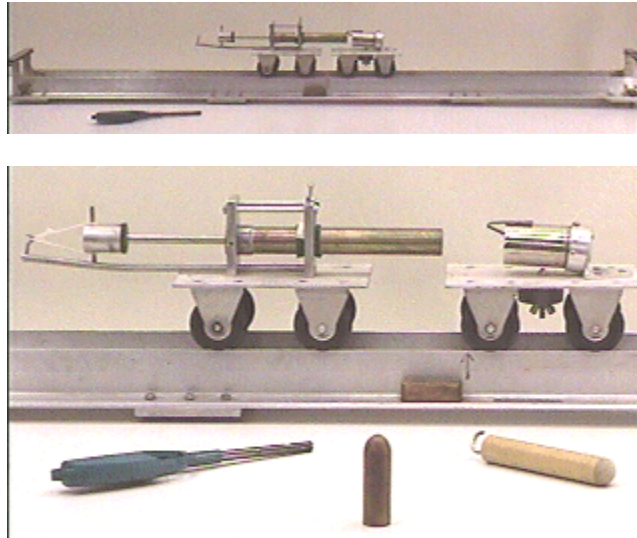


## Question #207

The apparatus shown in the upper photograph below, called "ballistic cannon carts," consists of a cannon on a cart, at the left in the photograph, which shoots a projectile into a receptacle cart at the right in the photograph. A string ties the gun mechanism in its ready position, the projectile is inserted into the gun, and the two carts are placed adjacent to each other in the exact center of the track, as seen in the upper photograph. The mass of the receptacle cart plus the mass of the projectile is the same as the mass of the cannon cart without the projectile. The lower photograph is a close-up of the apparatus on the track; the arrow on the track indicates its center.



The string is then burned, as seen in a video by clicking your mouse on the upper photograph, releasing the projection lever and shooting the projectile into the receptacle cart. The question this week is which cart, the cannon cart or the receptacle cart, will get to its respective end of the track sooner, or will the race end in a tie? NOTE: The ends of the carts are very close to the forward wheels of the respective carts, not at the end of the long handle holding the tensioned string.

After the projectile is shot into the receptacle cart:

- (a) the cannon cart will reach the left end of the track first.
- (b) the receptacle cart will reach the right end of the track first.
- (c) the carts will reach their respective ends at the same time.

Click here for [Answer #207](#) after February 7, 2005.

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For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).