SCIENCE, ENGINEERING & TECHNOLOGY STEM (ENGINEERING)

Unlimited entries per class number may be made per exhibitor.
Premium Code: STATIC ITEMS

Rules:
1. 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 exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24" and not to exceed 1/4" in thickness. A height of 23 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). Posters can be any size up to 28" by 22" when ready for display. Example: tri fold poster boards are not 28" by 22" when fully open for display.
3. Fabricated boards such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. 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.

COMPUTERS

This division gives 4-H'ers a chance to display their knowledge of computers. Through participation in this category 4-H'ers will develop presentations that show judges their knowledge of the different aspects of computer science. Involvement in STEM Computers gives participants a first-hand experience in modern technology. 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: https://4hcurriculum.unl.edu/indes/php/main/program_project/123
Rules:
1. 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.
2. Demonstration boards should include an overall title for the display, plus other necessary labeling.
3. 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.
4. 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.
5. No firearms, items with a blade, and other related items allowed.
6. No use of copywritten images.
7. The State Fair Premier 4-H Science Award is available in this area.
8. Team Entries: 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.

Booting Up-Unit 1
Dept H Division 860
Classes
20* Poster- Scoresheet CF022- Create a poster on a lesson learned in Unit 1. Examples might include hardware, software programs, how to take care of a computer and operating systems.
24*Computer Designed Announcement/Greeting Card- Scoresheet CF023- Card should be created using a commercially available graphics program. Tell which software program was used. Prefabricated cards from commercially available card programs will NOT be accepted. No theme required. Put cards in some type of protective cover.
27* 4-H Promotional Flier- Scoresheet CF024- Exhibit should be created on an 8 1/2" x 11" page using a commercially available graphics software package. Flier can be color or black and white. Fliers can be a whole page or a folded flier. Display on appropriate size paper or poster board, not to exceed 24" x 24".

28* Cybercard- Scoresheet CF025- (For ages 8-12)- Exhibit will consist of two cyberspace greeting cards sent to the office e-mail address. The exhibit will be a printout of each card and a one-page text telling the steps taken to complete and send the cybercards and how you may be able to use cybercards. **Due in Extension office by 4:00 p.m. on entry deadline date**. Office email address: nuckolls-county@unl.edu or thayer-county@unl.edu

29* Utilizing the Internet- Scoresheets CF026- Exhibit will be a notebook of web sites used to plan a real or fictitious vacation. Notebook will consist of at least four different web sites illustrating the following: 1) airfare and/or directions to drive to destination, 2) hotels/motels in the area, 3) things to do (i.e., baseball game, Disney World, amusement park) and 4) a maximum of one- page text telling the steps taken to plan the vacation. List web sites for each site and tell how you may be able to use the web to plan or research other things in the future.

Computer Mysteries-Unit 2
Dept H Division 860
Classes

1   Computer Application Notebook - Scoresheet SF277- 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 should 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 a (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.

2   Produce a Computer Slideshow Presentation- Scoresheet 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 presentation. All slideshows must be uploaded and submitted to Nuckolls-county@unl.edu one week prior to fair's static entry date. Exhibitors MUST provide a hard copy QR code for viewing. Exhibitors should test their codes or link on several devices

to check for appropriate permissions for public viewing.

Computer Mysteries-Unit 3

Dept H Division 860

Classes

3   Produce an Audio/Video Computer Presentation- Scoresheet 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, appropriate graphic, sound and either a video clip, animation, or voice over and/or original video clip. Entry should be submitted to Nuckolls-county@unl.edu one week prior to fair's static entry date. Exhibitor must provide a hard copy QR code for viewing. Codes should be tested on several devices to check for appropriate permissions for public viewing.

4   How To STEM (Science, Technology, Engineering, and Math) Presentation- Scoresheet 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-Her, 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 or may be uploaded to a video streaming application and exhibitors MUST provide a hard copy QR code for public viewing. Exhibitor should test their codes or links on several devices to check for appropriate permissions for public viewing.

5   Virtual Platform Presentation- Scoresheet SF276- Youth design a fully automated educational presentation using any multimedia platform such as Tik Tok, 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. Entry should be submitted to Nuckolls-county@unl.edu one week prior to fair's static entry date. 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.

6   Create a Website/Blog or App- Scoresheet SF275- Design a simple website/blog or app for providing Information about a topic related to youth. Include an explanation of why the entry was created. Any current website, blog, or app development platform is accepted such as Google Sites, iBuildApp, Wix, etc. If the website, blog, or app isn't live, include all files on a flash drive in a plastic case. Entry should be submitted to Nuckolls-county@unl.edu one week prior to fair's static entry date. Exhibitors are encouraged to test their codes or links on several devices to check for appropriate permissions for public viewing.

7 **3D Printing-** Scoresheet SF1050- 3D printing uses plastic or other materials to build a three-dimensional (3D) object from a digital design (including 3D Pen Creation). Youth may use original designs or someone else's they have redesigned 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 projects. Must include design notebook that addresses the following questions:
1. What was the motivation for your design or the problem you were solving with your design? i.e. Is your item a functional or decorative piece?
2. 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.
3. 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)?
4. What materials were selected for your project?
5. If your final design has any moving parts, define how you determined an appropriate allowance in your design.
6. Identify any changes that you would make to improve your design.

8 **Maker Space/Digital Fabrication-** Scoresheet SF1051-This project is a computer generated projected 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.
   State Fair 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.