

Department H - Science, Engineering & Technology

Division 850 - Aerospace/Rocketry

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 your county 4-H office.

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) is similar to model rocketry with differences that include the 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

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
7. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and

- observations. Results: What you learned. All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.
8. Premier 4-H Science Award is available in this area. Please see General Rules for more details.
 9. Rockets must be supported substantially to protect the rocket from breakage. Rockets are to be mounted on a base that has dimensions equal or less than 12" x 12" and the base should be 3/4" thick. No metal bases. If the rocket fins extend beyond the edges of the required base (12" x 12"), then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins.
 10. 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 rockets engine mount to give added stability.
 11. 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.
 12. 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.
 13. 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 State Fair.
 14. 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 for the State Fair, only actual launches count, misfires will not count towards one of the required three launches.
 - For self-designed rockets only, please include 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) is similar to model rocketry with differences that include the 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.

For General Rules [click here](#)

Rocket Launch Contest information is located in the contest section of this fairbook.

Division 850 - Aerospace/Rocketry

Beginning

Aerospace 1

* The following beginning classes are not eligible for State Fair consideration*

CLASS 901 ROCKET WOODEN FINS LEVEL 1

Any skill level 1 rocket with wooden fins and cardboard body tubes painted by hand or air brush.

CLASS 902 ROCKET PLASTIC FINS LEVEL 1

Any skill level 1 rocket with plastic fins.

Intermediate and Advanced

Includes Aerospace 2, 3, or 4

Class 1 Rocket (SF92)

Any Skill Level Rocket with wooden fins and cardboard body tubes painted by hand or air brush.

Class 2 Aerospace Display (SF93)

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" by 22".

Class 3 Rocket (SF92)

Any Skill Level Rocket with wooden fins and cardboard body tubes painted using commercial application, for example: commercial spray paint.

Self-Designed Rocket

Includes Aerospace 2, 3, or 4

CLASS 4 SELF DESIGNED ROCKET (SF92)

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

Drones

Includes Aerospace 2, 3, or 4

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. Posters can be any size up to 28" by 22".

CLASS 6

Drone Video

Exhibit must demonstrate how the drone interacts with the outside world. Examples include: field scouting, surveying damage from natural disasters, drones used in commercial applications and settings, and drones used for structural engineering. Video should not exceed 5 minutes. Videos should be submitted to Amy Timmerman at atimmerman2@unl.edu by **August 17th, 2020**.

Resources

Aerospace 2

Fly kites and launch rockets; Explore space; Experience disorientation

URL: https://4hcurriculum.unl.edu/index.php/main/program_project/120

Aerospace 3

Learn to fly an airplane; Make a shuttle on a string; Control flight directions

URL: https://4hcurriculum.unl.edu/index.php/main/program_project/121

Aerospace 4

Create an altitude tracker; Evaluate navigation systems; Explore pilot certification requirements

URL: https://4hcurriculum.unl.edu/index.php/main/program_project/122