Rocket Design Contest Manual

Course: *Orientation to Technology*
Teacher: Mr. Smith • Hour: 6th

Materials Required

1. Rolled Rocket Packet
2. Utility Knife
3. Hot Glue Gun and Glue Stick
4. Tape Measure
5. Pencil
6. Scissors

Suggested Design Approach

1. Read Rocket Package directions carefully.
2. Understand all directions before building.
3. Discuss the plans with your team partner.
4. You will be given one packet only. **[NOTE: No additional material will be provided.]**
5. Think about the report you will write as you build your rocket. Make any notes to help you construct a better technical report. [See the Rocket Report Guidelines and Specifications shown below.]
6. Make sure you understand all the rules. Points are lost for breaking the rules as well as possible expulsion from the contest.

Rocket Construction Rules

1. Use only materials in the rocket packet plus hot or yellow glue.
2. Rocket may be painted in the spray room.
3. Follow ALL rocket manual directions.

Rocket Report Guidelines and Specifications

1. How did working with a partner to build a rocket affect the:
    a. Construction process?
    b. Craftsmanship?
    c. Overall appearance?
2. How did following or not following the directions affect the flight path of your rocket?
3. What would you change, if anything, to affect a better outcome of your rocket's appearance and flight path?
4. Double space your report, use Times New Roman font, and 11 point font size.
5. Use Microsoft Word or Google Docs to type report.

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Rocket Evaluation

RUBRIC:

15 points **Meets Construction Specifications:** Does your rocket meet the stated specifications?

10 points **Appearance:** Does the rocket look like the standard? Did the construction techniques add or detract from its appearance?

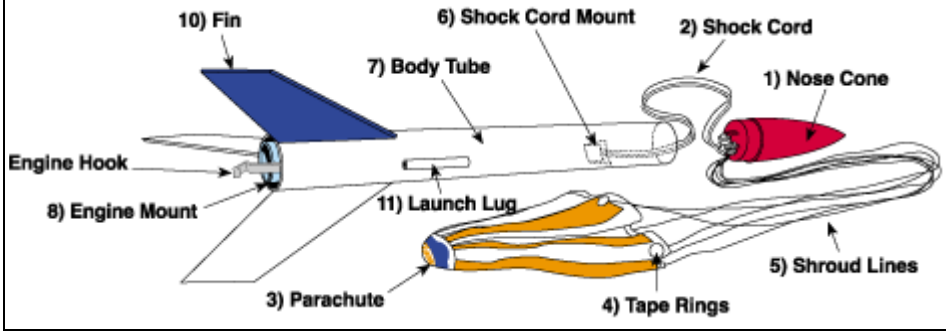
10 points **Flight Path:** How well did the rocket fly: straight or erratic? How high did your rocket fly as compared to others'?

15 points **Computer Application:** Was the report computer-generated using Microsoft Word or Google Docs? Additional points will be awarded for paper-see rubric.

Contest Criteria

The total points collected, as per the above stated criteria, will determine the winners. The highest score, based on the total of all four (4) categories, will be **awarded a 12-packs of pop and have bragging rights**. In the event of a tie, the appearance of the rockets will be the tiebreaker.

Components of a Typical Model Rocket



Estes Rocket Engine FACTS

Intelligent design, precise manufacturing, and strict engineering tolerances have made Estes rocket engines the standard in the industry. They have been proven consistent and reliable in more than 300 million launches. Some important features are:

- Lightweight non-metallic casings made from paper and clay materials.
- Pre-loaded with propellant–the modeler does not handle any hazardous materials.
- Expendable and biodegradable–use them once and throw them away. *Reloading is forbidden*.
- Non-toxic propellant–however, ingestion is not recommended!
- 3% of all Estes engines made are static-tested at the factory for reliability.

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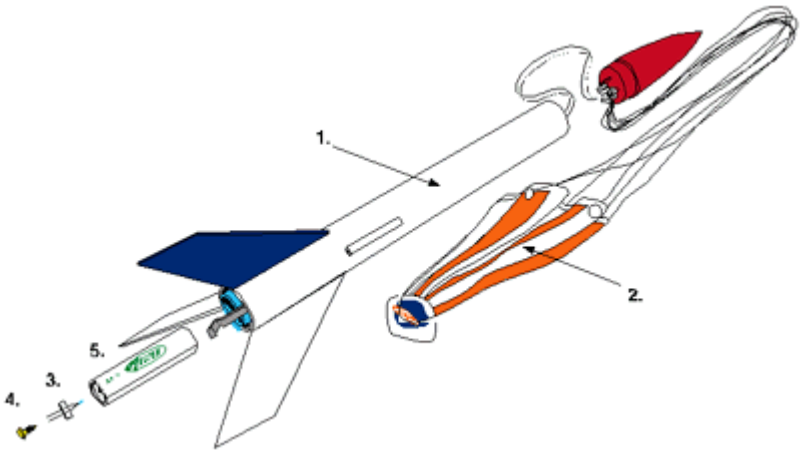
Rocket Preflight Preparation: Flight sequence for completed rocket



Step 1: Insert recovery wadding. (Refer to instructions for correct amount).

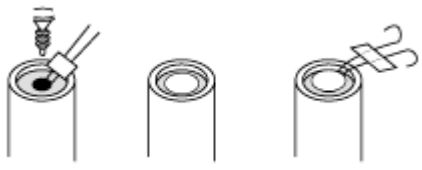
Step 2: Fold and insert the recovery device.

Step 3: Install igniter.

Step 4: Insert igniter plug*.

Step 5: Insert engine into mount.

Here's how to use Estes' igniter plug technology. The brightly colored reusable igniter plugs have virtually eliminated the frustrations and misfires common to other igniter systems.



Model Rocket Flight Profile