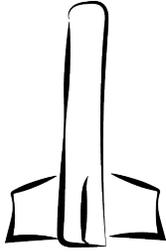


## Lab Assistant: Stomp Rocket – Rocket Design Quiz



### Student Lab Objectives:

- Students make predictions for which rocket designs will perform the best on their worksheet by coloring in the rocket icon that they think will fly the highest.
- Students make paper rockets isolating design variables to test their predictions.
- Students test 3 rockets in each of 4 design categories to see what makes a rocket fly the highest by actually launching them outside. They make observations and record their data by circling which rockets (on their worksheet) fly the highest.

### Lab Prep:

1. **Materials** –Get the Stomp Rocket Koa. Each student will use a pipe section to roll the body of their paper rocket. The pipes will then become a rocket launcher to test their rocket designs. Each student will need two sheets of cardstock paper, some tape, scissors, and a measuring device.
2. **Print** – Print off the student worksheet (Design Quiz).
3. **Watch the teacher prep movies:** One movie will show you how to do the lab, the other will show you how to set up the launcher.

### Running the Lab Activity:

1. **Show the in-class movie:** The movie demonstrates how to make a paper rocket.
3. **Pass out the worksheet:** Review the worksheet with your class and allow them to make their own predictions for which rocket design in each category will perform the best by coloring one rocket in each category.
4. **Lab session one- Make paper rockets:** Pass out scissors, cardstock paper and tape. Guide students in planning how they will make their paper rockets. Help them focus on coordinating with their other group members to keep all rocket design elements within their test group the same while only altering the design variable of interest. Allow students about 40 minutes to plan and make their paper rockets.
5. **Lab Session 2: Launch the Rockets:** Walk outside with your class to launch the rockets. Assemble the launcher. Allow students to launch 3 rockets at a time in each category to observe which design variables allow the rockets to go the highest. Allow students to perform multiple launches to see if results are consistent.

### Tips:

1. **Allow every student to make their own rocket:** Students should work in groups of three, each making their own rocket. There are only 4 design categories, so some groups will be testing the same variables. Have these groups compare if they observed similar results.
2. **Set up a repair station outside on launch day:** Students will need paper scissors and tape to repair rockets outside on launch day.
3. **Keep a pair of scissor in your pocket:** You can easily assist students while loading their rockets by trimming the back of any rockets that become crushed while loading.

### Discussion:

- **“How do their launches relate to the engineering process or scientific method?”** Isolating variables and conducting fair tests allows scientists and engineers to learn and improve their designs. They are becoming better engineers by testing various rocket designs.