

LEAVENWORTH COUNTY FAIR 2026

4-H AEROSPACE / ROCKETRY

Superintendent: Open

Exhibit Judging: Monday, July 27th, 5pm – 8pm; 4-H Building

The Kansas 4-H Engineering & Technology Aerospace/Rocketry program is designed to allow 4-H members to explore aerospace through rockets of various sizes. Kansas 4-H has adopted the National Association of Rocketry's regulations, and safety guidelines.

1. Read General Rules. Violations of any of the following rules may result in disqualification. All decisions will be made by a county agent and their decision is final.
2. Each exhibitor may enter up to two rocket exhibits that have been constructed during the current year. If two rockets are entered, one rocket must be a "model rocket kit", the second may be entered into any other applicable class. An exhibitor may not enter two rockets in the same class.
3. 4-H members are to complete and sign the rocketry information form, available from <http://rocketry.engtech4ks.com/> or your local extension office and attach it to a 10" x 13" "manila" envelope. The envelope should contain:
 - a. Instructions on how to construct the rocket
 - b. Up to 5 pages of pictures, pictures are to be attached to sheets of paper, from both construction and launch
 - c. Documentation of any flight damage that occurred
 - d. Any modifications made to the rocket except for paint scheme and decals.
 - i. If needed, additional page for altitude calculations if the space on the form is not enough.
 - ii. Additionally, for original design rockets, also known as "scratch built" rockets:
 1. 5 additional pages of photos are allowed
 2. Documentation of how the rocket was tested for stability
4. Exhibits should not contain any perishable items, such as eggs.
5. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor's rocket, at the judge's discretion, may receive a ribbon placement or disqualification.
6. Rockets are to be displayed upright on a display stand with a sturdy rod that does not extend past the top of the rocket, or stand unassisted, unless the rocket is taller than 4 feet in which case no display stand is required, at which point the rocket may be displayed on its side. Rockets are not to be displayed on launch pads to save space and prevent someone from being poked in the eye.
7. Rockets ARE NOT to be displayed with used or unused rocket engines either in the rocket or as part of the stand, if rocket engines are included in the exhibit the judge may disqualify the exhibit.
8. Rockets should be flown unless there is an active burn ban in the county or conditions are too dangerous to safely launch the rocket. Just flying the last stage (the part with the nose cone) of a multi-stage rocket is acceptable.

9. Rockets, **except those in the JR division**, are not to be “beginner kits” or use prefabricated (molded plastic) fin assemblies, or pre-finished rockets requiring no painting. These are only acceptable in the JR division at the county fair. Rockets of this type outside the JR division should be disqualified. Rockets entered in the JR division **may not** go on to the Kansas State Fair.
10. Angles of fins must fall within a plus or minus 2-degree variation using an approved fin alignment guide (such as KSSTAC10). An official fin guide is available from <http://rocketry.engtech4ks.com/>
11. Fins and body tubes, except beginners kits’, are to be filled and sealed with putty, sanding sealer, and/or primer or other suitable filler to eliminate the appearance of body grooves and wood grain.
12. Fins and launch lugs are to be filleted to reduce drag and properly secure them to the model.
13. Engine mounts are to be securely attached to the body tube.
14. Any seams on plastic parts are to be sanded smooth.
15. The recovery system (typically a parachute or streamer) should be attached according to the instructions
16. The nose cone is to fit snugly but still allow for easy removal.
17. Exhibits must be uniformly painted and smoothly finished without “runs,” “orange peel,” or “alligator skin” or finished as per rocket instructions (for example, no painting required), and decals, if used, are to be applied smoothly.
18. Models may not be judged based on their paint scheme (colors and placement on the rocket), except for rockets that fit the definition of a ‘scale model*’ and are entered in the scale model class. All other rockets do not have to follow the suggested paint scheme, allowing the 4-H’er to display maximum creativity in the finishing of their rocket. Under no circumstances is the weight given to the paint scheme to be sufficient enough, by itself, to move the non-scale model from one ribbon placing to another.
19. “Scale Models*” entered in the scale model class may be judged based on their paint scheme. The judge may deduct up to one ribbon placing for not following the paint scheme.
20. “Scale Models*” displayed in the scale model class are to be finished and completed with a majority (greater than 70%) of decals. For all other rockets the use of decals is optional. (The following rules (20-32) apply to advanced exhibits.)
21. Original design rockets cannot be a modification of a pre-existing kit and must be of original design.
22. Original design rockets must be designed by the exhibitor(s).
23. Exhibitor(s) must be 11 years of age (4-H age) or older to enter an original design rocket.
24. Original design rockets must include detailed instructions, so that someone could construct the original designed rocket just like a kit purchased at a store. Instructions can be as many pages as needed to convey full and complete construction techniques, including fin templates.

25. For a rocket entered in the original design classes, describe in the summary how the rocket was tested for stability prior to flying. Swing testing of the rocket is required. Other tests and calculations are strongly encouraged. Exhibitors must include documentation of the swing test. Failure to swing test a rocket will result in a deduction of TWO ribbon placings.
26. Rockets that use more than one 'D' engine or equivalent are considered mid or high-power rockets in 4-H.
27. Mid and High-Power exhibitors must be at least 14 years of age by January 1 of the current year. This is to align with NAR certification guidelines.
28. In addition to the information packet completed for all rockets, a high-power information form is to be completed and placed inside of the information packet. This may be downloaded from <http://rocketry.engtech4ks.com/>
29. Exhibitors in the mid and high-power divisions must hold memberships in either NAR or Tripoli organizations.
30. The NAR High Power Rocket Safety Code applies to the construction and launching of all rockets displayed in this division. As such all mid and high-power rocketry exhibitors must comply with the NAR High Power Rocket Safety Code that is in effect as of October 1st of the current 4-H year.
31. All rockets in the mid and high-power divisions are to be launched under adult supervision by the 4-H member who constructed the rocket.
32. For rockets launched using engine(s) that have 160.1 ('H' engine or equivalent amount of smaller engines) Newton's-seconds of thrust or larger, adult supervision must be provided by an individual having at least a level 1 high power certification. The 4-H member should also hold or be attempting to attain their level 1 high power certification if launching on this large of an engine.

As defined by the National Association of Rocketry (NAR), a scale model is “any model rocket that is a true scale model of an existing or historical guided missile, rocket vehicle, or space vehicle, that has flown under rocket power.” The intent of scale modeling, according to the NAR, “is to produce an accurate, flying replica of a real rocket powered vehicle that is judged for craftsmanship in construction, finish, and flight performance.” (NAR “Model Rocket Sporting Code” 52.1

County Fair Divisions and Classes

Division JR (Ages 7 – 8 years) Not a State Fair Class

- Rocket made from kit, without pre-assembled fin units. Include plans.
- Rocket made from “beginners kit.” Include plans. Rockets in this class may have pre-assembled fin units (plastic). (This class is for first and second year 4-H members to explore the rocketry project).
- Scale Model Rocket made from kit, include plans.

Division A - Kit (Ages 9 – 13 years)

5520 Rocket made from kit. Include plans.

5537 Scale Model Rocket made from kit. Include plans.

Division B - Scratch Built (Ages 11 – 13 years) 7 to 10 year olds may not enter this class.

5521 Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans.

5538 Scale Model Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans and stability testing.

Division C (Ages 14 years and older)

5525 Rocket made from kit. Include plans.

5526 Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans.

5539 Scale Model Rocket made from kit. Include plans.

5540 Scale Model Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans and stability testing.

Division D (Ages 11 years and older)

This class is designed to encourage teamwork among individuals and clubs to work on a rocket from the initial design to the finished product.

5530 Rocket designed by 2 or more exhibitors: not merely a modification of an existing kit. Include original plans.

Division E (Ages 14 years and older)

5536 Mid or high-power rocket made from kit or original design.

Educational Exhibits Rules

1. For notebooks, display boards, and posters, no additional exhibit information is required; no manila envelope is needed for these exhibits.
2. Exhibits are to have a **clear link to the Engineering and Technology area** of Aerospace/Rocketry,
3. Exhibits in posters, notebooks and display boards must contain substantial supporting educational materials.
4. Educational display boards, posters and notebooks should be creative and showcase details about the knowledge learned in the project during the current 4-H year. Value is placed on youth who can demonstrate how their skills have increased while completing the project. Each exhibit will be judged on uniqueness, creativity, neatness, accuracy of material, knowledge gained, and content. An exhibit judging score sheet is available at <http://rocketry.engtech4ks.com/>. For example, a rocket that may have crashed and/or is highly damaged may be made into an educational display or poster that tells a great story with many lessons learned.
5. Follow copyright laws, citing all sources of information in a standard notation Sources of information must be cited on the front of your exhibit, including all posters and educational display boards. **Example citation: "Make a Star Finder" <https://spaceplace.nasa.gov/starfinder/en/>**

6. Educational displays are not to exceed 4' high x 3' wide x 2' deep. No card table exhibits will be allowed. Care should be taken to use durable materials that will withstand Kansas State Fair conditions.
7. Posters are limited to commercial 3' x 4' tri-fold display boards.
8. "Construction Kits" that are part of educational displays must be contained in cases (tackle boxes, sealable containers, etc.) that may not be larger than ~~4'-2'~~ 2' x 2' and must have a latch which securely keeps all components contained in the "Construction Kits". Other components are to adhere to appropriate dimensions as stated elsewhere.
9. Educational Project notebooks must be organized in a 3-ring binder or similar book.
10. Any three-dimensional poster or display board exhibits may not be thicker than 2 inches.
11. Engines and igniters for rockets ARE NOT permitted with the exhibit and constitute an immediate disqualification. This is for safety reasons and includes both spent and live engines.
12. The exhibitor's name (or ID), county, age, and year(s) in project must be tagged or labeled on the exhibit. Exhibit cards are not sufficient as they may be removed or repositioned for display. Failure to label an exhibit may result in one ribbon placing deduction.
 13. Exhibits should possess the following qualities (in no particular order):
 - a. A central theme
 - b. What you want others to learn
 - c. Be designed and constructed in a manner befitting the exhibit
 - d. Be something you are interested in
 14. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor's exhibit, at the judge's discretion, may receive a reduced ribbon placing or disqualification.
 15. Poster, Notebook, and Display Board exhibits may be checked out for use in a Kansas State Fair 4-H demonstration or 4-H illustrated talk with prior permission. For permission, check with the superintendent or the information desk in 4-H Centennial Hall. The exhibit must be returned to display immediately after the demonstration/illustrated talk, or the exhibit will be disqualified. Exhibitors and/or their designees may not remove exhibits from 4-H Centennial Hall prior to the exhibit release time on Sunday evening without the express consent of State 4-H staff. Any exhibit removed before release time without 4-H staff consent will be disqualified.

Aerospace/Rocketry – Intermediate Division (Ages 9 – 13)

5741 Rocketry Educational Display

5742 Rocketry Notebook

5743 Rocketry Poster Board

Aerospace/Rocketry – Senior Division (Ages 14 years and older)

5746 Rocketry Educational Display

5747 Rocketry Notebook
5748 Rocketry Poster Board

Resources: Project Area – [Aerospace/Rocketry](#)