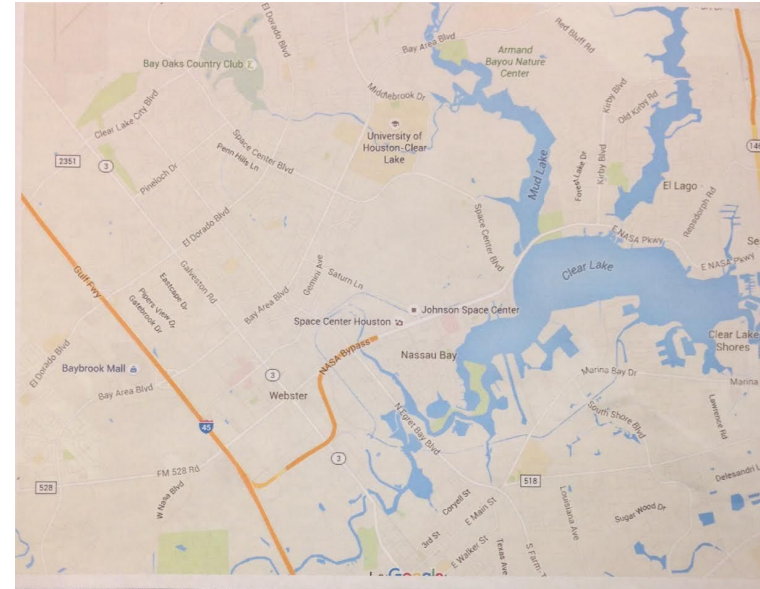


STEAM Academy 2016

Model Rocketry

Map Activity

Objective: Recreate a map to scale on
 8.5×11 paper that resembles the map
on the much smaller piece of paper



Balancing Sticks

Each of the balancing sticks had nails taped to the stick. Every trial the nails were taped in different locations, ranging from near bottom, just below half, just above half, and top.



Objective: Balance the wooden stick on one finger for as long as possible.

Purpose: To demonstrate the ideal placement for the egg to be located in our model rockets.

Data: The data proves that placing the egg just above halfway inside of the rocket will best protect the egg.

Balancing Sticks Photos



Model Rockets

Components of our rockets:

- Body of rocket
- Nose Cone
- Fins
- Recovery system/parachute
- Launch lugs
- Engine tube

Objective: Create a model rocket that can successfully carry an egg using a recovery system, and land close to the launch pad.

Purpose: Find a design that works the most effectively.

Data: We found that when a model rocket has a slim and light design with the weight of the egg toward the top, the rocket was the most successful.

Model Rocket Photos



Thrust Demonstration

Explanation: Mr. Hoburg showed us how the rocket motors work by setting one off so we could build our rocket based around the motors.

Presentation

- Matt Vernacchia- a USC graduate
- Went to MIT
- Majored in Aeronautics and Astronautics
- NASA Jet Propulsion Lab
- SpaceX



Bottle Rockets

Objective: Create a rocket made from a bottle that is fueled by water and pressurized air.

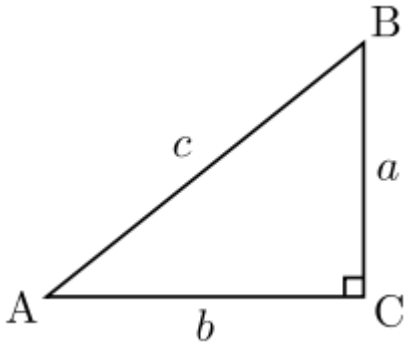
Purpose: To simulate how a real rocket uses aerodynamics and limited resources to make the best rocket possible.

Data: We measured how high the bottle rockets went.

Overall success

Bottle Rocket Altitude Calculation

- Estes 2232 Alti Trak Model Rocket Altitude Finder
- $25 \times \tan(\Theta)$
- measured from 25 feet away
- triangles



Egg Drop/Recovery System

- What: We each made our own recovery system to protect an egg.
- Where: We dropped them off the bleachers at the field.
- Why: We did this activity because we needed to see what will protect the egg in our rockets.

Conclusion

During this week, we have learned about the engineering skills it takes to create and fly a successful rocket. We learned these useful skills by watching a helpful presentation by Matt Vernacchia, helpful advice from our teacher, and several activities to build up to our final rocket launch.

Video

