

DEPARTMENT H - ROCKETRY/AEROSPACE

This category gives 4-H'ers a chance to display the rockets and drones they have created. Through participation in this category, 4-H'ers will show judges what they learned about and how they adapted their exhibit throughout this project. Involvement in SET Aerospace gives participants a first-hand experience in modern technology. For help getting started with this project, contact the extension office.

The exhibitor's name and the county should appear separately on the back of each board, poster or article and on the front cover of the notebooks so identification can be made in case the entry tag is lost.

Rockets **MUST** be supported substantially to protect the rocket from breakage. Rocket **MUST** be mounted on a base that has dimensions equal or less than 12"x12" and the base should be ¼" thick. **NO** metal bases. If the rocket fins extend beyond the edges of the required base (12"x12"), then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins. The rockets **MUST** be mounted vertically. Please do **NOT** attach sideboards or backdrops to the displays. In addition, a used engine or length of dowel pin is to be glued and/or screwed into the board and extended up into the rocket's engine mount to give added stability. Rockets **MUST** be equipped as prepared for launching, with wadding and parachute or other recovery system. Rockets entered with live engines, wrong base size or sideboards will be disqualified. A report, protected in a clear plastic cover, **MUST** include: 1) rocket specification (include original or photo of manufacture packaging stating rocket skill level), 2) a flight record for each launching (weather, distance, flight height), 3) number of launchings, 4) flight pictures, 5) safety (how did you choose your launch site? Document safe launch, preparations, and precautions), 6) objectives learned and 7) conclusions. The flight record should describe engine used, what the rocket did in flight and recovery success. Points will **NOT** be deducted for launching, flight or recovery failures described. This includes any damage that may show on the rocket. Complete factory assembled rockets will **NOT** be accepted at the county or state fair. Judging is based upon display appearance, rocket appearance, workmanship, design or capabilities for flight, number of times launched and report. Three launches are required to earn the maximum launch points given on the score sheets. For scoring, only actual launches count. Misfires will **NOT** count towards one of the required three launches. Contact the extension office for scoresheet to see how exhibit is judged.

For self-designed rockets only, please include a digital recorded copy of one flight. In the documentation, please include a description of stability testing before the rocket was flown.

Skill level of project is **NOT** determined by number of years in project. Skill level is determined by the level listed on the manufacturing packaging.

4-H Rocket project levels are **NOT** intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels. High power rockets (HPR) are similar to model rocketry with differences that include propulsion power and weight increase of the model. They use motors in ranges over "G" power and/or weigh more than laws and regulations allow for unrestricted model rockets. These rockets are **NOT** appropriate for 4-H projects and **will be disqualified**.

DIVISION 850

Aerospace – Unit 1

The following project ideas can be found in the 4-H manual Aerospace Adventures Stage 1 "Pre-Flight".

Class

901. **Space Buggy** – Design and make a spacecraft from household items or items that could be re-used instead of being thrown away. Materials list: scissors, glue, assorted clean household materials such as; paper towel tubes, tissue boxes, plastic bottles, etc... Draw a picture design of your buggy on a sheet of paper. On another separate sheet of paper briefly explain the job/jobs your space buggy can do.
902. **Space Station** – Draw a design of what you think an International Space Station of the future might look like. Using household items build a model of that station. On a sheet of paper briefly describe how scientists would use your Space Station.
903. **Other**

Rocketry – Anyone enrolled in Aerospace 2, 3, or 4 may exhibit in any class

Class

904. **Rocket** – Any Skill Level 1 Rocket with wooden fins or plastic fins painted by hand or air brush.
 - *1. **Rocket** – Any Skill Level Rocket with wooden fins and cardboard body tubes painted by hand or air brush.
 - *2. **Aerospace Display** – Poster or display board that displays or exemplifies one of the principles learned in the Lift Off project. Examples include: display of rocket parts and purpose, explains the parts of a NASA rocket or shuttle, interview of someone in the aerospace field, or kite terminology. Include notebook containing terminology (definition), and what was learned. Display can be any size up to 28"x22".
 - *3. **Rocket** – Any Skill Level 2 Rocket with wooden fins and cardboard body tubes painted using commercial application, for example: commercial spray paint.

Self-Designed Rocket – Anyone enrolled in Aerospace 2, 3, or 4 may exhibit in any class

- *4. Any self-designed rocket with wooden fins and cardboard body tubes.

Drones – Anyone enrolled in Lift Off – Unit 2, Reaching New Heights – Unit 3 and Pilot In Command – Unit 4 may exhibit in any class

- *5. **Drone Poster** – Exhibit **MUST** be designed to educate yourself and others on one or more of the following topics: drone technologies, uses of drones, the different types of drones, types of training needed to operate drones and the laws and regulations users must follow. Poster can be any size up to 28"x22".
- *6. **Drone Video** – Exhibit **MUST** demonstrate how the drone interacts with the outside world. Examples: field scouting, surveying damage from natural disasters, drones used in commercial applications and settings, and drones used for structural engineering. Video should **NOT** exceed five minutes. Videos should be submitted to Kathy Burr at kathy.burr@unl.edu by July 24, of the current year.