

CHARLES COUNTY PUBLIC SCHOOLS 5305 Piney Church Road Waldorf, MD 20602 301.934.7464 www.ccboe.com/ScienceCenter



## ENGINEERING DESIGN A SCIENCE @ HOME ACTIVITY FRICTION

## **OVERVIEW FOR PARENTS**



### The Engineering Design Process...

This lesson introduces the process which engineers use when creating, developing, improving, or implementing an idea. The goal is to help students understand this process when coming up with a solution to a problem. In this experiment:

- A problem has been presented with some questions to think about
- Some ideas have been presented in helping them come up with a solution
- Students should take notes as they work through the process
- Length of time for the project will be different for each individual

We would love to see their creativity so please tag us at James E. Richmond Science Center on Facebook and Twitter.

Thanks for visiting! See you soon!





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### **PROBLEM**:

I want to get a better understanding of friction.

#### QUESTIONS

What is friction?

Why do I care about friction?

How could I show the effects of friction?

What materials could I use?

How could knowing about friction help me?

AREA TO WRITE RESEARCH & IDEAS





## FRICTION

As we talked about in the spinning top lab in week 3, friction is a force that acts in the opposite direction of the original force produced. In other words, when two surfaces come in contact with each other resistance is produced. This resistance (an attempt to prevent something by action) can either be negative by slowing things down or positive by allowing less

of an effect.



Which surface produces less friction-A or B?

easiest to move because there is less friction-round or square?







So let's think...how can we test what we have talked about? What can we use?

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The video links below are provided to help with creative ideas.

OBJECTS TO USE

Marbles Pennies Shoes Balls Book Pencil/Pen Toy Cars Socks SURFACES

Tabletop Driveway Walkway Grass Floor Sand Aluminum Foil Plastic

Rubber Bands Stones Shoes Ramp Liquid Soap Ice String

MISCELLANEOUS

MATERIALS

https://youtu.be/JkkoyDkgqSw (certainly not a professional video but good for ideas & it is short) https://youtu.be/RMf0QYq1MNg https://youtu.be/ww02KQ7uZxY

# Engineering Notebook James E. Richmond SCIENCE CENTER Design/Plan: Materials Needed: It is important to note the engineering process is a *cycle* and can be started *anywhere* in the process/cycle. How To Test (Don't forget a way to measure results): \_\_\_\_\_

#### Engineers are always thinking and taking notes so let's put on our thinking cap:

- Does greater mass make more or less friction ?
- How does the surface on which the object is located affect the movement?
- Other than the surface, are there other factors that affect the friction?
- How is force related to the mass and friction?

NOTES SECTION

We at the Science Center would love to see your finished project, notes you have taken in your engineering notebook, and/or get general feedback. Tag us on Twitter or Facebook at James E. Richmond Science Center

