

ANGRY ROCKETS

End Goal: Design, Build + Test Cardboard Rockets

Supplies

- Smoothy Straws
- Construction Paper
- Masking Tape
- Cardboard
- Hot glue guns/sticks
- Erasers Caps
- Internet
- **Each student must bring in 2 Paper towel tubes**

Ideal Setting

- 1 week -12 hrs
- 4-5th grade students
- 20-75 students (1-3 classes)

Teacher Expectations

- Support out of lab work
- Fill the week with related activities (fiction/non-fiction readings, spelling/sight aeronautical words, grade appropriate math work)
- Crowd control



This week-long workshop is an exploration of the design process and flight patterns of rockets. The students will gain experience using elements learned in their Math, Engineering, and Humanities courses.

Activities

Introduction Whole Group Assembly

- ♦ Introduction to project and The Engineering Design Process
- ♦ Connection to Angry birds - *how do you want your rocket travel (height or distance)*
- ♦ Tour of lab with safety rules





Interdisciplinary Skills

The most stressed skill in this workshop is The Engineering Design Process, we want kids to be thinking critically about their design choices and being reflective about the creations.

Other, more specific skills include:

- ✦ Humanities: non-fiction readings on rocketry
- ✦ Science: simple physics and the scientific method
- ✦ Math: conversations and measurements
- ✦ Art: decoration and digital design
- ✦ Engineering: prototyping, experimentation, design thinking, physical fabrication
- ✦ Technology: two and three dimensional design and fabrication

Straw + Construction paper prototyping and experiment

- ✦ Experiment with straw and paper rocket prototypes- explore different fin and nose shapes.
- ✦ Out of Lab HW: Reading on Rockets and Design your own fins!
- ✦ Create a final paper prototype of the final design.

Software Design and Fabricate

- ✦ Use InkScape, Corel Draw and Tinkered to digital design fins and rocket nose
- ✦ Laser cut fins and 3D print noses

Build + Hypothesize

- ✦ Construct complete rocket and decorate (if time allowed)
- ✦ Predict results of testing and justify.

Testing

- ✦ Final test of Rocket distance using sling shot launcher.

Reflection

- ✦ Award Presentations
- ✦ Writing and Verbal reflection on Engineering Design Process.

Student Expectations

If students are not adhering to MFL rules and regulations and or causing harm to self, others or hindering the learning experience, the MFL instructors reserve the right to remove students from work area.