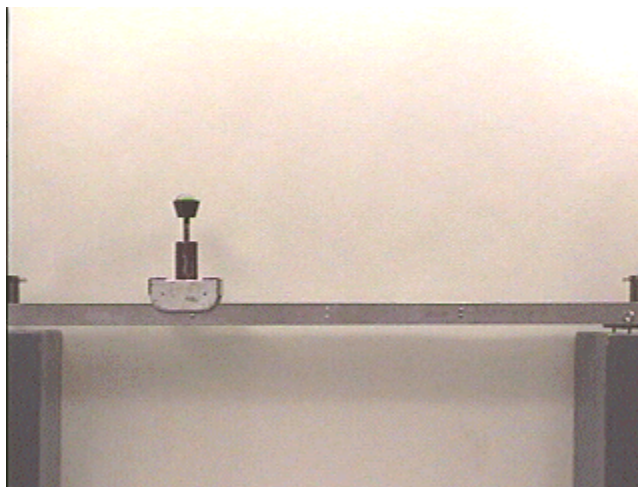


Answer #6

The answer is (c); the ball will fall IN the funnel. This experiment demonstrates the idea of separation of components of motion. As the cart with the ball in the funnel moves along the track, both the ball and the cart are moving with the same horizontal velocity. When the cart hits the trip, ejecting the ball, the motion created when the ball is ejected is vertical - perpendicular to the original velocity of both the ball and the cart. The separation of components idea suggests that the horizontal velocity of the ball is NOT affected by its vertical motion, so the ball remains directly above the funnel at all times and falls back into the funnel. This can be seen on a video obtained by clicking your mouse on the photograph of the apparatus below.



The separation of components is why a ball that you throw directly upward falls right back to the point from which it was thrown - even though the surface of the earth is moving at a speed of about 1000 miles per hour. (Well, almost! We are overlooking the less important fact that a point on the surface of the earth is moving in circles.)

The next Question of the Week will use the same funnel cart in a more complex experiment.

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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](#).