

STEM - ROCKETS & DRONES

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 STEM Rockets gives participants a first-hand experience in modern technology.

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair. Entry level rockets, made with PLASTIC FINS and PLASTIC BODY TUBES, are COUNTY ONLY projects.

RULES

- 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.
 - 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.
 - 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.
 - 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 lowered a ribbon placing.
 - 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
 - 7) conclusions
 - The flight record should describe the 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 be shown on the rocket. Complete factory assembled rockets will not be accepted.
 - 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 at the State Fair, only actual launches count, misfires will not count towards one of the required three launches.
 1. 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.
 2. 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.
 3. 4-H Rocket project levels are not intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels.
 4. High power rockets (HPR) are 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.
 5. Posters can be any size up to 28" x 22" when ready for display. Example: tri-fold poster boards are not 28" x 22" when fully open for display.
 - Premier 4-H Science Award is available in this area. For info, go to <https://4h.unl.edu/fairbook/premier-science-award>
- Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4haerospace>

PREMIUMS: Purple-\$3.00; Blue-\$2.00; Red-\$1.50; White-\$1.00

DIVISION 850 - AEROSPACE/ROCKETS/DRONES

- H850001* **ROCKET** – Any Skill Level Rocket with wooden fins and cardboard body tubes painted by hand or air brush. (SF92)
- H850002* **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, explaining 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" x 22". (SF93)
- H850003* **ROCKET** – Any Skill Level Rocket with wooden fins and cardboard body tubes painted using commercial application; example: commercial spray paint. (SF92)
- H850004* **ROCKET** – Any self-designed rocket with wooden fins and cardboard body tubes. (SF92)
- H850005* **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" by 22". (SF93)
- H850006* **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, drones used for structural engineering. Video should not exceed 5 minutes. Videos should be submitted to Steve Pritchard at: spritchard1@unl.edu by July 1, 2024. Videos should also be uploaded to a video streaming application and exhibitors **must** provide a hard copy QR code for viewing. Exhibitors should test their codes or links on several devices to check for appropriate permissions for public viewing. (SF93)
- H850007 **ROCKET** – Any Skill Level Rocket with wooden fins painted using commercial application; example: commercial spray paint. **** NOT ELIGIBLE FOR STATE FAIR ****
- H850008 **ROCKET** – Any skill level rocket with plastic fins. **** NOT ELIGIBLE FOR STATE FAIR ****