Air Car

Purpose
To demonstrate how friction effects motion.

Materials
- Scissors
- Notebook paper
- Ruler
- 9-inch (23-cm) balloon
- Cardboard
- Pencil
- Empty thread spool
- Glue

Procedure
- Cut a 4-inch (10-cm) square from the cardboard.
- Punch a hole equal in size to the hole in the thread spool through the center of the cardboard square.
- Glue the empty thread spool over the hole in the cardboard. Be sure the hole in the spool lines up with the hole in the cardboard.
- Place a bead of glue around the base of the spool.
- Cut and glue a circle of paper over the top end of the thread spool. Allow the glue to dry for several hours.
- Use a pencil to punch a hole in the paper circle to line up with the hole in the spool.
- Inflate the balloon and twist the end.
- Stretch the mouth of the balloon over the top of the spool.
- Untwist the balloon and give the cardboard a little push. Observe its motion.

Results
As the balloon deflates, the cardboard skims across the table.

Why?
The air flowing from the balloon through the holes forms a thin layer of air between the cardboard and table. This air layer reduces friction (a force that tries to stop movement), allowing the cardboard to move quickly across the table.