Eggs at Rest Stay at Rest
Contributed by: St. Louis Science Center

Objective
Demonstrate the properties of inertia--an object at rest tends to stay at rest until a force is exerted on it.

What You Need
• 1 broom
• 1 glass
• water
• 1 egg
• 1 pie pan (disposable works well)
• 1 empty toilet paper roll

To Do and Observe
Fill glass halfway with water. Set glass near edge of counter or table. Place the pie pan on top of the glass (bottom of pan should be resting on rim of glass).
Align the apparatus on the table so the edge of the pie pan is even or slightly over the edge of the table (make sure you have enough room behind the glass for the pan to fly).
Stand the toilet paper roll (on end) in the middle of the pie pan, making sure that it is over the center of the glass.
Place the egg on the toilet paper roll.
Stand with the broom right next to the table edge, with the bristles on the floor and the handle in front of the pie pan.
Place one foot on the bristles and bend the broom back slightly. (Make sure that the broom is close enough to the edge that when you let go, it hits the edge of the table as it hits the pie pan. You do not want it to hit the glass). Let the broom go.

What's Going On
As the broom hits the pie pan, the pie pan and the toilet paper roll are knocked away (the edge of the pan hits the roll after you hit the pan with the broom). The egg drops into the glass of water. The egg falls because it started out at rest and remains at rest as the pie pan and toilet paper roll move out from under it. This effect is called inertia--resistance to any change in motion or rest. Objects in motion tend to stay in motion and objects at rest tend to stay at rest unless acted upon by an external force.

Parent/Teacher Tips
As a less messy alternative, you can do this experiment with an empty glass, a playing card or small piece of cardboard and some coins. Place the cardboard on the glass, the coins on the cardboard and use your hand to tap the cardboard off the glass.