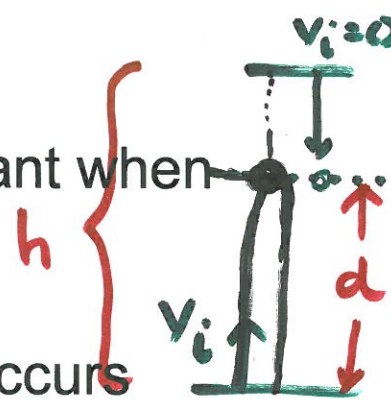


- HINTS**
- 2 separate legs: 'a' & 'g'
 - v_f FOR 1st leg = v_{i2} for 2nd leg
 - DISPLACEMENT FOR BOLT WHEN ATTACHED '+d'
 - DISPLACEMENT FOR DETACHED BOLT: '-d'
 - MATH HINT:
- a , $v_{f1} = v_{i2}$, v_{f2}
- DESIRED, USEFUL BUT NOT DESIRED, ~~USELESS~~ USEFUL

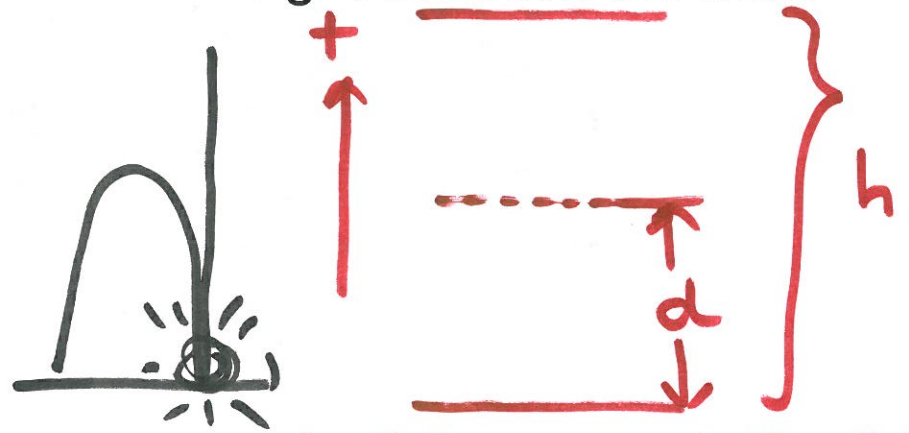
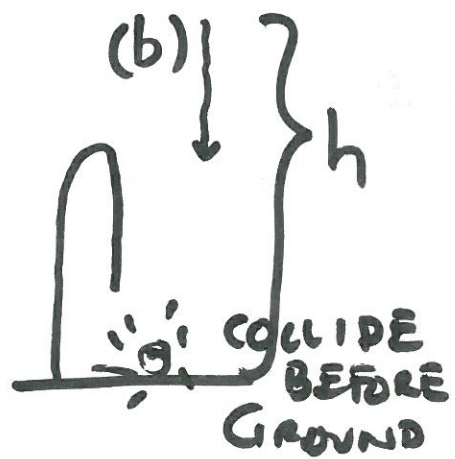
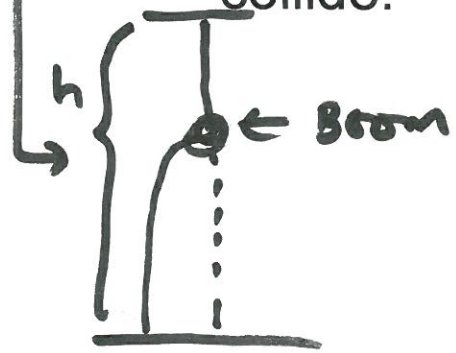
Another challenge problem: Ch2 #84

A rubber ball is shot straight up from the ground with speed v_0 . Simultaneously, a second rubber ball at height h directly above the first ball is dropped from rest.

- For what value of h does the collision occur at the instant when the first ball is at its highest point? **VISUALIZE!**
- What is the maximum value of h for which a collision occurs before the first ball falls back to the ground? **Important! VISUALIZE!**



- For any given value of h , determine the height at which the balls collide.



LINK BETWEEN MOTION OF 2 BALLS:

- $\text{DISPLMT OF DROPPED BALL} = -(\text{DISPLMT OF THROWN BALL})$
- **SAME Δt**