



the stars
challenge

Explore, Imagine,
and Build
Winter 2016



Wow, that was a fast ten weeks but you know the old saying, "time flies when you're having fun"! I had fun and I know that you did too.

To start our journey, we investigated inertia by making an inertial hat and constructing the dollar bill challenge device. We then made the magical appearing ball trick device. Remember, a good magician never reveals their secrets but it's all based on inertia! To further our understanding of inertia, we glided around our classroom on a hovercraft powered by a leaf blower.

We then studied centripetal force by trapping a tornado in a bottle...don't let it out! We also made a device that enabled you to swing a cup of water over your head. Why didn't you get wet?

Mechanics was our next topic. We studied torque by constructing a balancing soldier toy, a balancing nail challenge, and the balancing fork and spoon device, to amaze your friends and family.

We investigated energy conservation by predicting how fast marbles would roll down inclines of different shapes. Then we applied this concept to the magic trick entitled: Happy & Sad Balls! Similar to many magic tricks, this trick is based on physics principles.

Sound and light were investigated as wave motion in our next topic. To demonstrate sound we constructed a singing cup device that sounded like a chicken and viewed light through rainbow glasses.

Concluding the course, we focused on electricity and series circuits by constructing a challenge similar to the game operation. Have fun challenging your friends to maneuver the probe without the buzzer sounding.

It is my wish that you continue to "see" the physics that surrounds you in your daily life.

Mr. Valente



The class experiences the phun of gliding on inertia!



The students of Explore, Imagine, and Build



The class builds their inertia hats while Mr. V explains how the hovercraft works.



The students experiment with their inertia hats.



Did any of the students remove the dollar bill while keeping the bottles balanced? The winners experienced the victory award of doughnuts. Yum!



A water tornado in a bottle. Don't let it out!



Mr. Valente makes the balls magically appear but, of course, you know how. It is all based on Inertia! Others in the class experiment with the dollar bill trick and the physics behind the water tornado.



The class builds their centripetal force device.



Can you whirl a cup of water around your head with out the water spilling?



Mr. V demonstrates how a balancing toy seems to defy gravity!



How does the fork and spoon balance on the edge of a nail? It is all based on center of mass and torque.



The class studies the properties of sound using a slinky?



Which ball wins the race? How is sound recorded on a record?



The class demonstrates their homemade kazoos. Quiet! Way too much noise.



Sporting their rainbow glasses, the ladies study the properties of light.



Studying electric circuits, the students build an operation style game challenge. Can you move the loop around the wire with out the buzzer sounding?



