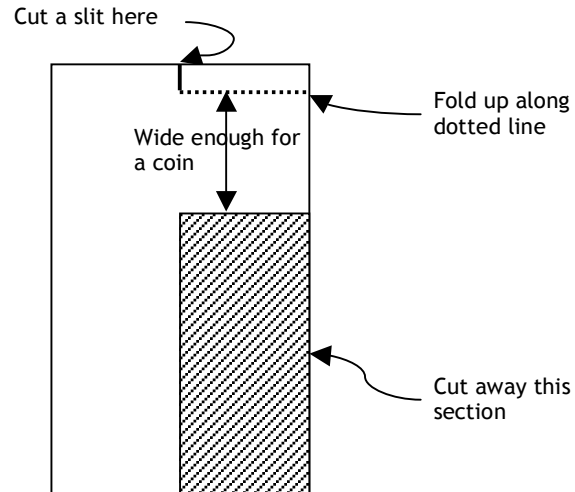


Two easy “Launch and Drop” seat experiments

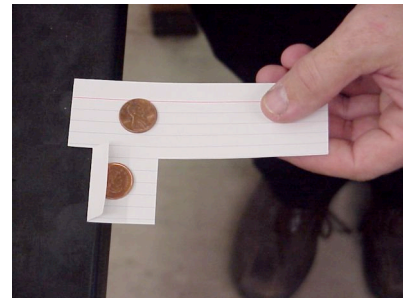
David Abbott, Buffalo State College

The demo is classic: drop one ball and simultaneously fire another horizontally. The experiment is essential evidence for the establishing the independence of horizontal and vertical components of projectile motion. This article describes two different ways to do this classic demo that are so cheap you can give one to every student in the class. (Students supply coins from their pockets as the projectiles).

The first method uses an index card launcher shown in the figure at the right. Cut a $\frac{1}{4}$ " long slit in the middle of the short side of a 3" x 5" card and fold from the slit to edge of the card to form a tab. Then cut off most of the card on the half of the card with folded tab, leaving a region large enough to support the coin to be launched. To perform the demo, place the tab on the edge of a table and place the coins side by side on the card. Give the card a swift tug directly away from the table to send the coins on their way. Listen to the coins hit the ground. Does one hit the ground first, or do they take about the same amount of time?



You can also use a popsicle stick as the launcher- no assembly required. Angle the popsicle stick so that one end hangs over the edge at an angle to the table. Place your index finger near the center of the stick to act as a pivot. Balance one coin on the part of the stick that overhangs, leaving a little space at the end of the stick.



The other coin is placed on the table in contact with the stick. Pushing the end of the stick toward the table launches the coin on the table and “pulls the rug” from under the other coin. This method requires a little more coordination than the index card and works best near a corner of a table. The small initial height difference between the coins does not affect the outcome.

Photos by Jimmy Grant