

PARENT LETTER FOR BUILD IT AND BREAK IT BY THE POWER OF ENGINEERING

Dear Parents,

We look forward to a great semester with your child! We are excited to share so many hands-on, fun-filled activities with our students! Below are descriptions of the many subject matters that will be covered over the course of the year.

DOMES AND BRIDGES

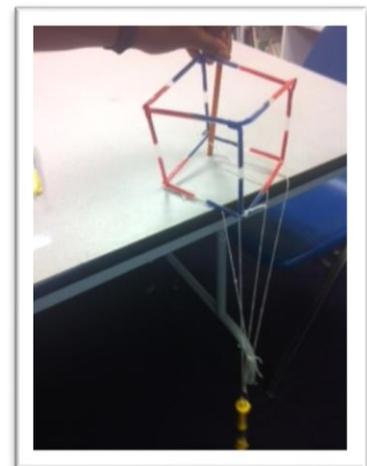
PART 1 PRINCIPLE- STRUCTURES



- By the end of your child's first day of class they should walk out with a new understanding of concepts people in ancient Rome used! Students will go from challenge to challenge as they progressively construct a sturdy paper bridge. This bridge will need to have columns, stretch at least 2 feet, and have an arch. Though it may seem simple, this paper bridge will start your child's understanding of stable structures.
- Our class will then move on to learning about suspension bridges. They will divide into groups and make a small suspension bridge. At the end, each team will compete to see which of their bridges can hold the most weight!
- **Discovery Questions**
 - *What is a suspension build, and how is it made?*
 - *What makes the structure more stable?*

PART 2 PRINCIPLE-TRUSSES

- They will be building their very own trusses out of toothpicks and gumdrops. In building these trusses they will understand just how strong the 'triangle shape' is. This shape is used in a lot of major bridges.
- They will then need to build a gumdrop bridge that uses trusses, spans at least 2 feet, and uses the concept of suspension (learned yesterday).
- What they build they take home today!
- **Discovery Questions**
- *What shapes are most stable?*
 - *What is the "weakest link" of a structure?*



PART 3 PRINCIPLES- ARCHES AND DOMES

- Your children will be introduced to Geodesic Domes! We promise- it is as cool as it sounds! They will each take home a dome!
- Your children will then have an Egg Bungee Drop! Given several protective materials and pantyhose, your children will be creating a bungee that will contain an egg. This egg and bungee will then be dropped from a height of at least 6 ft. Your child's objective- To make a bungee device that will enable the egg not to touch the ground!
- **Discovery Questions**
 - What is a geodesic dome?
 - Why are arches and domes so stable?



SOUNDS LIKE FUN!

We will start with a **thunder tube** that will light up their eyes as they see how sound can be amplified.

We will explore how sound works and how our ears pick up on the sound with an exciting array of experiments. We have to use sonar to find to location of our Dr. Lipid's underwater lab. But first we must understand how sound can work to accomplish this mission.

Next we will explore **how we hear** with our model eardrum and special sound games.

Back to our sound amplification with some very exciting and funny experiments such as **a talking cup** and **screaming balloon**.

Just how does sound travel? We will explore with a sound symphony, sonar search and eavesdropping activities.

We will finish our Sounds Like Fun! Portion with an understanding of **frequency and resonance** with our strange band of Singing Bottles, Singing Tubes and Palm Pipes.

Whoever know sound could be so much fun!

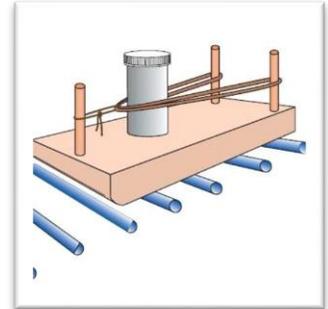


NEWTON MANIA

Ok, the laws may sound boring, but the proof of the laws are not! We have amazing beads that defy gravity and Newton's Car. But the favorites are our Potato Launcher and Water Balloon Helmet Designs!

Three Laws of Motion, which changed science forever, are as follows:

1. Every object in a state of uniform motion tends to remain in that state of motion unless an external force is applied to it. (Law of Inertia)
2. Acceleration is produced when a force acts on a mass. The greater the mass (of the object being accelerated) the greater the amount of force needed (to accelerate the object).
3. For every action there is an equal and opposite reaction.



- **Newton's Car**- Students will put The Third Law of Motion into motion by proving that "For every action there is an equal and opposite reaction." This activity will also help students to understand how mass affects the acceleration of moving object (Newton's Second Law).
- **Water Balloon Helmet Design**- After learning about what affects an object's acceleration students will be given several experiments that they will use to test what affects an objects deceleration when an impact occurs. They will have to make a 'helmet' for a water balloon that will prevent the water balloon from breaking when dropped from at least 8 feet.
- **Potato Launcher** will prove the second and third laws as we propel potato pieces using the force of compressed air!

VORTEX GENERATOR



Then, just to prove that waves can travel through the air even though we cannot see them, we will make a **vortex** that can knock cups down from across the room. Your child will make a smaller version to take home.

FLUORESCENCE

Learn about hitch hiking germs, ghost eggs and invisible inks all under the power of Fluorescence! Watch eggs grow to unbelievable size and glow. Let your child understand why you always are saying "wash your hands!" Learn about how fluorescence works!

