Newton's Penny Drop

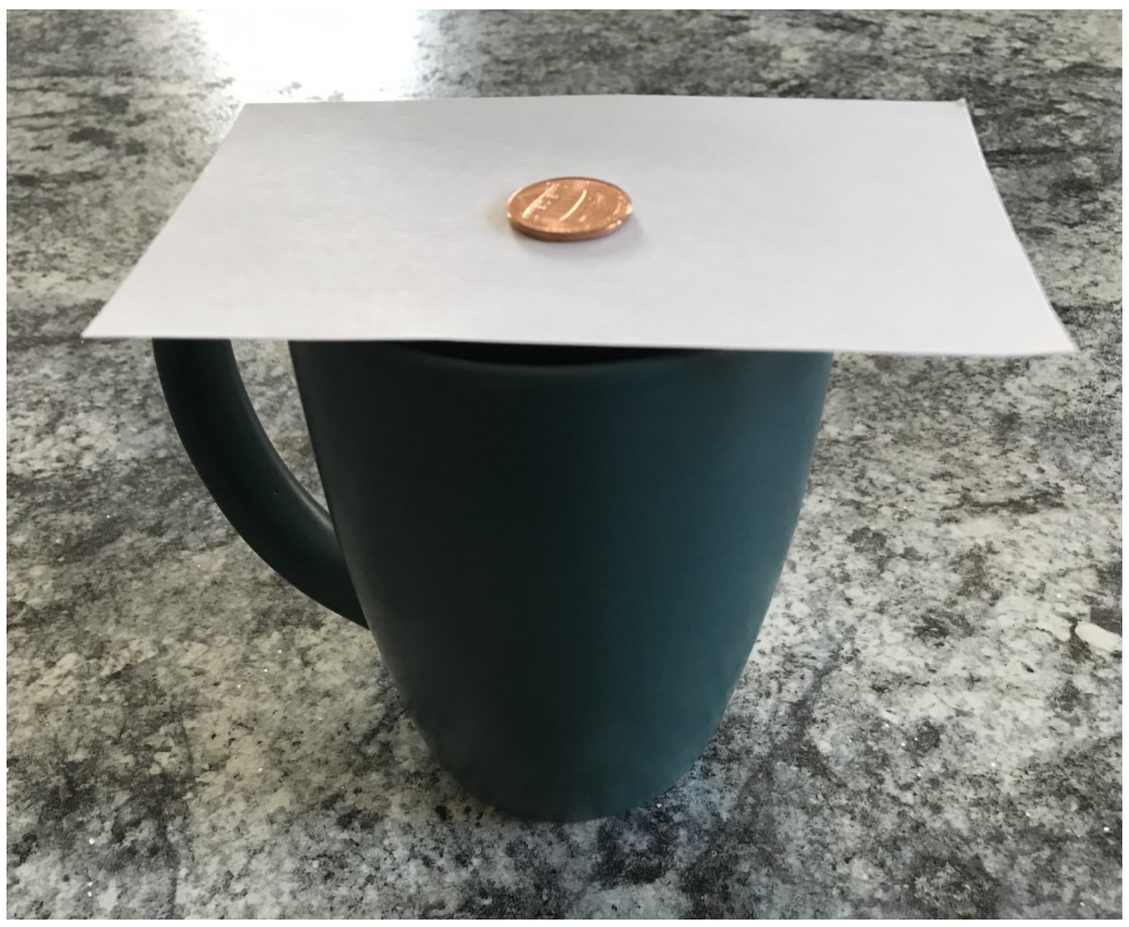
Materials

- Cup or mug
- Coins
- Index Card

1 Place an index card on top of a cup or mug.

2 Place a penny on top of the index card in the middle of the cup or mug.

3 Push or pull the index card as fast as you can.



4 The penny should fall in the cup.

5 Repeat the experiment with 2 pennies and continue to increase the weight. When you reach 5 cents, use a nickel instead. Do the same with a dime when you reach 10 cents and 25 cents, but with a quarter. Can you get up to ninety-nine cents? Even higher? If an index card cannot support the weight switch to a piece of cardboard.

The Science Behind It

Newton's first law of motion states the law of **inertia**. An object in motion will stay in motion, and an object at rest will stay at rest, until acted upon by an unbalanced force. In this case, the penny is at rest and wants to stay at rest. If the index card is moved fast enough, only gravity can act on the penny, forcing it to fall into the cup. If the index card is slowly moved, the movement from the index card enacts on the pennies bringing it with the card.