

- 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 3 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.

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.

DIVISION 850 - AEROSPACE/ROCKETS

Youth enrolled in Aerospace 2, 3, or 4 may exhibit in any class within this division.

AEROSPACE/ROCKETS

- 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, explains that 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

SELF-DESIGNED ROCKET

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

DRONES

- 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".
- 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: sritchard1@unl.edu by July 8, 2021.
- 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 **

DEPARTMENT COMPUTERS

PREMIUMS: Purple-\$4.50; Blue-\$4.00; Red-\$3.50; White-\$2.50

- 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.
- Each individual is limited to one exhibit per class. All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.
- 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 computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
- Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
- Premier 4-H Science Award is available in this area.
- Team Entries: To qualify for entry at the Nebraska State Fair, team materials entered in H860009 - Digital Fabrication is clearly the work of a team instead of an individual; 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.

DIVISION 859 - COMPUTERS

BOOTING UP – UNIT I

- H859001. **POSTER** – Create a poster on a lesson learned in Unit I. Examples might include: hardware, software programs, how to take care of a computer and operating systems.

DIVISION 860 - COMPUTERS

COMPUTER MYSTERIES – UNIT II

- H860001.* **COMPUTER APPLICATION NOTEBOOK** - 4-H exhibitor should use computer application to create a graphic notebook utilizing computer technology. 4-H'er 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 inches) 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) print out of your project. Project may be in color or black and white.
- H860002.* **PRODUCE A COMPUTER SLIDESHOW PRESENTATION** - Using Presentation Software - A notebook with a printout of all the slides should be submitted. Slideshow should include a minimum of 10 slides and no 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. Files must be saved in a PC compatible format. State Fair entries: all slide shows for state fair should be emailed to Amy Timmerman atimmerman2@unl.edu before August 15 with county name and last name of participant before emailing. SF277

COMPUTER MYSTERIES – UNIT III

- H860003.* **PRODUCE AN AUDIO/VIDEO MULTIMEDIA COMPUTER PRESENTATION** - Using presentation software, a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. The presentation should be at least 2 minutes in length and no more than 5 minutes in length, appropriate graphics, sound and either a video clip, animation or voice over and/or original video clip. The presentation must be able to be played and viewed on a PC using Windows Media Player, Real Player, iTunes or QuickTime Player. SF276
- H860004.* **HOW TO STEM (Science, Technology, Engineering and Math) PRESENTATION** - 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'er, 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. Videos should be designed for web viewing. Any of the following formats will be accepted: .mpeg, .rm, .wmv, .mp4, .ov, .ppt, or .avi. SF276
- H860005.* **VIRTUAL PLATFORM PRESENTATION** - (SF276) - Youth design a fully automated education presentation (video, notebook, poster, etc.). Videos should be submitted to <https://go.unl.edu/2023nesfset> by August 15th, 2023 or videos can be uploaded to a video streaming application 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 permissions.
- H860006.* **CREATE A WEB SITE/BLOG OR APP** - Design a simple Web site/blog or app for providing information about a topic related to youth using either software programs such as an HTML editor like Microsoft's FrontPage or Macromedia's Dreamweaver, and image editor like IrfanView or GIMP OR online using a WIKI such as Google Sites. If the Web site, Blog, or App isn't live, include all files comprising the Web site, Blog, or App should be submitted on a CD-ROM in a plastic case along with the explanation of why the site was created. If developed using a WIKI or other online tool, include a link to the website in the explanation of why the site was created.
- H860007.* **3D PRINTING** - 3D printing uses plastic or other materials to build a 3 dimensional (3D) object from a digital design. Youth may use original designs or someone else's they have re-designed in a unique way. Exhibits will be judged based on the motivation and/or problem identified. For example, 3D objects printed as part of the design process for robot or other engineering project or cookie cutter. Must include design notebook with motivation or problem statement the prototype was 3D printing will include a notebook with the following:
- What was the motivation for your design or the problem you were solving with your design? ie. is your item a functional or decorative piece?
 - Please include a picture of original design, citation of designer/website OR if design is completely original (you created it using CAD software), then state that it's original. If item was not completely original, indicate what you did to the original design to modify it to better meet the design problem stated in #1 above. Its design was modified multiple times, please indicate what change was made with each modification, and what prompted the need for the change. I.e. I printed it and the design was too fragile, so I resliced the print to make thicker external walls, or to have a denser infill.
 - Define your process for designing/printing. What software and/or hardware was used (indicate type of 3D printer or if item was created with 3D pen)?

- d. What materials were selected for your project?
 - e. If your final design has any moving parts, define how you determined appropriate allowance in your design.
 - f. Identify any changes that you would make to improve your design.
- H860008.* **MAKER SPACE/DIGITAL FABRICATION** - This project is a computer generated project created using a laser cutter, vinyl cutter, heat press or CNC router. Vector or 3D based software such as Corel Draw or Fusion 360 would be an example of an appropriate software used to create your finished project. Project should include a notebook with the following:
- a. What motivated you to create this project
 - b. Software and equipment used
 - c. Directions on how to create the project
 - d. Prototype of plans
 - e. Cost of creating project
 - f. Iterations or modifications made to original plans
 - g. Changes you would make if you remade the project

Team Entry Option: To qualify for entry at the Nebraska State Fair team materials entered in H860007 – Maker Space/ Digital Fabrication 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.

DEPARTMENT ROBOTICS

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DIVISION 861 - ROBOTICS

- Youth enrolled in Virtual Robotics, Junk Drawer Robotics (Levels 1, 2, or 3) Robotics Platforms or GEAR TECH 21 may exhibit in any class within this division.
- Team Entries: To qualify for entry at the Nebraska State Fair, team materials entered in robotics classes that are clearly the work of a team instead of an individual 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.
- Creating a video of your robot in action would be helpful for the judges but is not mandatory. Present as a CD Rom with your robot entry.

H861001.* **ROBOTICS POSTER** – Create a poster (14” x 22”) communicating a robotics theme such as “Robot or Not”, “Pseudocode”, “Real World Robots”, “Careers in Robots” or “Autonomous Robotics”, “Precision Agri culture”, or a robotic topic of interest to the 4-H’er. SF236

H861002.* **ROBOTICS NOTEBOOK** - Explore a robotics topic in-depth and present your findings in a notebook. Documentation should include any designs, research, notes, pseudocode, data tables or other evidence of the 4-H’ers learning experience. The notebook should contain at least three pages. Topics could include a programming challenge, a programming skill, calibration, sensor exploration, or any of the topics suggested in Class 1. SF237

H861004.* **ROBOTICS/CAREERS INTERVIEW** - Interview someone who is working in the field of robotics and research the career in robotics. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1” margins. Multimedia reports should be between 3 to 5 minutes in length. SF239

H861005.* **ROBOTICS SENSOR NOTEBOOK** – Write pseudo code with a loop which includes at least one sensor activity. Include the code written and explain the code function. SF241

H861007.* **KIT LABELED ROBOT (cannot be programmed) and NOTEBOOK** SF243 – This class is intended for explorations of robotic components such as arms or vehicles OR educational kits marketed as robots that do not have the ability to be programmed to “sense, plan and act.” The exhibit should include a notebook with the robot the youth has constructed. Included in the notebook should be (1) a description of what the robot does, (2) pictures of programs the robot can perform, (3) why they chose to build this particular form, and (4) how they problem solved any issues they might have had during building and programming. A picture story of assembly is recommended. If robot is more than 15” inches wide and 20” inches tall they may not be displayed in locked cases.

H861008.* **3D Printed Robotics Parts** - This class is intended for youth to create parts through 3D printing, that help create their robot or aid the robot in completing a coded function. Project should include notebook describing the process used to create the project, describe the success of your designed piece (did it work), intended use of the product and the modifications made to the item. SF244