Off Target

Purpose
To determine the path of an object dropped from a moving body.

Materials
1 cup (250 ml) rice, uncooked
Sock
Pencil

Procedure
- Pour the rice into the sock.
- Tie a knot in the sock.
- Lay the pencil on the ground to mark the target position.
- Stand about 10 yards (10 m) from the target.
- Hold the sock in your hand to the side of your body about waist high.
- Run forward toward the target so that as you pass, the target will be to your side.
- Drop the sock at the moment the sock is above the target.
- Stop running as soon as the sock is released.
- Observe where the sock lands.

Results
The sock lands on the ground past the target.

Why?
Gravity starts pulling the sock down at the moment it is released, but the sock has the same forward horizontal speed as your running speed. It continues to move forward, slowing due to air resistance, and at the same time is pulled downward by gravity until it strikes the ground at a point past the target. All objects with a horizontal speed accompanied by a downward increase in speed due to gravity move forward in a curved path.