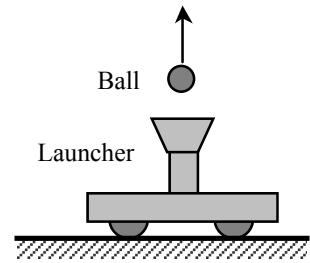


**Pretest: Accelerating reference frames:
Inertial "forces" and local acceleration due to gravity**

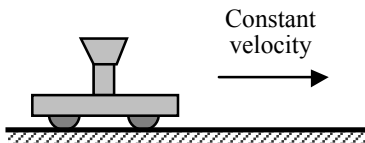
Name _____

A cart is fitted with a mechanism that allows a small ball to be launched from the top of the cart. (See diagram.) If the cart remains at rest while the ball is launched, the ball drops back down into the launcher.

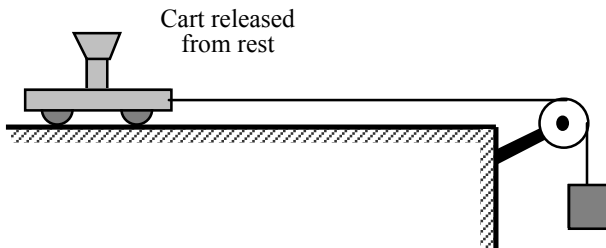


Described below are several experiments in which the cart is set into motion before launching the ball. For each case, will the launched ball drop *back into* the launcher, *to the left of it*, or *to the right of it*? Explain your reasoning in each case. (*Note:* Ignore all frictional effects.)

- A. The cart moves with constant velocity on a level table (and continues to do so after launching the ball).



- B. Before the ball is launched, the cart is released from rest as part of a modified Atwood's machine.



- C. Before the ball is launched, the cart is released from rest on a very long, frictionless incline. (Ignore any effects due to the rotational motion of the wheels of the cart.)

