

I-83

A decorative light fixture in an elevator consists of a 2.0 kg light suspended by a cable from the ceiling of the elevator. From this light, a separate cable suspends a second 0.80 kg light. The elevator is moving downward at 4.0 m/s when someone presses the emergency stop button. During the stop, the upper cable snaps. The elevator engineer says that the cable could withstand a force of 40 N without breaking.

Motion Diagram

Free-Body Diagrams



Event 1:

$t_1 =$

$r_1 =$

$v_1 =$

$a_{12} =$

Event 2:

$t_2 =$

$r_2 =$

$v_2 =$

the top light



the bottom light



Mathematical Analysis

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