



# 2024 Scotts Bluff County Fair 4-H Fair Book



**Only one entry per class.** <sup>S<sub>E</sub></sup> Classes only are State Fair eligible.

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

## STEM Electricity Division 870

In this category 4-H'ers have the opportunity to create informational exhibits about the different aspects of electricity. Through involvement in this category 4-H'ers will be better educated about electricity and be able to present their knowledge to others.

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4helectricity>.

### State Fair Special Recognition:

Premier 4-H Science Award is available in this area. Please visit this site for more details <https://4h.unl.edu/fairbook/premier-science-award>.

### Rules

- A. 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 the owner of the exhibit may be identified if the entry tag is separated from the exhibit.
- B. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
  1. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
  2. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
  3. Demonstration boards should include an overall title for the display, plus other necessary labeling.
  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

### Magic of Electricity – Unit 1

- Class 11 **Bright Lights:** Create your own flash light using items found around your house. Flash lights should be made out of items that could be recycled or reused. No kits please.
- Class 12 **Control the Flow:** Make a switch. Use the following items: D cell battery, battery holder, insulated wire, 2 or 2.5 volt light bulb, bulb holder, paper clip, cardboard, and two brass paper fasteners to create a circuit that you can open and close.
- Class 13 **Conducting Things:** Make a circuit with a switch and a light bulb that can be used to test different household items for their ability to act as an insulator or conductor. You must find five items that are conductors and five items that are insulators. Create a table that illustrates your results.
- Class 14 **Is There a Fork in the Road:** Use the following items to construct one parallel and one series circuit. Items: D cell battery, battery holder, insulated wire, bulb holder and a 2 or 2.5 volt light bulb.





### Investigating Electricity – Unit 2

- Class 15 **Case of Switching Circuit:** Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3" by 6" piece of cardboard, six brass paper fasteners and approx. two feet of 24 gauge insulated wire to build a three way switch. Write a short essay or create a poster that illustrates how three-way switches function.
- Class 16 **Rocket Launcher:** Construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4" by 8", single pole switch, single throw switch, normally-open push button switch, 40 feet of 18 or 22 gauge stranded wire, 4 alligator clips, 2" by 6" board 6 inches long, 1/8 inch diameter metal rod, rosin core solder, soldering iron or gun, wire stripper, small crescent wrench, pliers, small Phillips and straight blade screwdrivers, drill 1/8 inch and 1/4 inch drill bits, rocket engine igniters, additional drill bits matched to holes for two switches. You must successfully build a rocket launcher and light two rocket igniters with your launcher. You DO NOT have to actually fire a rocket off the launcher. Create a poster using photographs to show the "step by step process" you used to build your launcher.
- Class 17 **Stop the Crime:** Build an alarm using the following materials: On-off push button switch, mercury switch, buzzer-vibrating or piezoelectric, 9-volt battery, 9-volt battery holder, 4" by 4" by 1/8 inch Plexiglass board to mount circuit on; rosin core solder, soldering gun/iron, two feet of 22 gauge wire, wire strippers, hot glue sticks, hot glue gun and a plastic box with a lid to mount your alarm circuit on. Create a poster using photographs to show the "step by step process" you used to build your alarm.

### Electricity – Wired for Power – Unit 3

- <sup>S</sup><sub>F</sub>Class 1 **Electrical Tool/Supply Kit:** (Scoresheet SF224) Create an electrical supply kit to be used for basic electrical repair around the house. Include a brief description of each item and its use. Container should be appropriate to hold items.
- <sup>S</sup><sub>F</sub>Class 2 **Lighting Comparison:** (Scoresheet SF225) Display studying the efficiency of various lighting (incandescent, fluorescent, halogen, Light Emitting Diodes, etc.) Exhibit could be a poster display, or an actual item.
- <sup>S</sup><sub>F</sub>Class 3 **Electrical Display/Item:** (Scoresheet SF226) Show an application of one of the concepts learned in the Wired for Power project. Examples include: re-wiring or building a lamp, re-wiring or making a heavy duty extension cord or developing an electrical diagram of a house. Exhibit could be a poster display, or an actual item.
- <sup>S</sup><sub>F</sub>Class 4 **Poster:** (Scoresheet SF227) Poster should exemplify one of the lessons learned in the Wired for Power project. Posters can be any size up to 28" x 22".

### Electronics – Unit 4

- <sup>S</sup><sub>F</sub>Class 5 **Electrical/Electronic Part Identification:** (Scoresheet SF228) Display different parts used for electrical/electronics work. Exhibit should show the part (either picture or actual item) and give a brief description, including symbol of each part and its function. Display should include a minimum of 10 different parts.
- <sup>S</sup><sub>F</sub>Class 6 **Electronic Display:** (Scoresheet SF229) Show an application of one of the concepts learned in the Entering Electronics project. Examples include: components of an electronic device (refer to page 35 of the Entering Electronics manual).
- <sup>S</sup><sub>F</sub>Class 7 **Electronic Project:** (Scoresheet SF230) Exhibit an electronic item designed by the 4-H'er or form a manufactured kit that shows electronic expertise of the 4-H'er. Examples include: a radio, a computer, or a volt meter.
- <sup>S</sup><sub>F</sub>Class 8 **Poster:** (Scoresheet SF231) Poster should exemplify one of the lessons learned in the Entering Electronics project. Posters can be any size up to 28" x 22".





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## STEM Geospatial Division 880

STEM Geospatial is a diverse category that includes a variety of exhibits 4-H'ers can get involved in. Through participation in this category 4-H'ers will gain more knowledge about Nebraska's rich history and diverse geography. Take close note of the rules to ensure your exhibit qualifies.

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4hgeo>.

URL: [https://4hcurriculum.unl.edu/index.php/main/program\\_project/132](https://4hcurriculum.unl.edu/index.php/main/program_project/132)

State Fair Premier 4-H Science Award is available in this area.

### Rules

A. 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 the owner of the exhibit may be identified if the entry tag is separated from the exhibit.

B. 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.

**S<sub>F</sub>Class 1 Poster** – (Scoresheet SF299) Create a poster (not to exceed 14" x 22") communicating a GPS theme such as How GPS or GIS works, Careers that use GPS or GIS, How to use GPS, What is GIS, GPS or GIS in Agriculture, Precision Agriculture, or a geospatial topic of interest.

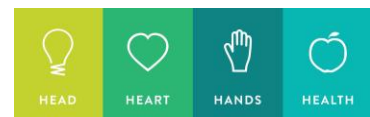
**S<sub>F</sub>Class 2 4-H Favorite Places or Historical Site Poster** – (Scoresheet SF299) The 4-H exhibitor identifies a favorite place or historical site (including grave sites) in Nebraska. Exhibit should include latitude and longitude, digital picture, and local area map. Poster size should not exceed 14" X 22".

**S<sub>F</sub>Class 3 GPS Notebook** – (Scoresheet SF300) Keep a log of at least 5 places visited using a GPS enabled device. At least one site should be from a community other than where you live. For each site, record the latitude, longitude and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional but encouraged.

**S<sub>F</sub>Class 4 Geocache** – (Scoresheet SF301) Assemble a themed geocache (physical geocache is REQUIRED with exhibit). Each geocache should be a water-tight container. It should include a logbook and pencil for finders to log their visits and may include small trinket, geocoins, etc. for the finders to trade. Documentation should include a title, teaser description and the geographic coordinates of intended placement. **Register the site at [geocaching.com](http://geocaching.com), include a print-out of its registry.** The entry may include a photograph of the cache in its intended hiding place.

**S<sub>F</sub>Class 5 Agriculture Precision Mapping** – (Scoresheet SF302) 4-Hers will assemble a notebook that will include a minimum of 2 digital copies of various data layers that can be used in precision agriculture to identify spatial patterns and/or correlations (printed copies of websites were applications can be purchased is acceptable) A report of how the analysis of the various data will be used to make a management decision.

**S<sub>F</sub>Class 6 4-H History Map/Preserve 4-H History:** -- (Scoresheet SF303) Nominate a Point of Interest for the 4-H History Map Project. Include copy of submitted form in folder or notebook. To nominate a site for the 4-H history map please go to <http://arcg.is/1bvGogV>. For more information about 4-H history go to [http://www.4-hhistorypreservation.com/History\\_Map/](http://www.4-hhistorypreservation.com/History_Map/) for a step-by-step video on nominating a point, please go to this link: <http://tinyurl.com/nominate4h>. Write a brief description of historical significance of 4-H place or person. (a minimum of one paragraph)





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- S<sub>E</sub>Class 7 GIS Thematic Map** – (Scoresheet SF302) Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-H'er. Example map would be Amelia Earhart's or Sir Francis Drake's voyage population density maps, water usage maps or 4-H project in Nebraska. Create GIS Map using data from books, and/or internet. Use reliable data, (U.S. Center or U.S. Census Bureau etc.) Map any size from 8.5" x 11" up to 36" x 24", should include Title, Base Map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of map.
- S<sub>E</sub>Class 8 Virtual Geocache** (Scoresheet SF300) - Keep a log of at least 5 places visited using a virtual geocach platform. At least one site should be from a community other than where you live. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional, but highly encouraged.

