

- *111. Shooting Aid or Accessory- Item which helps the shooter/hunter better perform their sport. Ex: rifle sling, kneeling roll, arm guard, shotgun vet, target boxes, shooting stick, etc. Include design, or plans you adapted, what the item is and uses.
- *112. Storage Case- Item with the purpose to safely hold a firearm, bow, ammunition, and/or arrows. Ex: soft sided shotgun case, quivers, firearm safe. Include design, or plans you adapted. Explain how the storage case is used.
- *113. Practice Game or Activity- Invent or adapt an activity to practice or teach a project skill. Include pictures of youth playing the game, testimonials for 4-H members who played the game, what skill is being worked on, and directions for game. Explain how you came up with the game or adapted it to fit the needs of your group members.
- *114. Science, Engineering, Technology Advancements of Shooting Sports Essay or Display - Choose a specific area of shooting sports and share how it has advanced. Include a timeline and photos or illustrations. Keep topic narrow and manageable. Essay limited to 1000 words, on 8 1/2" x 11" paper.
- *115. Healthy Lifestyles Plan- Include a shooter's diet and exercise plan, and how the 4-H member will benefit or improve from following the plan. Ideally, 4-H member would follow the plan and include some journal entries about adaption or improvements made while following the plan.
- *116. Citizenship/Leadership Project- Share a display on a citizenship or leadership project the 4-H member took on individually or with a group to improve some aspect related to 4-H Shooting Sports. Ex: range development, conservation planting to attract wildlife, a camp, 4-H recruitment event. Include who benefited from the project, what the 4-H member's role was, and results.
- *117. Career Development/College Essay, Interview or Display- Research opportunities for careers related to this area or opportunities for college majors or college activities to help discover using project skills beyond a person's 4-H career. Essay limited to 1000 words, on 8 1/2' x 11' paper. Interview must include a picture of interviewee in their work setting, questions asked, and a transcript of answers.
- *118. Community Vitality Display- Explore the difference shooting sports and hunting make in keeping Nebraska vibrant, especially in rural areas. Present facts and research in an interesting way for the public to learn from.
- *119. Ag Literacy - Value Added Agriculture Interview or Research Project- Explore how traditional ag producers are adding value to their production agriculture operation through conservation efforts, hunting, raising pheasants, shooting sports related tourism, etc. Present findings in an interesting way for the public to learn from.

DEPARTMENT 38

SCIENCE, ENGINEERING & TECHNOLOGY

Pre-Entry Deadline: July 11 (paper) or July 18 (online)

Trophies, Awards & Sponsors

Rewound Power Motors Sales & Service - Sr. Division All-Stars Champion
Nebraska Crop Insurance Agency- Int. Division All-Stars Champion
Cami Saathoff State Farm - Jr. Division All Stars Champion
Gage County 4-H Council- Champion Theme Exhibit

ENGINEERING THEME EXHIBITS - Division 1
COME HOME TO THE GAGE COUNTY FAIR 4-H THEME EXHIBITS
Premium \$2.00 Non-Competitive 2018 Theme Ribbon

- Open to 4-H member enrolled in Engineering project.
- | | |
|---|-------------------------------------|
| 1. Wooden Theme Exhibit | 7. Nuts/Bolts Theme |
| 2. Welding Theme Exhibit | 8. Schoolhouse Theme |
| 3. Husker Wind Chimes | 9. Lunch Pail/Bucket Repurposed |
| 4. Bird House made with Old Vehicle Tag/s | 10. My Home Fire Escape Plan Poster |
| 5. Go Big Red | 11. House Shaped Accessory/Item |
| 6. Lego/K'Nex Husker | 12. Theme Exhibit of Choice |

COUNTY ENGINEERING EXHIBITS - Division 2
MODEL HORSE OR ANIMAL DIORAMA
Premium Category 6

- Open to any 4-H member.
13. Diorama- Show animal in natural setting, pasture, etc. May include accessories such as fences, water tanks, show equipment, etc. Include: 1) Short description of breed and breed characteristics; 2) Short description of the balanced diet of this animal. Each description should be 3-4 sentences in length. Print, type or write information in large size for ease of readability. Exhibit on 8 1/2" x 11" plywood or material to support exhibit, same size box, etc.

2018 CAMP RENEGADE
Premium \$2.00 Non-Competitive

- Open to 4-H member attending Camp Renegade at Camp Jefferson, Fairbury.
14. Animals Inside and Out Poster - 14 x 22 "
15. Flag Project
16. Other Exhibit

4-H GIANT LEGO SPECIAL
Premium \$2.00 Non-Competitive

- Open to 4-H member enrolled in project at Extension Office. Funding provided by **Beatrice Walmart Super-Center #2784**
17. Giant Lego Kit - One of the most popular and best selling toys of all time around the world is Lego, dating back over 80 years. Participants will pick up Lego kit at Extension Office and assemble according to directions. Must exhibit on substantial base of appropriate size (some bases provided). Leave assembled kit at the 4-H Building Sunday evening of the fair. Staff will unassembled kits for 2019 participants.

SOLAR LIGHT POST
Premium Category 6

- Open to 4-H member enrolled in project at Extension Office. Thanks to Paul Hay, Extension Educator, and Doug Casey, Precise Fabrication, for project design.
18. Solar Light Post – Participants will pick up kit and build a solar light post for yard or garden landscaping. Exhibitor will determine height of post and paint, embellish or leave natural.

LARGE ENGINEERING EXHIBIT
Premium Category 2

- Open to 4-H/FFA member enrolled in Engineering Project.
21. Large Item - Include plans/directions in clear plastic cover. (May be exhibited outside)

CONCRETE EXHIBIT
Premium Category 5

- Open to any 4-H/FFA member.
22. Stepping Stone
23. Planter
24. Bird Bath
25. Exhibit of Choice

REDUCE - REUSE - RECYCLE
Premium Category 6

- Open to any 4-H/FFA member.
26. Recycled Item for Outdoors - Adapted for use other than its original purpose.
27. Recycled Item for Home - Adapted or redecorated for use other than its original purpose.
28. Constructed Item to Aid in Recycling - Ex: frame or stand to hold bins for cans, paper, plastic, etc.
29. Video or iMovie- Write and film a commercial with a recycling theme, maximum 3 mins.
30. Exhibit of Choice

ENGINEERING PROJECT INFORMATION

Youth must be enrolled in project to exhibit. Exhibit must be the result of current 4-H/FFA project. Exhibit must be made since July 31, 2017. Exhibitors must **enter exhibits Tuesday, July 24, 2:00 - 7:00 pm**, 4-H Inc. Building. Exhibits must conform to directions in each class.

Late, incorrect or incomplete entries will be lowered one ribbon placing. Limit one exhibit per class per exhibitor unless otherwise stated. Label each exhibit with Exhibitor's name on back or bottom.

Non-Competitive Exhibits receive a rainbow ribbon and premium money designated.

4-H All-Star Champion and Reserve Champion Awards, Age Divisions:
(4-H age January 1, 2018)
Senior Division - 14 and older
Intermediate Division - 11-13
Junior Division - 10 and under

Nebraska State Fair: Classes marked with an * are eligible for State Fair competition. Exhibitor must be 8 years of age by January 1, 2018 to have an exhibit selected for State Fair. **All static exhibits selected for the State Fair must receive a purple ribbon at county fair judging.** If the presence of the 4-H member is required, they must be 10 years of age by January 1, 2018.

Exhibits released Sunday, July 29, 8:00 pm. No premium money given if exhibits are removed before deadline. Remaining exhibits should be picked up Monday, July 30, 2018.

Display Board: Several classes (Ex: Woodworking and Electricity) require a display board which should be a height of 24" and not to exceed 1/4" thickness. A height of 23 7/8" is acceptable to allow for the saw kerf if two 24" boards are cut from one end of a 4'x8' sheet of plywood. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit. Nothing should be mounted within 3/4" of the top or bottom of the board. Include an overall title for the display, plus other necessary labeling.

Reports: Should be written using 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). Reports should be computer generated and in a clear, plastic cover. Reports should be attached securely to the display.

ROCKETRY - Division 3
Premium Category 6

ROCKET PROJECT INFORMATION

Complete factory assembled rockets will not be accepted. Rocket should be supported substantially to protect rocket from breakage. Rockets are to be mounted vertically on a base that has dimensions equal or less than 12"x12" and the base should be 3/4" thick. No metal bases. If the rocket fins extend beyond the edges of the required base, then construct a base that is large enough to protect the fins. Do not attach sideboards or backdrops to display. 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. Those with live engines, wrong base size or sideboards will be disqualified.

Reports should be clearly written or typed and enclosed in a clear, plastic cover. Report must include: 1) rocket specification (include original or photo of manufacture packaging, stating rocket skill level), 2) a 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 and 7) conclusions. Attach report securely to the display. The flight record should describe engine used, what rocket did in flight and recovery success. Points will not be deducting for launching, flight or recovery failures described. This includes any damage that may show on the rocket. Judging based on 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 on the score sheet.

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 may not be exhibited.

NOTE: Skill level is determined by the level listed on the manufacturers packaging, not determined by number of years in project.

- Unit 1
31. Beginning Skill Level Rocket with wooden fins
32. Space Station- Draw a design of a Space Station of the future. Describe how scientists would use the station. Notebook or poster (14"x22").
33. Display- Educational notebook, display, collection of materials that relate to project. Include 8 1/2"x11" page describing exhibit and summary of learning. Max size: 28"x22"
34. Poster - 14"x22"

- Unit 2
- *35. Skill Level 2 Rocket with wooden fins painted by hand or air brush.
*36. Skill Level 2 Rocket with wooden fins painted using commercial application. Ex: commercial spray paint.
*37. Display- Exemplify one of the principles learned in the Lift Off project. Ex: display of rocket parts and purpose, interview of someone in the aerospace field, or kite terminology. Include notebook, containing terminology (definition), and what was learned. Maximum size: 28" x 22".

- Unit 3
- *38. Skill Level 3 Rocket with wooden fins painted by hand or air brush.
*39. Skill Level 3 Rocket with wooden fins painted using commercial application. Ex: commercial spray paint.
*40. Display- Exemplify one of the principles learned in the Reaching New Heights project. Ex: airplane instrumentation, kite flying, or radio-controlled planes. Include notebook, containing terminology (definition), and what was learned. Maximum size: 28" x 22".



Unit 4

- *41. Skill Level 4 Rocket with wooden fins or any self-designed rocket. Include digital recorded copy of one flight. In the documentation, include a description of stability testing before the rocket was flown.
- *42. Display- Exemplify one of the principles learned in Pilot in Command project. Ex: flying lessons or careers in aerospace. Maximum size: 28" x 22".
- *43. Careers Interview- Interview someone working in the field of aerospace and research that career. Interviews can either be written or in a multimedia format, 3-5 minutes in length (CD/DVD). Written interviews should be 3-5 pages, double spaced, 12 point font, 1" margins, in a notebook.

MODEL BUILDING - Division 4

Premium Category 6

Maximum of two (2) exhibits per exhibitor per class. Model must be displayed on a flat sturdy base, maximum size 12"x12". Model should be attached to the base, but do not glue wheels to base. Exhibitor painted models must have a minimum of the interior, engine, and chassis painted.

	Junior (age 7-11)	Senior (age 12 & older)
<u>Model from a Kit</u>		
Exhibitor Painted	44.	52.
Pre-Painted	45.	53.
Diorama- 1 or 2 models in an action scene (18"x24" maximum in an base)	46.	54.
Other - Ex: wood, clay, plaster, plastic. Include plans or description.	47.	55.

	Junior (age 7-11)	Senior (age 12 & older)
<u>Model of Original Design</u>		
Exhibitor Painted	48.	56.
Pre-Painted	49.	57.
Diorama- 1 or 2 models in an action scene (18"x24" maximum in an base)	50.	58.
Other Medium- Ex: wood, clay, plaster, plastic. Include plans or description.	51.	59.

LEGO & K'NEX MODEL BUILDING - Division 5

Premium \$2.00 Non-Competitive

- 60. Purchased Kit

Premium Category 7

- 61. Original Design- No kit/s included in exhibit.
- 62. Diorama- Include 1 or more items (kit or original design) in setting/scene, maximum 18"x24" base. Ex: cardboard box with sides/top partially cut down for display.
- 63. Build a Character with Legos & Write a Story
- 64. Photograph of Lego Character/Exhibit- 5" x 7" on 8" x 10" posterboard
- 65. Item Made with Lego- Ex: lamp, frame, mirror, clock, wall art, vase, etc.
- 66. 3-D Lego Exhibit

LEGO CELEBRATES 60TH ANNIVERSARY IN 2018

Premium \$2.00 Non-Competitive

- 67. Lego Anniversary Exhibit - Since its introduction in 1958, the brick has become an icon of the LEGO brand and has inspired millions around the world to tap into their imaginations and express themselves through creative building. Only sets made for the anniversary may be exhibited.

ROBOTICS - Division 6

Premium Category 6

See Engineering Project Information for instructions.

Individual or Team entries may be entered. Team entries must be marked "team" with a minimum 50% of team members enrolled in 4-H. All 4-H members must complete and attach entry tag to the materials. A supplemental page documenting the individual contributions to the project should be included. Entry will be judged as a team, with all team members receiving the same ribbon placing.

- *68. Robotics Poster- Poster, 14"x22", communicating a robotics theme such as "Robot or Not", "Pseudocode", "Real World Robots", "Career in Robots" or "Autonomous Robotics", "Precision Agriculture" or a robotic topic of interest to 4-H member.
 - *69. Robotics Notebook- Explore a robotics topic in-depth and present your findings in a notebook, at least 3 pages. Documentation should include any designs, research, notes, pseudocode, data tables or other evidence of the 4-H member's learning experience. Topics could include a programming challenge, programming skill, calibration, sensor exploration, or any of the topics suggested in Junk Drawer Robotics Level 3 & 4.
 - *70. Robotics Video & Notebook- Video clip on a CD/DVD that demonstrates the robot performing the programmed function. Include your pseudo code and screenshots of the actual code with a written description of the icon/command functions in a note book. Display in a notebook. Contact Extension Office if your video entry is selected for State Fair.
 - *71. Robotics/Career Interview- Interview someone working in the field of robotics and research the career. Interviews can either be written or in a multimedia format (CD/DVD), 3-5 minutes in length. Written reports should be in a notebook, 3-5 pages, double spaced, 12 point font, 1" margins.
 - *72. Robotics Sensor Notebook- Write pseudo code which includes at least one sensor activity. Include the code written and explain the code function.
 - *73. Kit Labeled Robot (cannot be programmed)- Class 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". Include a project you have constructed, a description of what it does and an explanation of how it is similar to and different from a robot.
 - 74. Robotics Exhibit of Choice
- Premium Category 4**
- *75. Build a Robot (may use a kit)- Include a robot and notebook including the pseudo codes for at least one program you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming. Contact the Extension Office if your robot exhibit is selected for State Fair.

COMPUTERS - Division 7

COME HOME TO THE GAGE COUNTY FAIR 4-H THEME EXHIBITS Premium \$2.00 Non-Competitive 2018 Theme Ribbon

- Open to 4-H member enrolled in Computer (poster 8 1/2" x 11" or 14" x 22")
- | | |
|---------------------------------------|---------------------------------------|
| 76. Come Home to the Huskers | 85. There's No Place Like Home |
| 77. My Home | 86. The Best Journey Takes Me Home |
| 78. Homegrown Kids | 87. 'Till the Cows Come Home |
| 79. Log Cabin | 88. Homesteading |
| 80. Home Sweet Home | 89. Let's Stay Home |
| 81. Home for Christmas | 90. Home on the Range |
| 82. One Room Schoolhouse | 91. Come Home to the Gage County Fair |
| 83. Barn Sweet Barn: Home for Animals | 92. All Roads Lead Home |
| 84. Home for the Birds | 93. Theme Exhibit of Choice |

Premium Category 7

Unit 1

- 94. 4-H Promotional Flyer- Create an 8 1/2"x11" page using a commercial software graphics package. Color or black and white. Can be a whole page or folder flier.
- 95. Color or Black & White Poster- Minimum 8 1/2"x11" page mounted on poster board (14"x22") using a commercial graphics software package.
- 96. Internet Exploration Notebook- Include 1) printout of 5 websites, 2) commentary on each (what you liked/disliked) and suggested improvements.
- 97. Vacation of Your Dreams- Use the internet 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 are, 3) things to do (i.e. baseball game, Disney World, amusement park, etc.) and 4) maximum one-page text telling the steps taken to plan the vacation. List web sites for each.
- 98. Creative Computer Design- Six different examples of original design. Ex: address list, recipes, letterhead, greeting cards, graphics, posters, etc., in clear plastic cover.
- 99. You Be the Teacher- Educational Exhibit- poster or notebook.

Premium Category 6

Unit 2

- 100. Digital Camera Exhibit- Include 3 digital photos taken by exhibitor before and after enhancement; show how you used computer software to enhance or change the photo. Explain what hardware and software was used and how it was used.
- *101. Computer Application Poster (class description available at Extension Office)
- *102. Produce a Computer Slideshow Presentation (class description at Extension Office)

Unit 3

- *103. Produce an Audio/Visual Computer (class description at Extension Office)
- *104. How to STEM Presentation (class description at Extension Office)
- *105. Create a Web Site/Blog or App (class description at Extension Office)
- *106. 3D Printing Unique Items (class description at Extension Office)
- *107. 3D Printing Prototypes (class description at Extension Office)
- *108. 3D Pen Creation (class description at Extension Office)

GEOSPACIAL - Division 8

GEAR-TECH-21

Premium Category 6

- *109. Poster- 14"x22", communicating a GPS theme (ex: 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).
- *110. 4-H Favorite Places or Historical Site Poster- 4-H member identifies a favorite place or historical site (including grave sites) in Nebraska. Include latitude and longitude, digital picture, and local area map; size 14"x22".
- *111. GPS Notebook- 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.
- *112. Geocache- Assemble a themed geocache. Each geocache should be a water-tight container. Include a log book 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, include a print-out of its registry. (If geocache is placed in location, entry may be photos of cache in its location and contents and description of contents.)
- *113. Agriculture Precision Mapping - 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 where applications can be purchased is acceptable). A report of how the analysis of the various data will be used to make a management decision.

- *114. 4-H History Map (Preserve 4-H History)- 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, go to: <http://arcg.is/1bvGogV>. For information, go to: <http://4hhistorypreservation.com/History-Map/>. For step by step video on nominating a point, go to: <http://tinyurl.com/nominate4h>. Write a brief description of historical significance of 4-H place or person (minimum one paragraph).
- *115. Careers Interview- Interview someone who is working in a Geospatial field and research that career. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3-5 pages, double spaced, 12 point font, 1" margins. Multimedia reports should be 3-5 minutes in length.

POWER OF WIND - Division 9

Alternative/Renewable Energies

Premium Category 6

See Extension Office for resource list. See Engineering Project Information for instructions.

- *116. Create and Compare Energy Resources Poster – Explore 2 alternative/renewable energy resources. Compare and contrast the 2 resources including two of the following information: amount of energy created, costs of production, usability of the energy, pros/cons of environmental impacts, etc. Maximum 22" x 28".
- *117. Experiment Notebook – Explore the scientific method involving alternative/renewable energy sources. Include: 1) Hypothesis 2) Research 3) Experiment 4) Measure 5) Report or Redefine Hypothesis

Premium Category 4

- *118. Solar as Energy Display – Item should be the original design of the 4-H member. Include the item, or a picture if item is in excess of 6' tall or 2' x 2'. Include notebook of why the item was designed and how it harnesses the power of solar. Ex: solar ovens, solar panels, etc.
- *119. Water as Energy Display - Item should be the original design of the 4-H member. Include the item, or a picture if item is in excess of 6' tall or 2' x 2'. Include notebook of why the item was designed and how it harnesses the power of water.
- *120. Wind as Energy Display - Item should be the original design of the 4-H member. Include the item, or a picture if item is in excess of 6' tall or 2' x 2'. Include notebook of why the item was designed and how it harnesses the power of wind.
- *121. Other Nebraska Alternative Energy – Notebook should explore Nebraska alternative energy source besides wind, water and solar power. Include information on type of power chose, infrastructure for distribution, what resources are used to create this alternative resource, cost of production, and potential uses of bio-products

ELECTRICITY - Division 10

Magic of Electricity 1 Investigating Electricity 2 Wired for Power 3 Entering Electronics 4

Premium Category 7

- See Engineering Project Information for instructions.
- 122. Electrical Safety Poster- Must deal with a specific topic. Ex: overhead power line safety, electrical safety in the home, on the farm safety. 14"x22".
 - 123. Electric Energy Conservation Poster- Show useful methods of efficient use of electrical energy and conservation, 14"x22".
 - 124. Electrical Safety- Newspaper ad or 1 minute radio public service announcement on 8 1/2"x11" paper in clear plastic folder.

Premium Category 6

Unit 1

- 125. Bright Lights- Create your own flash light using items found around your house. Flashlights should be made out of items that could be recycled or reused. No kits.

126. Control the Flow- Make a switch. Using 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.
127. 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. Find five items that are conductors and five items that are insulators. Create a table that illustrates results.
128. There's a Fork in the Road- Construct one parallel and one series circuit: D cell battery, battery holder, insulated wire, bulb holder and a 2 or 2.5 volt light bulb.

Unit 2

129. Case of the Switching Circuit- Use the following items to build a three way switch: two D cell batteries, two battery holders, light bulb, bulb holder, a 3"x6" piece of cardboard, six brass paper fasteners and approximately two feet of 24 gauge insulated wire. Write a short essay or poster that illustrates how a three way switch functions.
130. Quiz Board- Follow directions in manual.
131. Rocket Launcher- Construct a rocket launcher with the following materials: a plastic pencil box that is at least 4"x8", single pole switch, single throw switch, normally-open push button switch, 40 feet of 18 or 22 gauge standard wire, 4 alligator clips, 2-by-6 board 6" long, 1/8" 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" and 1/4" 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".
132. 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"x4"x1/8" Plexiglas 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".

Unit 3

- *133. Electrical Tool/Supply Kit- 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.
- *134. Lighting Comparison- Display studying the efficiency of various lighting (incandescent, fluorescent, halogen, Light Emitting Diodes, etc.). Exhibit could be a poster display or an actual item.
- *135. Electrical Display/Item- Show an application of one of the concepts learned in the Wired for Power project. Ex: re-wiring or building a lamp, re-wiring or making a heavy duty extension cord, developing an electrical diagram of a house, etc. Poster (14"x22") or actual item.

Premium Category 7

- *136. Poster - Exemplify one of the lessons learned in project (14"x22").

Premium Category 6

- Unit 4
- *137. Electrical/Electronic Part Identification- Display different parts used for electrical/electronic work. Exhibit should show the part (either picture or actual item) and give a brief description, including symbol of each part and its function. Include a minimum of 10 different parts.
- *138. Electronic Display- Show an application of one of the concepts learned in the project. Ex: components of an electronic device (manual pg. 35).
- *139. Electronic Project- Exhibit an electronic item designed by the 4-H'er or from a manufactured kit that shows the electronic expertise of the 4-H'er. Ex: radio, computer or volt meter.
- *140. Careers Interview- Interview someone working in the field of electricity and research that career. Interviews can either be written or in a multimedia format, 3-5 minutes in length (CD/DVD). Written interviews should be 3-5 pages, double spaced, 12 point font, 1" margins, in a notebook.

Premium Category 7

- *141. Poster - Exemplify one of the lessons learned in project (14"x22").

SMALL ENGINES - Division 11

Premium Category 6

142. Unit 1- Small Engine Display/Item- Show an application of one of the concepts learned in the project. Ex: identify the parts of a small engine, safety rules for starting a small engine, small engine repair tool identification. Exhibit can be a poster (14"x22") or actual item.
143. Unit 2- Small Engine Display/Item- Show an application of one of the concepts learned in the project. Ex: comparison of engine oil types, transmissions, or safety related to engines. Exhibit can be a poster (14"x22") or actual item.
144. Unit 3- Engine Display/Item- Show an application of one of the concepts learned in the project. Ex: diagnostic tools, fuel systems, ignition systems. If a complete engine is exhibited, it will not be started. However, display needs to report process of building/rebuilding engine and how/where engine will be utilized (i.e. lawn mower, weed eater, snow blower, etc.)

Premium Category 3

145. Complete Small Engine- Reconditioned, repaired or overhauled in 4-H Small Engines project. A story listing source of engine, use of engine, repair of parts list and cost is to be included and protected in a notebook type of cover. Gas tanks are to be EMPTY when entered at the fair. Engine will be fueled and started as part of the judging criteria. All engines should be mounted on a base. Complete lawn mower exhibits are recommended where the engine is equipped with an aluminum flywheel because the blade is important to the smooth operation of the engine. Engines with case iron flywheels will run smoothly without attachments on the PTO shaft. Engines must be equipped with a throttle control.

WOODWORKING - Division 12

- Measuring Up - Level 1 Making the Cut - Level 2**
Nailing It Together - Level 3 Finishing Up - Level 4

COME HOME TO THE GAGE COUNTY FAIR 4-H THEME EXHIBITS

Premium \$2.00	Non-Competitive	2018 Theme Ribbon
Open to 4-H member enrolled in Woodworking project. Include directions in plastic cover.		
146. House Shaped Wood Accessory/Item	151. Birdhouse	
147. Theme Toy	152. Barn Wood Frame or Item	
148. Indoor Home Accessory/Item	153. Go Big Red	
149. Outdoor Home Item	154. Theme Exhibit of Choice	
150. Theme Wood Exhibit		

“COME HOME” WOODEN CUT-OUT

Premium \$2.00	Non-Competitive	2018 Theme Ribbon
Awards: Gage County 4-H Council		
Open to 4-H member enrolled in project at Extension Office. Pick up precut wood at Extension Office.		
155. “Come Home” – 4-H members will receive a house shaped wood cut-out to decorate, paint, embellish in any way to carry out the theme. Use your creativity and imagination. Must have hanger of choice.		

See Engineering Project Information for instructions.

WOODWORKING PROJECT INFORMATION

The ability to build objects as designed by another person is an important life skill. Professional woodworkers offer are hired to build objects to exact specifications as laid out in a written plan.

All entries/articles must include a plan (with drawings or sketch or blueprint) stating dimensions and other critical instructions a builder would need to know how to build the project. Plans may include narrative instructions in addition to the dimension drawings and include any alternations to the original plan. Part of the score depends on how well the project matches the plans. If plans are modified, the changes from the original need to be noted on the plans. All plans used for making the article must be securely attached and protected by a clear plastic cover.

Premium Category 7

156. Poster - 14"x22"
157. You Be the Teacher - Educational notebook, display, collection of materials that relate to project. Include 8 1/2"x11" paper describing exhibit and summary of learning.

Premium Category 6

158. Ten Woodworking Related Articles- Mount on 24"x22"x1/4" board. Identify each with: kind, type or grade; where or why it is used; their importance in woodworking. Display might include types of wood fasteners, types or grades of sandpaper, types of wood finishes, etc.

Maximum 2 exhibits per class per exhibitor (Class #157, 158, 160, 163)

Unit 1

159. Woodworking Article- Item made using skills learned in manual. Ex: recipe holder, stilts, etc.

Premium Category 5

Unit 2

160. Woodworking Article- Item made using skills learned in manual. Ex: birdhouse, foot stool, napkin or letter holder, etc.

Premium Category 2

Unit 3

- *161. Woodworking Article- Item should be made using either joints, hinges, dowels, or a dado joining made using skills learned in manual. Exhibit must be appropriately finished. Ex: bookcase, coffee table, end table, etc..
- *162. Woodworking Display- Exemplify one of the principles learned in the project. Ex: measuring angles, wood lamination, joint types, etc.
- *163. Recycled Woodworking Display- Article made from recycled, reclaimed or composite wood. Article must be appropriately finished and/or sealed and utilize one or more woodworking techniques from page 2 of the Unit 3 manual. Exhibit must include woodworking plan and a minimum one page report of how the engineering design process was used to develop the woodworking plan. Engineering Design Process: 1) State the proble (Why did you need this item?) 2) Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?) 3) Select a solution (How does your solution compare on the basis of cost, availability, and functionality?) 4) Build the item (What was your woodworking plan, and what processes did you use to build your item?) 5) Reason for article finish (What type of finish, how did you finish or why you chose this finish) 6) Evaluate (How does your item solve the original need?) 7) Present results (How would you do this better next time?).

Premium Category 2

Unit 4

- *164. Woodworking Article - Item made using skills learned in manual. Ex: dovetailing, making a pen using a lathe, overlays, using a router, etc.
- Premium Category 5**
- *165. Woodworking Display - Exemplify one of the principles learned in the project. Ex: Career opportunities, types of finishes, dovetailing, etc.

- *166. Careers Interview - Interview someone in the field of woodworking and research that career. Interview can be written or in multimedia format (CD/DVD), 3-5 minutes. Exhibit notebook, 3-5 pages, double spaced, 12 point font, 1 in. margins.
- *167. Recycled Woodworking Display - Article made from recycled, reclaimed or composite wood. Article must be sanded and sealed and utilize on or more wood working techniques from p. 2 of Unit 3 manual. Exhibit must include woodworking plan and a minimum one page report of how the engineering design process was used to develop the woodworking plan. Engineering Design Process: 1) State the problem (Why did you need this item?) 2) Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?) 3) Select a solution (How does your solution compare on the basis of cost, availability, and functionality?) 4) Build the item (What was your woodworking plan, and what processes did you use to build your item?) 5) Reason for article finish (What type of finish, how did you finish or why you chose this finish). 6) Evaluate (How does your item solve the original need? 7) Present results (How would you do this better next time?).
- *168. Careers Interview – Interview someone who is working in the field of woodworking and research that career. Interview can either be written or in a multimedia format (CD/DVD). Written interview should be in a notebook, 3-5 pages, double spaced, 12-point font, 1" margins. Multimedia report should be 3-5 minutes in length.

WELDING - Division 13

Premium Category 6

See Engineering Project Information for instructions.

Welding Project Information

All welds (classes #169 & 170) must be mounted on a 12" high x 15" long display board of thickness not to exceed 3/8". Attach each weld on a wire loop hinge or equivalent, so the judge can look at the bottom side of the weld when necessary. Each weld should be labeled with information stated: 1) type of welding process (stick, MIG, TIG, Oxy-Acetylene, etc.) 2) kind of weld, 3) welder setting, 4) electrode/wire/rod size, and 5) electrode/wire/rod ID numbers. Attach a wire to display board so it can be hung like a picture frame. If plans are NOT included with welding article or welding furniture, item will be disqualified.

Premium Category 6

- *169. Welding Joints - Display of one butt, one lap and one fillet weld.
- 1) All welds should be made with the same electrode/wire/rod size and number.
 - 2) Welds should be made only on one side of metal so penetration can be judged.
 - 3) Welds should be cleaned with chipping hammer and wire brush. Apply a coat of light (penetrating oil) to the metal to prevent rusting. Wipe off excess oil. 4) It is suggested that all welds be on the same size and thickness of metal. These pieces, referred to as coupons, should be 1.5" to 2" wide and 3.5" to 4" long. A good way to get this size is to buy new cold rolled strap iron and cut to length. The extra length is needed to provide enough metal to absorb the heat from the welding process and prevent the coupons from becoming too hot before the bead is completed. Narrower coupons will become very hot, making an average welder setting too cold at the bead start, just about right in the middle, and too hot at the end. The correct way to weld narrow strips is to make short beads and allow time to cool, however, this project requires a full length bead. Stick Welding: Suggested coupon thickness - 1/4" if using 1/8" rod. Suggested rod AC and DC straight or reverse polarity - first E-7014, second E-6013. MIG welding: Suggested coupon thickness - 1/4" if using .035 wore and 1/8" if using .023 wire. Oxy-Acetylene: Suggested coupon thickness - 1/8", suggested rod - 1/8" mild steel rod.
- *170. Position Welds - Display showing three beads welded in the vertical down, horizontal and overhead positions. 1.) It is suggested that all welds be on same size of thicknessof metal. These pieces are referred to a coupon. The welds can be on once coupon that is 4"x4" or on individual coupons that are about 2"x4" and 1/4" thick. Suggested rods for this class of position welds for AC and DC straight or reverse polarity is 1st E-6013, 2nd E-7010 and E-6010 for DC reverse polarity only. 2) Welds should be cleaned with a chipping hammer and wire brush. Apply a coat of penetrating oil to prevent rusting. Wipe off excess oil

Premium Category 3

- *171. Welding Article - Any shop article or piece of furniture where welding is used in the construction. 60% of item must be completed by 4-H member and notes regarding laser welding or machine welding must be included. All plans, plan alterations and a bill for materials must be attached to the article in plastic cover. 1) All welds should be cleaned and protected from rust with paint or light oil. Plans are to be complete enough that if they were given to a welding shop, the item could be made without further instructions. Bill of materials should include a cost for all items used including steel, electrodes, paint, wheels, etc.
- *172. Welding Furniture - Any furniture with 75% welding is used in construction. 60% of item must be completed by 4-H member and notes regarding laser welding or machine welding must be included. All plans, plan alterations, dimensions and a bill for materials must be attached to the article in a plastic cover. May be displayed outdoors.
173. Plasma Cutter/Welder Design – Plasma cutters/welders allowed for detailed design/s to butt cut into metal. Exhibitor will create a notebook describing the design process to create the “artwork” to butt cut into the metal. Include in notebook: 1) Photo (front and back) of the finished project with detailed photos of the cuts. 2) Instructions on how the design was created, this allows for replication of the project. 3) Lessons learned or improvements to the project.

SCIENCE ENGINEERING TECHNOLOGY (SET) CAREERS – Division 14 Premium Category 7

- *174. SET Careers Interview – Interview someone who is working in any field associated with science, engineering and technology and research that career (Ex: computer programmer, architect, engineer, pilot, etc). Interview can either be written in a notebook or in a multimedia format (CD/DVD). Written report should be 3-5 pages, double spaced, 12-point font, with 1” margins. Multimedia reports should be between 3-5 minutes in length.

Home is the place you grow
up wanting to leave -
and grow old wanting to
come back to.

DEPARTMENT 39 HEALTHY LIFESTYLES FOOD & NUTRITION - SAFETY CAKE DECORATING FOOD PRESERVATION

Pre-Entry Deadline: July 11 (paper) or July 18 (online)

Trophies, Awards, & Sponsors

American Family Insurance, Cheryl Wirth - Sr. Division All-Stars Champion

McDonald's of Beatrice - Intermediate Div. All-Stars Champion

Val Jean McKeever Memorial - Jr. Division All-Stars Champion

Red Star Yeast Company, LLC - Champion and Reserve

Champion baked yeast products awards to class win

Yeast packets for participants in Foods classes

Gage County 4-H Council - Champion Theme Exhibit



TASTE OF HOME 4-H BAKE SALE

Wednesday, July 25, 9:00 am - Noon 4-H Inc. Building

Thanks to 4-H members and volunteers for managing the Bake Sale

FOODS 4-H THEME EXHIBITS - Division 1 COME HOME TO THE GAGE COUNTY FAIR

Premium \$2.00 Non-Competitive 2018 Theme Ribbon

Open to 4-H member enrolled in Foods project. Item must be homemade. Include recipe/ directions on half sheet, 8 1/2"x11". Food products must be safe to eat after an extended length of time without refrigeration. Maximum 10 entries per exhibitor.

1. Whole Wheat or Mixed Grain Bread or Rolls (family recipe)
2. Gingerbread House (max. base size 12"x12")
3. My Favorite Comfort Food (baked)
4. Cinnamon Rolls (family recipe)
5. Cookie/Bar (family recipe)
6. Home on the Range Cowboy Cookies
7. My Favorite Fair Food (baked)
8. Let's Stay Home - Snack
9. Cornbread (6x6" piece)
10. Red & White Snack (1 c. in ziploc bag)
11. Theme Exhibit of Choice

Food Preservation - canned (1 jar) or dried (1 C in self-sealing bag)

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| 16. 1 Jar Home Canned Jam/Jelly | 19. 1 Jar Home Canned Vegetable |
| 17. 1 Jar Home Canned Pickles | 20. 1 Jar Home Canned Fruit |
| 18. Theme Exhibit of Choice | |

COUNTY FOODS EXHIBITS - Division 2

ELECTRIC BREAD (BREAD MACHINE)

Premium Category 6

Open to 4-H member enrolled in Foods project. Baked product must be made in bread machine. Use any recipe. On half sheets, 8 1/2" x 11" paper, include name of machine, recipe, and any special techniques used. Resource kit 'Electric Bread for Kids" available at Extension Office.

22. White Bread 3/4 of a loaf
23. Wheat or Mixed Grain Bread - 3/4 of a loaf
24. Sweet Rolls or Specialty Bread - 4 on a plate or 3/4 of a loaf or ring
25. Dinner Rolls (any shape) - 4 on a plate
26. Bread as Art - Basket, cutout/s, animal shapes, colored, etc. (non-edible)
27. Bread Sticks - 4 on a plate
28. French Bread - 3/4 of a loaf
29. Bread with Fruit - 3/4 of a loaf

CHOCOLATE LOVERS CONTEST

Premium Category 6

Open to any 4-H member. No mixes. Recipes must include minimum 1/4 cup cocoa or any chocolate product. Must last duration of the fair. Include recipe. Exhibit 4 on a plate, 1 cup, 3/4 of a loaf of bread, or appropriate amount for judging. 4-H age divisions: Jr. (under age 12) and Sr. (age 12 and older). **Awards: Jane Esau, Chocolate Lover**

Jr. Div. Sr. Div.

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|-----|-----|---|
| 30. | 38. | Baked Dessert (on a 6" plate) |
| 31. | 39. | Cookies/Bars |
| 32. | 40. | Brownies |
| 33. | 41. | Chocolate Candy |
| 34. | 42. | Chocolate Bread |
| 35. | 43. | Decorated Chocolate Cupcakes |
| 36. | 44. | Chocolate for Breakfast |
| 37. | 45. | Chocolate Photograph - Photo chocolate creatively - 5" x 7", mounted on 8" x 10" black poster board, vertical or horizontal |

GIFTS FROM YOUR KITCHEN

Premium Category 6

Open to 4-H member enrolled in Foods project. **Awards: Gage County 4-H Council.** Prepare and package a food gift creatively. Ex: yeast product in a basket, cookies in a decorative tin, etc. Exhibit must include a prepared item (finished product) made by 4-H member, suitable for human consumption. Ex: cookie mix in a jar exhibit must include a baked cookie. If item is perishable, enter class #61 or # 68. On index card indicate whom the gift is intended for and the occasions. 4-H age divisions: Jr. (4-H under the age of 12), Sr. (4-H age 12 and older).

Jr. Div. Sr. Div.

- | | | |
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| 54. | 61. | Food Gift - Theme of Your Choice |
| 55. | 62. | Theme Food Gift - "Take Some Home" |
| 56. | 63. | Food Gift in a Jar/Glass Container |
| 57. | 64. | Food Gift in a Pail/Tin/Metal Container |
| 58. | 65. | Food Gift in a Paper Bag/Box/Container |
| 59. | 66. | Candy Bar Bouquet |
| 60. | 67. | Food Gift Without Prepared Item (perishable item); Ex: soup, or dip mix Theme of Your Choice |

FOOD SCIENCE EXPLORATION

Premium Category 6

Open to 4-H member enrolled in Foods project.

- *68 Food Science Explorations - Show the connection between food and science as it relates to food preparation, food safety, or food production. Exhibit may be a poster or foam core board (not to exceed 22"x30"), computer based presentation printed with note pages, if needed, and displayed in binder, an exhibit display, a written report in portfolio or notebook.

FOODS AND NUTRITION POSTER, SCRAPBOOK, OR PHOTO DISPLAY

Premium Category 6

Open to 4-H member enrolled in Foods Project.

- *69 Nutrition or Food Preparation or Career Concept/lesson - Might contain pictures, captions, and /or reports to highlight the concept. Exhibit may be a poster or foam core board (not to exceed 22" x 30"), computer cased presentation printed off with notes pages, if needed, and displayed in binder, an exhibit display, a written report in portfolio or notebook.

PHYSICAL ACTIVITY AND HEALTH POSTER, SCRAPBOOK OR PHOTO DISPLAY

Premium Category 6

Open to 4-H member enrolled in Foods Project

- *70. Physical Activity and Health or Career Concept/Lesson - Might contain pictures, captions, and /or reports to highlight the concept. Exhibit may be a poster or foam core board (not to exceed 22" x 30"), computer cased presentation printed off with notes pages, if needed, and displayed in binder, an exhibit display, a written report in portfolio or notebook.

COOKING BASICS RECIPE FILE

Premium Category 6

Open to 4-H member enrolled in Foods Project

- *71. Cooking Basics Recipe File – Collection of 10 recipes from any source displayed in a recipe file or binder. Each recipe must accompany a complete menu in which the recipe is used. An additional 10 recipes may be added each year the 4-H member is in the project, with year clearly marked on recipes. Include the number of servings or yield of each recipe. This may be a continued recipe file project from previously used 4-H curriculum (prior to 2018).

KING ARTHUR FLOUR BAKING CONTEST

Premium Category 6

Open to 4-H member enrolled in Foods Project. We celebrate the 227th anniversary of King Arthur Flour. Exhibitors must use King Arthur flour in all baking aspects of the contest. Use any recipe: must include recipe PLUS the PCB Code from the King Arthur Flour Sack/Bag.

Awards: King Arthur Flour

72. White Yeast Bread - 3/4 of a loaf
73. Wheat or Mixed Grain Yeast Bread - 3/4 of a loaf
74. Sweet Rolls or Specialty Bread - 4 on a plate or 3/4 of a loaf or ring
75. Dinner Rolls (any shape) - 4 on a plate
76. Cookies, Bars, or Brownies - 4 on a plate
77. French Bread - 3/4 of a loaf
78. Cake, Sponge Cake, Angel Food Cake
79. Exhibit of Choice

