



Fifth Grade Science

5th Grade Science: Activity 3, Summer

How can you go down the slide faster?



Directions: This handout can also accompany a KCSatHome Teacher Video. If you have access to the video, watch the video before doing this activity. You can find the videos at <https://www.knoxschools.org/Page/21816>

The Great Slide Challenge: You will test different materials to see which material causes the least amount of friction in order for you to go down a slide faster.



Read this short passage about friction.

When you rub your hands together on a cold day to warm them up, you are using friction. Friction slows things down and creates heat. All types of matter can cause friction, even air! Air resistance is a form of friction that slows down cars, trains, and airplanes. Scientists design their shape to reduce friction from the air. Some surfaces cause more friction than others, like rough surfaces. The treads on the bottom of your shoes keep you from slipping. In this case, friction is beneficial. Sometimes you want less friction. Air resistance is a form of friction that slows down all moving objects. Cars, trains, and airplanes are designed to reduce air resistance.

Another way to reduce friction is to change the types of materials that contact each other. If you change what the material of clothing you are wearing when sliding, you can cause more or less friction. This will cause you to either slide faster or slower. If you have a squeaky door hinge, the noise is created when parts of door rub against each other. Adding a substance, such as oil or grease, will make the squeak go away.



Make a Prediction:

Think about some of the many slides you have gone down. What made some slides better than other slides?

In today's activity, you can't make the slide steeper, but you want to go down the slide faster. What else could you change?



Activity: The Great Slide Challenge

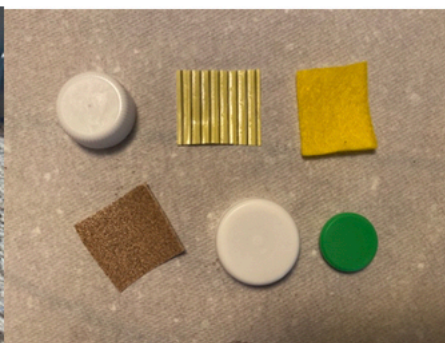
Materials:

- 3-4 books to stack
- An object to make a ramp. (Examples: stiff notebook, cardboard, baking sheet)
- 4-5 Different items with different textures (Example cloth, felt, aluminum foil, sand paper, bottle caps, large plastic buttons)
- Pennies: 2 for each slider (total of 8-10)
- Tape
- Ruler

Ramp



Example materials



Sliders





Carry Out an Investigation:

1. Build a ramp by stacking 3-4 books up and laying a flat object against the books.
2. Build your sliders. Make each slider about the same size and tape 2 pennies to each one. You can build as many sliders as you want to test.
3. Place two sliders at the top of the ramp. (you may choose to test all sliders at the same time)
4. Use the ruler, any straight object, or your fingers to holder the sliders in place.
5. Lift the ruler, straight object, or fingers to let the sliders go.
6. Document your observations in the table. (be sure to note which one made it to the bottom first)

<u>Trails:</u> In each box below, write down the materials you tested.	<u>Observations:</u> Write down observations for each trial. For example, "I observed that the cardboard began sliding first.."
Trail 1	
Trail 2	
Trail 3	
Trail 4	

Wrap up:

1. What slider seemed to have the **least** friction?

2. What evidence did you use to know which slider has the **least** friction?

3. What slider seemed to have the **most** friction?

4. What evidence did you use to know which slider has the **most** friction?

5. If you had time in the future to do more friction experiments, what would you do differently? What other tests would you want to try? Why?
