AEROSPACE: MODEL ROCKETRY

A. 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.

B. Rockets must be supported substantially in order to protect it from breakage. Rockets are to be mounted on base that has dimensions equal to or less than 12 inches x 12 inches and the base should be ¾" thick. No metal bases. If the rocket fins extend beyond the edges of the required base (12 inches x 12 inches) then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins. Use a short section (i.e. no taller than an inch of the rocket length) of launch rod to support the rocket.

C. The rockets should be mounted vertically. Please do not attach sideboards or backdrops to the displays. In addition, a used engine or length of dowel pin should be glued into the board and extended up into the rocket's engine mount to give added stability. Rockets must be equipped for launching, with wadding and parachutes. Rockets entered with "live" engines, wrong base size or sideboards will be disqualified.

D. A report, protected in clear plastic cover, must include: 1) Rocket specification (include original or photo of manufacture packaging stating rocket skill level), 2) 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.

E. The flight and record may describe engine used, what rocket did in flight, and recovery success. Points will not be deducted for launchings, 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. Judging is based upon display appearance, rocket appearance, workmanship, design, or capabilities for flight, number of launches, and report. Three launches are required to earn the maximum launch points given on the score sheets. 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 the number of years in a project. Skill level is determined by the level listed on the manufacturing packaging. Youth enrolled in aerospace 2,3, or 4 may exhibit in classes H850001-H850006.

4-H Rocket project levels are not intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels.

F. 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 allowed for unrestricted model rockets. These rockets are NOT appropriate for 4-H projects and will be disqualified.

G. Posters can be any size up to 28 inches by 22 inches when ready for display. Example: tri-fold poster boards are not 28 inches by 22 inches when fully open for display.

PRE-FLIGHT – UNIT 1

H850020 **Water Rocket** - Any water rocket made with a two-liter bottle

H850021 **Water Rocket Display** - Display exemplifying one for the principles learned in the Water Rocket Project. Examples include: display of rocket parts and purpose, interview of someone in the aerospace field, etc. Display can be any size and material

H850022 **Rocket** - Any skill Level Rocket with plastic fins and plastic body tubes.

H850023 **Other Aerospace** - All Levels

AEROSPACE 2

***H850001** **Rocket** - (SF92) – Any Skill Level Rocket with **wooden fins and cardboard body tubes** painted by hand or airbrush.

***H850002** **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, explaining the parts of a NASA rocket or shuttle, interview of someone in the aerospace field or kit terminology. Display can be any size up to 28 inches x 22 inches.)

***H850003** **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

***H850004** **Rocket** – (SF92) - Any self-designed rocket with **wooden fins and cardboard body tubes**.

DRONES

***H850005** **Drone Poster (SF93)** – 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 inches x 22 inches.

***H850006** **Drone Video (SF93)** – 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 Melissa Mracek at mmracek2@unl.edu by fair entry deadline or 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.

Resources:

- Aerospace 2 – Fly kites and launch rocket; Explore space; Experience disorientation
- Aerospace 3 – Learn to fly an airplane; Make a shuttle on a string; Control flight directions
- Aerospace 4 – Create an altitude tracker; Evaluate navigation systems; Explore pilot certification requirements