

# Science, Technology, Engineering & Math

## Department H

### Division 860 – Computers

This category 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 various aspects of computer science. Involvement in STEM Computers gives participants a first-hand experience of modern technology. For help getting started with this project contact your county 4-H extension office.

#### 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 transparent 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. Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
6. Please refer to the General Rules for the policy regarding the use of copyrighted images.
7. 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 H860008 – 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.

For General Rule [click here](#)

## **Eligibility**

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

## **Quota**

Maximum of 2 entries per class

Everyone is limited to one exhibit per class

## **Scoresheets, Forms, and Contest Study Materials**

Scoresheets, forms, contest study materials, and additional resources can be found at <http://go.unl.edu/ne4hcomputers>.

# **COMPUTERS - UNIT 1**

**\* Following 900# classes are not eligible for State Fair consideration\***

### **CLASS 901 WRITE A SOFTWARE PROGRAM**

This project allows a 4-H'er to demonstrate his or her skills in writing a computer program using a common programming language. The program must demonstrate the use of data files and subroutines. It should demonstrate a high degree of organization and quality suitable for distribution to the public. This exhibit consists of a notebook (8.5x11) which should include these parts: (1) a cover page, (2) a report including: (a) what the software can do, (b) why you wrote the software, (c) what features are included in the software, (d) how you will use the program in the future, (3) a flow chart in block diagram form, and (4) an example of input and output

### **CLASS 902 COMMERCIAL SOFTWARE UTILIZATION**

The exhibit will be a notebook of the documentation and printouts using each section of the commercial program (i.e., Microsoft Works; Word processor, Database, Spreadsheet). The notebook will have the following areas: 1) cover page, 2) printouts of each section offered by the software and 3) a paragraph explaining how each section can be used.

### **CLASS 903 COMPUTER POSTER**

Create a poster. Examples might include hardware, software programs, how to take care of a computer and operating systems.

### **CLASS 904 COMPUTER GRAPHIC ART POSTER (BLACK & WHITE)**

Exhibit should be created on at least an 8 ½" x 11" page using a commercially available graphics software package and a single-color printer/plotter. Posters shall be mounted on a 14" x 22" poster either in vertical or horizontal arrangement. No theme required.

**CLASS 905      COMPUTER GRAPHIC ART POSTER (COLOR)**

Exhibit should be created on at least an 8 ½" x 11" page using a commercially available graphics software package and color printer/plotter. Posters shall be mounted on a 14" x 22" poster either in vertical or horizontal arrangement. No theme required.

**CLASS 906      COMPUTER DESIGNED GREETING CARD**

The exhibit will consist of six (6) greeting cards, each for a different occasion/holiday. Cards should be created on an 8 ½ x 11" page using commercially available graphics program and either single color or color printer/plotter. The cards should vary in fold and design. 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.

## **COMPUTER MYSTERIES – UNIT 2**

**Class 1      Computer Application Notebook (SP277)**

4-H exhibitors should use computer applications 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 brief 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.

**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 presentation. All slideshows must be uploaded. State fair qualified entries should be submitted to <https://go.unl.edu/2024nesfset> by August 10, 2024, or entries can be uploaded to a cloud sharing service 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.

## COMPUTER MYSTERIES – UNIT 3

- 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 more than 5 minutes in length, appropriate graphics, sound and either a video clip, animation, or voice over and/or original video clip. State Fair qualified entries should be submitted to <https://go.unl.edu/2024nesfset> by August 10, 2024, or entries can be uploaded to a cloud streaming service 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.
- 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-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. State Fair eligible entries should be submitted to <https://go.unl.edu/2024nesfset> by August 10th, 2024, or videos can be 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.
- CLASS 5      Virtual Platform Presentation –(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. State Fair qualified entries should be submitted to <https://go.unl.edu/2024nesfset> by August 10<sup>th</sup> ,2024. Entries can**

also be uploaded to a cloud sharing service. 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.

**CLASS 6      Create a Web Site/Blog or App (SF275)**

Design a simple Web site/ blog or app for providing information about a topic related to youth. Include an example 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 is not live, include all the files on a flash drive in a plastic case. State Fair qualified entries should be submitted to <https://go.unl.edu/2024nesfset> by August 10, 2024. Entries can be uploaded to a cloud sharing service. 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.

**CLASS 7      3D Printing (SF1050)**

3D printing uses plastic or other materials to build a three-dimensional (3D) object for a digital design (including 3D Pen Creation). 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 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? Is your item a functional or decorative piece?
2. Please include a picture of the original design, citation of designer/website OR if design is completely original (you created it using CAD software), then state that it is 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.

## **CLASS 8      Maker Space/Digital Fabrication (SF1051)**

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 appropriate software used to create your finished project. Project should include a notebook with the following:

1. What motivated you to create this project
2. Software and equipment used
3. Directions on how to create the project
4. Prototype of plans
5. Cost of creating project
6. Iterations or modifications made to original plans
7. 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 H860008 – 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.

## **Resources**

### **Computer Mysteries 1**

Learn about hardware and software; Discuss Internet safety; Create and save data.

**URL:** [https://4hcurriculum.unl.edu/index.php/main/program\\_project/123](https://4hcurriculum.unl.edu/index.php/main/program_project/123)

### **Computer Mysteries 2**

Use Internet search engines; Take apart a computer; Participate in a chat room; Create a newspaper or magazine.

**URL:** [https://4hcurriculum.unl.edu/index.php/main/program\\_project/124](https://4hcurriculum.unl.edu/index.php/main/program_project/124)

### **Computer Mysteries 3**

Build your own computer system; Design a Web site; Develop a multimedia presentation; Use spreadsheets.

**URL:** [https://4hcurriculum.unl.edu/index.php/main/program\\_project/125](https://4hcurriculum.unl.edu/index.php/main/program_project/125)