STEM GUIDELINES

- 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 notebooks so owner of exhibit may be identified if the entry tag is separated from the exhibit.
- Several classes require a display board which has a height of 24" and not to exceed 1/4" in thickness. A height of 24-7/8" is acceptable to allow for the saw kerf (width) if two 24" boards are cut from one end of a 4' x 8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. (Example: Woodworking & Electricity).
- Fabricated board such as plywood, composition board or particle-type lumber may be used for demonstration displays.
- Demonstration boards should include an overall title for the display, plus other necessary labeling.
- 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 clearly written or typed and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

ROCKETS & DRONES

ROCKET & DRONE GUIDELINES

- Fly kites and launch rockets; Explore space; Learn to fly an airplane; Make a shuttle on a string; Control flight directions; Create an altitude tracker; Evaluate navigation systems; Explore pilot certification requirements.
- This category gives youth a chance to display the rockets and drones they have created. Through participation in this category 4-H Members 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.
- Youth enrolled in STEM Rockets may exhibit in any class within this division.
- Rockets must be supported substantially in order to protect the rocket from breakage. Rockets are to be mounted on a base that has dimensions equal to 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. 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) 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 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 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 a digital recorded copy of one flight. In the documentation, please include a description of stability testing before the rocket was flown.
- The skill level of a 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 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. **High Power Rockets are NOT appropriate for 4-H projects and will be disqualified.**
- Posters can be any size up to 28" by 22" when ready for display. Tri-fold poster boards are not 28" by 22" when fully open for display.
- Rockets made with plastic fins and/or plastic body tubes are County Only projects.
- Scoresheets, forms, contest study materials, and additional resources can be found at https://go.unl.edu/ne4haerospace
- Educational resources can be found at: https://4hcurriculum.unl.edu/index.php/main/program_project/120

DEPT. H / DIV. 850
AEROSPACE/ROCKETS
[Scoresheets SF92]

(NOT eligible for State Fair)
Class 901 Rocket *[SF92]*: Any Skill Level Rocket with **plastic or other fin material.**

(Eligible for State Fair)
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 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" 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.
Class 4 Rocket *[SF92]*: Any self-designed rocket with **wooden fins and cardboard body tubes.**

DRONES
[Scoresheets SF92-93]
Class 5 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" by 22".
Class 6 Drone Video *[SF92]*: 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, etc. Video should not exceed 5 minutes. Exhibitors must provide a hard copy QR code for viewing. Exhibitors are encouraged to test their codes or links on several devices to check for appropriate permissions for public viewing.

COMPUTERS

COMPUTERS GUIDELINES

- Learn about hardware and software; Discuss Internet safety; Create and save data; Use Internet search engines; Take apart a computer; Participate in a chat room; Create a newspaper or magazine; Build your own computer system; Design a website; Develop a multimedia presentation; Use spreadsheets.
- This category gives 4-H Members a chance to display their knowledge of computers. Through participation in this category 4-H Members will develop presentations that show judges their knowledge in the different aspects of computer science. Involvement in STEM Computers gives participants a first-hand experience in modern technology. For help getting started with this project contact your county extension office.
- 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.
- Demonstration boards should include an overall title for the display, plus other necessary labeling.
- Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
- Please refer to the General Rules for the policy regarding use of copywritten images.
- **Team Entries**: To qualify for entry at the Nebraska State Fair team materials entered in <u>DEPT H., DIV 860, CLASS 7 – Maker Space/Digital Fabrication</u> must clearly be the work of a team instead of an individual, and must have at least 50% of all team members enrolled in 4-H. Additionally, all enrolled 4-H members on the team should complete and attach an entry tag to the materials. A supplemental page documenting the individual contributions to the project should be included. The entry will be judged as a team, with all team members receiving the same ribbon placing.
- Scoresheets, forms, contest study materials, and additional resources can be found at http://go.unl.edu/ne4hcomputers
- Educational resources can be found at: https://4hcurriculum.unl.edu/index.php/main/program_project/123

DEPT. H / DIV. 860
COMPUTERS

COMPUTER MYSTERIES: UNIT 1
GENERAL INFORMATION *[Scoresheet WCF83]*:
- Computer Posters should be mounted on a 14"x22" poster either in a vertical or horizontal arrangement.
- Computer Posters should be based on a computer theme, such as "How a Computer Works," "How to Use a Computer," or "Computers in Action."

(NOT Eligible for State Fair)
Class 901   Computer Poster: Create a poster. Examples might include hardware, software programs, how to take care of a computer, or operating systems.
Class 902   Computer Art Poster: Exhibit should be created on at least an 8½"x11" page using a commercially available graphics software package and printer/plotter.
Class 903   Computer Designed Greeting Card: Exhibit will consist of six greeting cards, each for a different occasion/holiday. Exhibit should be created on 8½" x 11" paper using a commercially available graphics program and a printer/plotter. Cards should vary in fold and design.

Prefabricated cards from commercially available card programs will NOT be accepted. Note which software program was used.
Class 904   4-H Promotional Flier: Create flier on 8½" x 11" page using a commercially available graphics software package. Fliers can be a whole page or folded flier.

COMPUTER MYSTERIES: UNIT 2
[Scoresheets SF276-277]

Class 1   Computer Application Notebook *[SF277]*: 4-H exhibitor should use computer application to create a graphic notebook utilizing computer technology. 4-H Member may create any of the following: greeting card (5 different cards such as a birthday, wedding, anniversary, sympathy, get well or other); a business card (3 cards for 3 different individuals and businesses); menu (minimum of 2 pages including short description of foods and pricing); book layout (I-book); promotional flyer (3 flyers promoting 3 different events); newsletter (minimum 2 pages); or other: examples such as precision farming or family business logo, etc. This exhibit consists of a notebook (8.5x11") which should include (1) a detailed report describing: (a) the task to be completed; (b) the computer application software required to complete the task; (c) specific features of the computer application software necessary for completing the task; (2) a print out of your project. Project may be in color or black and white.
Class 2   Produce a Computer Slideshow Presentation *[SF276]*: Using presentation software, a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. A notebook with a printout of all the slides should be submitted. Slideshow should include a minimum of 10 slides and not more than 25. Incorporate appropriate slide layouts, graphics, animations, and audio (music or voice and transition sounds do not count). Each slide should include notes for a presenter. All slideshows must be uploaded and exhibitors must provide a hard copy QR code for viewing. Exhibitors are encouraged to test their codes or links on several devices to check for appropriate permissions for public viewing.

COMPUTER MYSTERIES: UNIT 3
[Scoresheets SF275-276 & SF1050-1051]:

Class 3   Produce an Audio/Video Computer Presentation *[SF276]*: Using presentation software, a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth, including audio and/or video elements. A notebook with a printout of all the slides should be submitted. The presentation should be at least 2 minutes in length and no more than 5 minutes in length, use appropriate graphics and sound and either a video clip, animation, or voice over and/or original video clip. Exhibitors must provide a hard copy QR code for viewing. It is recommended to test codes or links on several devices to check for appropriate permissions for public viewing.
Class 4   How to STEM (Science, Technology, Engineering and Math) Presentation *[SF276]*: Youth design a fully automated 2 to 5 minute 4-H "how to" video. Submissions should incorporate a picture or video of the 4-H Member, as well as their name (first name only), age (as of January 1 of the current year), years in 4-H, and their personal interests or hobbies. Exhibitors must provide a hard copy QR code for viewing. It is recommended to test codes or links on several devices to check for appropriate permissions for public viewing.
Class 5   Virtual Platform Presentation *[SF176]*: Youth design a fully automated education presentation using any multimedia platform such as TikTok, YouTube, Canva, Canvas, etc. Submissions may include a notebook, poster, etc. explaining the process, experience, and/or presentation. All submissions must include a link to the virtual presentation. Exhibitors must provide a hard copy QR code for viewing. It is recommended to test codes or links on several devices to check for appropriate permissions for public viewing.
Class 6   Create a Web Site/Blog or App *[SF275]*: Design a simple