

I-90

Tired of walking down the stairs, an 80 kg engineering student designs an ingenious device for reaching the ground from his third floor dorm room. A block, at rest on the ground, is attached to a rope that passes over a pulley. The student holds the other end of the rope. When the student steps out of the window, she falls the 8 m to the ground in a time of 1.8 s.

Motion Diagram

Free-Body Diagrams



Object:

Event 1:

$t_1 =$

$r_1 =$

$v_1 =$

$a_{12} =$

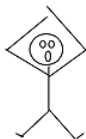
Event 2:

$t_2 =$

$r_2 =$

$v_2 =$

student



block



Mathematical Analysis

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