



**Science, Engineering,
Technology & Math**

LETS GET PHYSICSCAL

(Think of this as the “title page” and photos about the class here)



What do you see?

Class Structure

(Enter an overview of the class structure here...see Week#1 as an example)

Week #1:

- Plastic straw bridges

Week #2

- Pool noodle marble tracks

Week #3:

- Aluminum foil/ duck tape boats

Week #4:

- Balloon powered lego cars

Week #5:

- Popsicle stick catapults

Week #6: Finish-up all projects

- Science summit boards

Week #1: *Plastic straw bridges*

- *Ask kids about their favorite structures and buildings*
- *Talk about what engineering is and what engineers do*
- *Demonstrate how triangles are stronger than square shapes when building*
- *Talk about what a “truss” is*
- *Give each kid 50 plastic straw pieces (drinking straw cut in half) and tape*
- *At the end of the class test the weight of each kid’s bridge*



(enter definitions here)

Week #2: *Pool noodle marble tracks*

- *talk about potential and kinetic energy*
- *Explain inertia - and watch excerpt from Bill Nye's "force" episode*
- *Have kids work together to use pool noodle halves to connect "Point A" to "Point B" and successfully have a marble travel and end up at point B.*
- *Talk about gravity and the importance of teamwork within the project*
- *Need about 10 pool noodles cut in half and a roll of tape and a few marbles*



(enter definitions here)

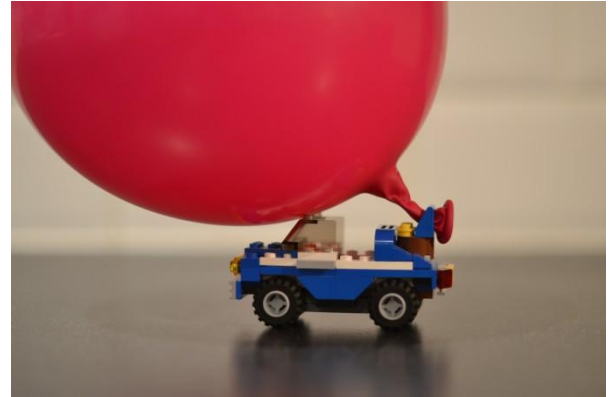
Week #3: Aluminum Foil / Tape Boats

- *Talk about surface area and the what buoyancy means*
- *Ask kids what they think makes a boat float and how boats have changed throughout history*
- *Give each kid 2 square feet of aluminum foil and a couple feet of duck tape*
- *Give them 30 minutes to make a boat and tell them that you will be testing them as a group by putting weight in them*
- *After the testing of the boats talk about why certain boats held more and others didnt do as well*
- *(usually the ones with the most surface area, that are the shallowest boats work best)*
- *You will need aluminum foil, duck tape, and a shallow bucket to put water in*

(enter definitions here)

Week #4: *Balloon powered lego cars*

- *Talk about the principles of traction and friction*
- *Again talk about inertia and how that might affect their cars*
- *Give each kid 4 wheels and a bucket of legos to create their own car*
- *Test each one and measure the distance each car gets on the “racetrack”*
- *After the testing talk about why certain ones worked better than others, and how their size, shape, and design affected their distance*



(enter definitions here)

Week #5: *Popsicle stick catapults*

- *Talk about potential and stored energy*
- *Mention the history of catapults and their evolution as well as their utility*
- *Make a few demo catapults with different types of designs*
- *Have each kid make their own catapult*
- *Test catapults outside and measure differences*
- *After testing talk about why certain ones were more successful than others*
- *You will need thick popsicle sticks, zip ties, binder clips, rubber bands, and plastic lids*



(enter definitions here)

Week #6: *Science Summit Boards and hands on project*

- *Ask kids about their favorite experiment or project in the class*
- *My class ended up making a board that talked briefly about all the experiments and I assigned each kid to be in charge of a different portion of the board*
- *We decided to do the catapult project for the hands on project at the summit and brought all the materials*

(enter definitions here)

Pro Tips by Liz Rich

- Show video clips at the beginning of each class period
- Take video and photos of the kiddos throughout the class and add it to the presentation.
- With each individual project tell kids to decorate and name their projects (catapult, bridge, car) -- helps the kids feel more invested in their creation and makes the science a bit more fun :)
- If there are kids in the class who have trouble working on their own you can design the projects as working as a collective team or with partners

Resources:

- <http://littlebinsforlittlehands.com/popsicle-stick-catapult-kids-stem-activity/>
- <http://www.keslerscience.com/aluminum-foil-boats-end-of-year-project/>
- <http://frugalfun4boys.com/2013/04/11/lego-fun-friday-balloon-powered-car-building-challenge/>
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