KCS @ home

Summer Edition

Second Grade Science

Activity 3

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2nd Grade Science: Activity 3
How does friction affect how an object moves?

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

What is friction? Have you ever rubbed your hands together? Let's try it. Rub your hand together as fast as you can for 10 seconds.

What did you observe? _____

When would be a time that rubbing your hands together would be useful?

_____

Friction: a force that produces heat and reduces or increases the motion of an object

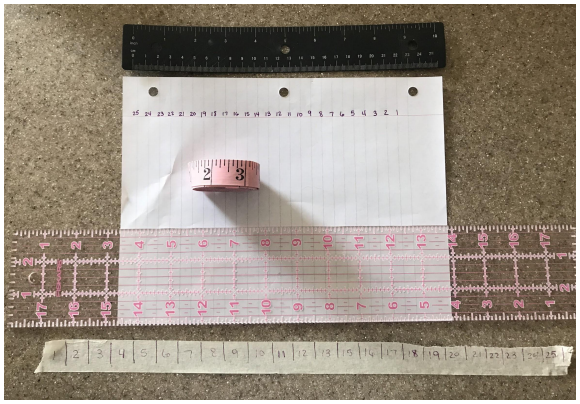
Activity: How does friction impact how an object moves?

The goal of this activity is to see how far a toy can roll on a road when you push it down a ramp. You will build a ramp and use different materials to make your road. The ramp will provide the speed for your toy to roll along your road.

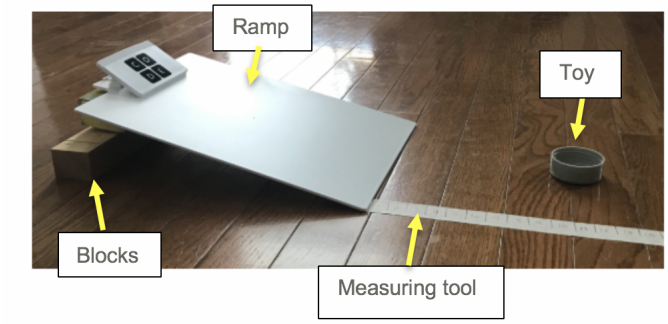
Rules: First, let go of the toy at the top of the ramp. Don't touch the toy until it stops rolling. Last, measure how far it rolled.

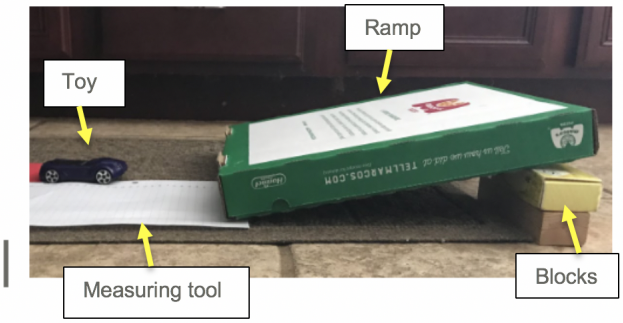
Materials:

- Ramp - pizza box (other options: clipboard, piece of cardboard, piece of wood, board game box)
- Ramp height - 2 or 3 items of similar height (examples: 3 blocks or 3 books)
- Measurement tool - choose 1: ruler, tape measure, piece of paper or tape marked at equal distances



- 2 Roads - choose 1 smooth surface: wood floor, sidewalk, tile floor, etc. choose 1 rough surface: carpet, rug, felt, foam, grass, etc.
- 1 Toy car or small ball: other options: large button, spool of thread, etc.





PLAN:
Step 1: Choose a place to set up your ramp that will have a level smooth surface. *(such as the hard floor, sidewalk, tile, etc)* Your ramp should look like the picture above.

Step 2: Lay your measuring tool on the ground at the bottom of the ramp like the picture above. Place the measuring tool starting with 1 next to the end of your ramp.

Step 3: Draw your ramp design in the box below. Label your materials.

PREDICT: Will the smooth road surface or the rough road surface cause the toy to roll the farthest?

_____

Step 4: Place the toy at the top of the ramp and let it go. Don't touch the toy until it stops rolling.

Step 5: Use your measuring tool to find out how far your toy rolled. Record your data on the table below. Try it 1 more time and record your data in the table.

Step 6: Now set up your ramp in a place with a rough surface *(such as the grass, carpet, on a towel, etc).* Roll your toy down 2 times and record your data in the table below.

EXPERIMENT	Road Material	Distance
EXAMPLE	**rug**	**24 spaces**
Smooth road, test 1		
Smooth road, test 2		
Rough road, test 1		
Rough road, test 2		

Does the car travel farther on a rough or smooth surface? Circle your answer.

Rough **Smooth**

Which material slowed down your toy the most? _____

What force caused this?_____

REFLECT: How would you improve your design to make the toy roll even farther?
Would you change the height of your ramp by using more or less blocks / books? Would you use a different material for your road? **Draw and label your improved design in the box below.**

Now try it out. Did your changes improve your design? Yes No

What other ideas do you have to improve your design? _____

_____

_____