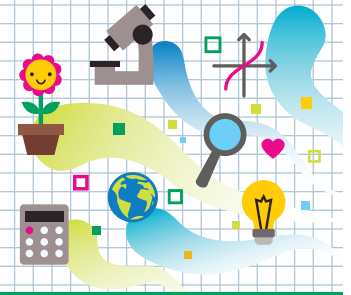




HEADS IN, HEARTS IN

Let's Race: Force and Friction

Instructions for Set-Up

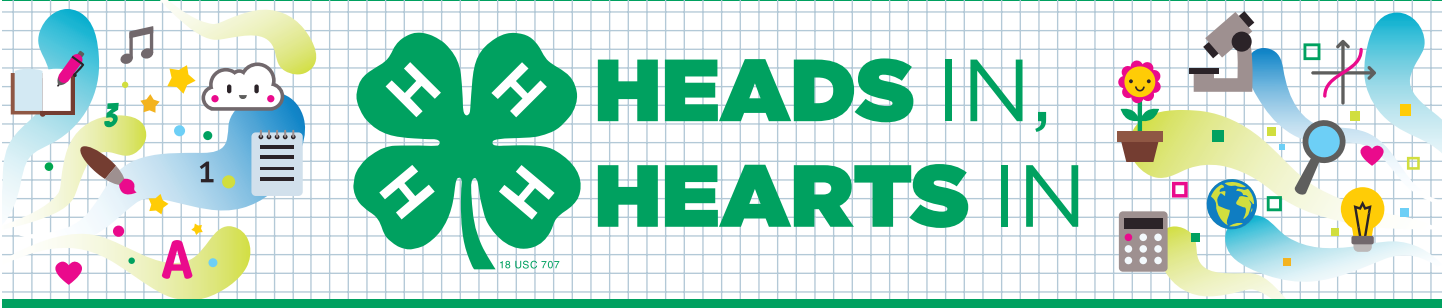


Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- 5-inch binder
- Foam board or cardboard (cut approximately 18 inches by 25 inches)
- 3 different types of materials to be used to create roads (examples: aluminum foil, pipe cleaners, sand, plastic wrap or other)
- Stapler with staples or tape
- 3 toy cars for racing (all of the same size and weight)
- Display table.

Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Staple or tape each of the three materials to the foam board or cardboard to create three different types of roads. Lean the foam board or cardboard against the 5-inch binder to create a ramp.
- ▶ Set up the display table and arrange needed supplies.



Let's Race: Force and Friction

Guide for Families

Learning Objectives

What you need to know:

Force is another word for pushing or pulling. Force is what we use to make things move. Sir Isaac Newton's first law states that an object in motion tends to stay in motion. Why do objects that we see moving every day stop moving? That's because of friction. **Friction** is a force that resists motion.

What you will do and learn:

You will apply the concept of force and friction. You will hypothesize, observe and evaluate the motion of the cars on each of the roads. You will have an opportunity to develop your observation, prediction and evaluation skills.

Instructions

1. Look at the race track. Notice that there are three different types of roads.
2. Observe: What makes each road unique? How are they different? How are they similar?
3. Hypothesize or predict: What do you think will happen when you race the cars down each of the roads? Which car will go faster? Which car will go slowest?
4. Test your hypothesis!
5. Place the cars at the top of the ramp. Let them go at the same time.
6. Evaluate the results and analyze: Which car was fastest? Slowest? Why?

In this experiment, you used **force** to make the cars move down the roads. Each road creates a different amount of **friction**. The car that is in motion is slowed by the friction (roughness) of the surface of the road. A rougher surface results in more friction. Which surface has the most friction? Which has the least?