

Physics Challenges for Teachers and Students

► The Start Wars

Projectile 1 is launched vertically upward with initial velocity v . Projectile 2 is launched vertically upward t seconds after the launch of projectile 1. Projectile 2 passes projectile 1 as the latter reaches the top point of its trajectory. Find the initial velocity V_{i2} of projectile 2. The acceleration due to gravity is g .

DOI: 10.1119/1.1616489

► Vanishing Friction

An inclined plane of mass M makes an angle θ with the horizontal. The plane is placed on a horizontal frictionless surface. A small block of mass m is placed on the inclined plane. What horizontal force F must be applied to the plane so that the force of friction between the block and the plane is zero?

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► Tour de Force

A particle is moving at a constant velocity v . A constant force F is then applied to the particle. After t seconds elapse, the speed of the particle is halved. After another t seconds elapse, the speed of the particle is halved again. What is the speed of the particle v_f after t more seconds elapse?

DOI: 10.1119/1.1616491

Note to contributors:

In order to facilitate the process more efficiently, please observe these submission guidelines:

- email solutions as Word files (note new email address);
- name the file “October03BSimpson” if — for instance — your name is Bart Simpson, and you are sending the solutions to October 2003 Challenges;
- state your name, hometown, and professional affiliation in the file, not only in the email message.

• Solutions from past *Challenges* may be found on our website, <http://www.aapt.org/tpt>.

Many thanks!

Please send correspondence to:

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