NAME _____

THE FORCE OF FRICTION

Friction helps a race car's tires better grip the track, allowing it to surge ahead at high speeds. But friction can work against objects too, slowing them down.

Friction is the resistance that happens between surfaces that are moving against each other. You can't often see friction, but it's all around us. Use this experiment to create friction, measure it, and analyze its impacts.

GATHER YOUR MATERIALS

Cardboard, toy car, completed car from Unit 1: Aerodynamics, ruler, tape, books, three different surfaces such as sandpaper, tinfoil, waxed paper, and carpet

PROCEDURE

1. Build a simple incline to roll your car down. Put one end of your cardboard on a stack of books. In front of the ramp, clear a racetrack for the car to travel. Curl the bottom of the ramp, so the car's impact with the floor is as gentle as possible.
2. For your first test run, place your car at the top of the ramp and release the car. When it stops rolling, measure how far it traveled across the floor from the bottom of the ramp. Record your data in the chart on the right.
3. Before your next test run, list the surfaces you will test on the blanks in the chart. Then place the first surface you will test at the bottom of your ramp. Release your car from the top of your ramp. Measure how far the car travels when it rolls over your first surface. Follow these same steps to test your two other surfaces. Record your data.

DATA

Surface	Distance
Floor	
Surface 1 _____	
Surface 2 _____	
Surface 3 _____	

CONCLUSIONS

Answer these questions on a separate sheet of paper.

1. What causes friction? Which surfaces caused the most friction and which surfaces caused the least friction?
2. How did you witness friction in this experiment? What piece of data was evidence of friction?
3. In your own words, summarize how friction affects a moving object's kinetic energy.