



# Science Experiment: Need for Speed

## Project: Models, Reading

### Supplies:

- *Assortment of small toy/model cars*
- *Assortment of books*
- *Assortment of various pieces of cardboard (different sizes and shapes)*
- *Rulers or tape measures*
- *Modeling clay*

**Time: 30 minutes**

### What to Do:

1. Divide the participants into groups of various age and ability levels and explain the various materials they will be able to use for the experiment.
2. Give youth approximately 5 minutes to build a ramp to use for their cars. Ramps can be made by stacking a few books and other objects on top of each other that can elevate and support the ramp. (*Very little instruction is given by the instructor during this time. The goal is for participants to work together and be creative using their own skills and background knowledge.*)
3. Give youth approximately 20-25 minutes to experiment with rolling the car down the ramp. They can measure the distances the car traveled and experiment with making the ramps various heights. The height of the ramp and distance the car traveled can be recorded, so youth participating can discuss the reasons why some cars traveled farther than others.
4. ***Variation on the experiment:*** Youth can make a figure out of the modeling clay that will sit in the seat of the model car. A book or other heavy object can be placed at the bottom of the ramp to be used as a collision. They can set up the experiment any way their group decides. Encourage a lot of discussion during the whole process, allowing the youth to make connections and draw conclusions on their own.
5. 4-H projects overlap each other in the skills they teach children. An optional activity to supplement this experiment would be to read children's books to reinforce concepts and inspire children to learn more about the concepts introduced. *R is for Race: A Stock Car Alphabet* by Brad Herzog is a great resource to use for youth to learn more about the concepts of force, motion, and race cars.

### Reflect:

1. How did the height of the ramp change the distance the car traveled?
2. What happened when the car had a collision at the bottom of the ramp?
3. What would you have changed about the experiment if you could do it again?

### Apply:

In this experiment, youth learned about speed, force, and motion. We can apply the concepts from this experiment to our everyday lives. *What happens when objects stop moving?* The speed reduces to zero and this can be done gradually or all of the sudden. To determine objects' speed, the distance an object travels through space in a certain amount of time is measured. *What did you learn about collisions from completing the experiment? What did you learn in the experiment that will help you as you drive?*