

- *105. World of Vegetables Notebook- Choose a favorite foreign cuisine and learn what vegetables and/or herbs are common to it (ex: Mexican, African, Chinese, Italian, etc.). Include a handwritten report telling about a minimum of 5 vegetables and/or herbs from each country chosen. Include the scientific and common names, pictures from your garden or seed catalogs; tell how they are grown, and how the foods are used. Also list a source for buying the seed or plants. Favorite recipes using some or all of the vegetables described may be included. Give proper credit by listing the source of pictures and information used. Protect in a clear report cover or small 3-ring notebook. Label with name, age, address, county, and years in the project on back cover of report or notebook.

LANDSCAPE: Grow a Beautiful Space - Division 6 Premium Category 7

Contact Extension Office for class descriptions.

- *110. Unit 1 Portfolio Notebook
- *111. Establish Landscape Analysis Poster
- *112. Unit 2 Portfolio Notebook
- *113. Landscape Renovation Poster
- *114. Estimating Dreams Poster
- *115. Site Inventory & Analysis Poster
- *116. Community Landscape Poster
- *117. Renovate The Outdoors Portfolio

AGRONOMY & CROP PRODUCTION - Division 7 Premium Category 7

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

Premium Category 6

4-H member in Field Crops projects may exhibit grain or plants or prepare an educational display representing their project. The purpose of these exhibits is to demonstrate the benefits from the study and application of crop, range and soil sciences to solving problems in management, conservation, sustainability and environmental protection. Grain or Plant Exhibits: A two page (maximum) essay must accompany grain and plant exhibits. The essay must include the exhibitors name and address, county, plant hybrid or variety, plant population, whether crop production was irrigated or dryland, and general information including farm cropping history, soil type and weather effects. Include an economic analysis of the project, listing individual expenses and income, on a per acre basis. Other topics to discuss are the selection of variety or hybrid, impacts of decisions on tillage and conservation practices, inputs (fuel, fertilizer, irrigation, labor, pesticides, etc.), any observations made during the growing season, and what you learned from your crops project. Essay counts as 50% of the score. Essay must be the original work of the exhibitor. Attach essay to the entry in a clear plastic cover that it can be read without removing it from the cover. In addition to the essay, grain and plant exhibits will be judged on condition, appearance (i.e., disease and insect damage, grain fill), uniformity (size, shape, color, maturity) and quality of exhibit.

Grain exhibits must be one gallon per sample. Grain exhibits harvested in the fall (i.e., corn or soybeans) may be from the previous year's project. Plant exhibits, with the exception of ears of corn, must be the result of the current year's project. Grain Sorghum- 4 stalks (cut at ground level and bound together). Small Grains (oats, barley, wheat, triticale)- sheaf of heads 2" in diameter at top, tie with stems 24" long.

- *121. Corn - 10 ears or 3 stalks (cut at ground level with no roots or soil and bound together); includes yellow, white, pop, waxy, or any other type.
- *122. Soybeans - 6 stalks (cut at ground level and bound together)
- *123. Oats
- *124. Wheat

- *125. Other Crops (grain sorghum, alfalfa, millets, barley, rye, triticale, amaranth, dry beans, sugar beet, mung bean, canola, forage sorghum, safflower, etc.). Sheaf of stems 3" in diameter at top, tied with stems cut at ground level or half size small square bale. Displays: Purpose of the display is to tell an educational story. Display is a visual representation (pictures, charts, graphs) no larger than 28" wide x 28" tall on plywood or poster board. The display should be neatly titled. Label with exhibitor's name, address and county on back side. Explain pictures and graphs clearly and concisely. Must have a one page essay explaining why the exhibitor chose the area of display and what they learned from their project. Include any references used. The essay should be in a clear plastic report cover with the exhibitor's name outside.
- *126. Crop Production Display- Purpose of this class is to allow original, creative exhibits that contain educational information about crop production aspects, such as crop scouting, alternative crops, pest management, etc.
- *127. Crop Technology Display- Information about aspects of technology used in crop production, such as genetic engineering, crop breeding, GPS, yield mapping, computers, etc.
- *128. Crop End Use Display- Information about the final product or end uses for a crop, such as food, feed, fuel or other products. Ex: corn can be processed into livestock feed, ethanol, plastics, etc. or soybeans can be processed into bio-diesel, pet bedding, crayons, oil, etc.
- *129. Water or Soil Display- Information about water or soils, such as how soils are being used for crop production, range, conservation, wildlife, or wetland use, or ways to protect or conserve water and soil resources.
- *130. Career Interview Display- Investigate a career in agronomy. Interview 1 person who works with crops about such topics as what parts of their job do they enjoy or dislike, why did they choose that career, what was their education, etc. Include a picture of the person interviewed.

WEED SCIENCE - Division 8 Premium Category 6

4-H member enrolled in the Conservation, Environment 1, 2, or 3, Reading the Range 1 or Using Nebraska Range 2, or Crop Production, Field Crops projects may exhibit a weed book or weed display. The book cover and at least 15 specimens must be this year's work. For assistance identifying plants, refer to Nebraska Department of Agriculture's Weeds of Nebraska and the Great Plains (1994) or Weeds of the Great Plains (2003). Judging based on completeness of plant mount, accuracy of identification, label, neatness, and conformity to exhibit requirements.

Books- Display one plant on the book cover (no label required on cover specimen). Plants must be mounted on sheets that are no larger than 14" wide x 14" high. Proper plant mount should include root as well as stem and leaf tissue. Plants should be glued rather than taped and the mounts should be protected with a clear cover. Each completed mount must have the following information in the lower right corner of the mounting sheet: 1) Scientific name (in italic or underlined) with authority, 2) Common name, 3) County of collection, 4) Collection date, 5) Collector's name, 6) Personal collection number, indicating the order that plants were collected- in your personal collection, 7) Other information depending on class exhibited (ex: noxious, life form). This information should be typed or printed neatly.

- *131. Weed Identification Book- A collection of a minimum of 15 plant mounts, including at least 2 of the following prohibited noxious weeds (Canada thistle, musk thistle, plumeless thistle, salt cedar, leafy spurge, purple lossstrife, diffuse knapweed, spotted knapweed, Japanese knapweed, bohemian knotweed, giant knotweed, sericea lespedeza or phragmites), and at least 5 weeds that are a problem primarily in lawns.
- *132. Life Span Book- A collection of 7 perennials, 1 biennial, and 7 annual weeds. Displays- Purpose of display is to tell an educational story. The display is a visual presentation (pictures, charts, graphs) no larger than 28"x28" plywood or poster board. The display should be neatly titled. Label with exhibitor's name, address and county on back side. Explain pictures and graphs clearly and concisely. Must have a one page essay explaining why exhibitor chose the area of display and what they learned from their project. Include any references used. The essay should be in a clear plastic report cover with the exhibitor's name outside.

- *133. Weed Display- Purpose of this class is to allow original, creative exhibits that contain educational information about weeds, such as interesting information about a weed species, the effects of weed control, herbicide resistant weeds, what make a weed a weed, or uses for weeds.

DEPARTMENT 37 ENVIRONMENTAL EDUCATION & EARTH SCIENCE

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

COUNTY EXHIBITS - Division 1

Outdoor Fun on the Prairie Workshop
Instructors: Mill Penner and Extension staff
Participants may exhibit in Entomology, Range, Wildlife

ROCKS & MINERALS Premium Category 7

Open to any 4-H member.

1. Rock Display- 12 rocks or minerals displayed in an egg carton (styrofoam or cardboard). Label each as sedimentary, metamorphic or igneous, with the specific name, date, and place found.
2. Item Made Which Includes Polished Rock(s)
3. Collection of Fossils- Label with date and place found, etc.
4. Rock Star- Painted or embellished
5. Stone Faced- Paint a face on a round rock using acrylic paint; include 5 rocks in display.
6. Rock Exhibit of Your Choice

SEVERE STORMS & WEATHER Premium Category 7

Open to any 4-H member.

7. "Totally Twisted" Tornadoes- Create an educational exhibit about tornadoes- notebook, poster, display, etc.; photos optional.
8. "Shakin' & Quaken" Earthquakes- Create an educational exhibit about earthquakes- notebook, poster, display, etc.; photos optional.
9. Rain Gauge- Made by exhibitor
10. Weather Vane- Made by exhibitor
11. Weather Exhibit- See manual, page 19.
12. You Be the Teacher- Educational notebook, display, collection of materials that relate to project. Include 8 1/2"x11" page describing exhibit and summary of learning.
13. Poster- 14"x22"

PROJECT INFORMATION

Youth must be enrolled in project to exhibit. Exhibit must be the result of current 4-H/FFA project. Item 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 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 of exhibit. **Label** all pieces of an exhibit.

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

CONSERVATION - Division 2

Ecosystem Services Earth's Capacity Premium Category 7

14. Soil, Water or Air Conservation Poster - 14"x22"
15. Build Your Own Ecosystem - Follow directions and diagram on page 11, Level 1.
16. Food Web - Poster (14"x22") illustrating a food web for the ecosystem found in your backyard. Level 1, page 22.
17. Weather Log - Make a rain gauge and pinwheel to create a 14"x22" poster display of your weather log. Include drawing or photos of the weather. Keep log for a minimum of seven days. Days need not be consecutive. Level 1, page 19-20.
18. Create a Compost Pile- Create a 14"x22" poster display that shows and describes how you made your compost pile. Include pictures and diagrams as needed. See pages 24-26 of the manual.
19. Plant or Animal Habitat Poster- 14"x22"
20. Groundwater Model- Construct a groundwater model of your area using colored clay or play dough. Include key to describe colors. Use poster board for the base, no larger than 12"x12". Level 2, page 27.
21. Soil Profile Poster- 14"x22"- Dig a hole approx. 1 foot deep. Illustrate different soil types using crayons or colored pencils. Level 2, page 15.
22. Soil Profile Poster- Dig a hole approximately one foot deep. Illustrate and label different soil types using crayons or colored pencils. Level 2, page 15.
23. Groundwater Model- Construct a ground water model of your area using colored clay or play dough. Include key to describe colors. Base of model should be wood or other strong support no larger than 12"x12". Level 2, page 27.
24. Acid Rain- Create a 14"x22" poster display showing the results of your "Acid Rain's Effect on Plants" experiment. Include photos and descriptions. See manual page 29-31.
25. Weather Watch Poster- 14"x22"
26. Global Positioning System Chart- Using a GPS system, choose 5 landmarks and chart their locations. Ex: your house, include street address with GPS description. Assemble in clear plastic cover.
27. City Display- Create a 14"x22" poster display of three cities highlighting their four elements of life. Include natural resources, homes, clothing, etc. Use descriptions and drawings. Level 3, page 10-12.
28. Wetlands Display- Create a 14"x22" poster display showing the benefits of wetlands. May use photos, drawings, etc. Level 3, page 56-58.
29. Environmental Stewardship- Create a 14"x22" poster display illustrating how pollution can be reduced or prevented and how natural resources can be conserved.
30. You Be the Teacher- Educational notebook, display, collection of materials that relate to project. Include one page description & summary of learning in clear cover.

RANGE MANAGEMENT - Division 3 Premium Category 6

4-H members in Unit 1 may exhibit classes #31-35 & #40, Unit 2 may exhibit classes #31-40. Each exhibit must be properly identified with Unit and Class. All plant displays and display covers must be the result of the current year's work. Plant identification and lists of appropriate plants in each category (grasses, forbs, shrubs, and grass-like plants) can be found in the Range Judging Handbook Contest Guide (EC 150, revised July 2009), Common Grasses of Nebraska (EC 170) and Common Forbs and Shrubs of Nebraska (EC 118).

Books - Plants must be mounted on sheets that are no larger than 14" wide by 14" high. Plants should be glued rather than taped and the mounts should be protected with a clear cover. Proper plant mount should include root as well as stem and leaf tissue. Each completed mount must have the following information in the lower right corner of the mounting sheet: 1) Scientific name (in italic or underlined), with authority, 2) Common name, 3) County of collection, 4) Collection date, 5) Collector's name, 6) Personal collection number, indicating order that plants were collected in your personal collection, 7) Other information, depending on class selected, e.g., value and importance, life span, growth

season, origin, types of range plants. This information should be typed or printed neatly.

Exhibits judged on completeness of plant mount, accuracy of identification, labeling, neatness and conformation to project requirements.

- *31. Value and Importance for Livestock Forage and Wildlife Habitat and Food Book- A collection of 12 different plant mounts, with 4 classified as high value, 4 as medium value, and 4 as low value for livestock forage, wildlife habitat, or wildlife food. Value and importance classifications can be found in the Range Judging Handbook and Contest Guide (EC150, Revised July 2009), pg. 3-6. Plants can consist of any combination of grasses, grass-like plants, forbs or shrubs. Assemble plant mounts in order of high, medium, and low importance classifications for each of the three areas: Livestock Forage, Wildlife Habitat, Wildlife Food.
- *32. Life Span Book- A collection of 6 perennial plant mounts and 6 annual plant mounts selected from grasses or forbs.
- *33. Growth Season Book- A collection of 6 cool-season grass mounts and 6 warm-season grass mounts.
- *34. Origin Book- A collection of plant mounts of 6 native range grasses and 6 introduced grasses. Introduced grasses are not from North America and often used to seed pastures.
- *35. Major Types of Range Plants Book- A collection of plant mounts of 3 grasses, 3 forbs, 3 grass-like and 3 shrubs.
- *36. Range Plant Collection Book- Collection of 12 range plant mounts with something in common (i.e. poisonous to cattle, or historically used as food by Native Americans, or dye plants, or favorite antelope forage, etc.). Include a short paragraph in the front of the book which describes what the plants have in common and why you have chosen to collect them.
- Displays-** Purpose of display is to tell an educational story. The display is a visual presentation (pictures, charts, graphs) no larger than 28"x28" plywood or poster board. The display should be neatly titled. Label with exhibitor's name, address and county on back side.
- *37. Parts of a Range Plant Poster- Mount a range plant on a poster board. Label all the plant parts. Include the plant label in the lower right corner. Label name and count on back of poster.
- Boards-** Maximum 30" wide x 36" tall or if hinged in the middle a maximum of 50" wide x 36" tall. Boards must be adequately labeled.
- *38. Range Plant Board- Will include 25 range forage species important to a particular county and include:1) Scientific name (in italic or underlined), with authority 2) Common name 3) County of collection 4) Collection date 5) Collector's name 6) Personal collection number, indicating order that plants were collected in your personal collection 7) Other information as needed
- *39. Special Study Board- A display of the results of a clipping study, a degree of use study or a range site study, etc.
- *40. Junior Rancher Board- Include a ranch map with record book or an appropriate educational display on some phase of rangeland or livestock management.

FORESTRY - Division 4

TREE IDENTIFICATION

LEAFING OUT

Premium Category 6

Official reference for forestry exhibits is revised Tree Identification Manual (4-H 332). Other resources: Trees of Nebraska (EC 92-1774-X), Leafing Out (4H 431), Plant a Tree (EC 17-11-80).

General Information

Display boards must be made from wood or wood composite, (ex: plywood, fiberboard or masonite), 1/4" to 1/2" thick and no larger than 24"x24". Display boards may be coated on both sides (painted or varnished) to prevent warping. Display posters must be made from a material, (ex: foam board or posterboard) that will upright without buckling, no larger than 24"x24". Display books must measure no more than 16"x16".

At least 5 of the 10 samples in class #41, 43, 44, 45 must be from the list of 60 species

described in 4-H 332. Samples to be judged must be from 10 different tree species. Ex: Emerald Queen Maple and Crimson King Maple are both varieties of the same species (Norway Maple), and thus have the same genus and species name, i.e. Acer platanoides. All samples must be from trees, NO shrubs. If more than 10 samples are included in the display, only the first 10 samples from the current year will be judged.

General labeling standards apply. Ex: scientific names are always italicized or underlined. Also, the first letter of a Genus name is always capitalized. The first letter of a species name is always lower case. When required, always indicate complete scientific names (Genus and species) and common names (e.g. Norway Maple), even when "variety names" are included. Ex: the scientific name of Emerald Queen Maple is Acer platanoides and the common name is Norway Maple. "Emerald Queen" may be included as the variety name, but variety names are not required.

*41. Design Your Own Exhibit- Educational exhibit about some aspect of trees, forests or forestry that is of special interest to you. Possible topics include paper recycling, wild fire, forest products, forest wildlife, or forest pests. Maximum display size 24"x24"x24". Photographs, drawings, samples, charts, posters, etc. can be used, but include enough information to adequately explain the topic. Display should be substantially different from other display classes. Be creative!

42. Leaf Print Display

*43. Leaf Display- Include samples of "complete leaves" from at least 10 different tree species. Include at least two samples of simple leaves, compound leaves, and conifer leaves. Leaves should be pressed, dried and mounted.

Collection: Whenever possible, collect leaves from mature trees. Collect leaves any time after they have reached full size, usually beginning in early summer. Leaf samples should be in good condition, representative of the average leaves on the tree. Shaded leaves are often much larger than normal. Carefully remove leaves from the twig with the entire petiole or rachis intact. During collection, fresh leaf samples can be temporarily stores within the pages of an old magazine, but they should be properly pressed and dried for display. Record pertinent information during collection.

Mounting: Leaves may be displayed in a notebook or on a display board. Any method may be used to mount leaves, Ex: wire, glue, tape, staples, plastic bags, but be sure all their features can be clearly identified.

Labeling: Label for each sample must include: 1) common name, 2) scientific name, 3) leaf type, 4) leaf arrangement (for broadleaf trees), 5) leaf composition (for broadleaf trees), 6) exhibitor's name, 7) collection date, 8) collection location (be specific- county and state at a minimum). If a twig is included with a sample, indicate "twig included" on the label. Ex: twig may be included with an eastern cedar sample because the leaves are very small and difficult to remove from the twig. Supplemental information (Ex: general uses, common products, fall color, etc.) may be included to enhance educational value.

*44. Twig Display- Include twig samples from at least 10 different tree species. Display must include at least two samples of opposite and alternate leaf arrangements from broadleaf trees.

Collection: Twig samples should be collected during the dormant season (November-April) when the buds are mature. Twig samples must be at least 6" long and exhibit buds. Leaves must be removed and side branches must be trimmed to less than 1 inch in length.

Mounting: Twigs must be mounted on a display board. Any method, e.g. wire, glue, tape, staples, plastic bags, etc. may be used to mount twigs, but be sure all features can be clearly identified. Non-terminal-end must be cut at a slant so the pith can be seen.

Labeling: The label for each sample must include: 1) common name, 2) scientific name, 3) leaf arrangement (for broadleaf trees), 4) exhibitor's name, 5) collection date, 6) collection location (be specific, including county and other relevant information). Supplemental information (ex. General uses, tree characteristics, etc.) may be included to enhance educational value.

*45. Seed Display- Must include seed samples from at least 10 different tree species.

Collection: Tree seeds should be collected at the time of year when they mature, which varies widely depending upon tree species. Ex: Silver maple seeds mature in May while red oak acorns do not mature until September. Seed samples should be free of insect or disease symptoms. Display seeds, not fruit. Ex: the seed of honeylocust is enclosed in a pod. Remove and display the seed, not just the pod. It is acceptable to display the fruit with the seed, but clearly label each.

Mounting: Seeds may be displayed in a variety of ways (Ex: mounted on a display board, displayed in jars in a rack, etc.) but they must be securely mounted and easily viewed.

Labeling: The labels for each sample must include: 1) common name, 2) scientific name, 3) type of fruit, if known (ex: samara, pod, nut, legume, etc.), 4) exhibitor's name, 5) collection date, 6) collection location (be specific- state and county at a minimum). Supplemental information (Ex: maturity date, average number of seed in the fruit, etc.), may be included to enhance educational value.

*46. Wood Display- Include wood samples from at least 10 different tree species.

Preparation: Samples may be of any shape, (Ex: sections from a board, wood cylinders turned on a lathe, horizontal or vertical cross sections of a small log with bark attached), but all samples should be the same shape (Ex: all wood cylinders or all sections of a board). Each sample can be no larger than 4"x4"x4". Cut surfaces should be sanded to show the grain. Treating samples with a clear finish (no stain) is optional

Mounting: Samples may be displayed in a variety of ways, (Ex: mounted on a display board, displayed in a box or rack, etc.), but they must be securely mounted and easily viewed. Be creative!

Labeling: The label for each sample must include: 1) common name, 2) scientific name, 3) wood type (softwood or hardwood), 4) exhibitor's name, 5) collection date, 6) collection location (be specific- county and state at a minimum). Supplemental information (Ex: common products, wood density, etc.), may be included to enhance educational value.

*47. Cross Section- Display a disc cut from a tree, species listed in 4-H 332. Sample must be collected within one year of the state fair judging day. Disc must measure 6-12" in diameter and 1-3" thick. Bark should be firmly attached, which may be difficult if the tree was dead when the disc was cut. Sand at least one side of the disc so the grain can be easily seen. If the disc is treated with a clear finish, both sides must be treated to minimize warping. As the disc dries, some cracking or checking can be expected and is allowed.

Labeling: The following parts must be clearly and accurately labeled on the cross section with pins, paper tags, or some other form of identification: a) pith, b) heartwood, c) sapwood, d) one growth ring (beginning and end), e) cambium and f) bark. A separate label attached to the back of the disc must include: 1) common name, 2) scientific name, 3) tree classification (softwood or hardwood), 4) age (of the cross section), 5) exhibitor's name, 6) collection date, 7) collection location (be specific- county and state at a minimum).

*48. Parts of A Tree (only for youth ages 8-11)- Prepare a poster, no larger than 24"x24", that clearly identifies the main external parts of any tree: a) Trunk, b) Crown, c) Roots, d) Leaves, e) Flowers, f) Fruit, g) Buds and h) Bark. Identifying other internal parts (ex. phloem, xylem, cambium, annual ring, pith, etc.), is optional. Attach a separate label on the back of the poster that includes the exhibitor's name and age.

*49. Living Tree- Display a living tree seedling grown by the exhibitor from seed in the display container. Seed must be from a species listed in 4-H 332. The seedling must be 60 days to 1 year old (on State Fair judging date, if exhibiting at the Nebraska State Fair). Display container must contain at least 8" of soil (potting mix or suitable natural soil), have drainage hole/s, and a drain pan to catch drainage water.

Labeling: A waterproof label must be attached and include: 1) common name, 2) scientific name, 3) seed treatments (if any), 4) planting date, 5) emergence date, 6) exhibitor's name. Supplemental information about the tree (Ex: where the seed was collected, growth measurements, uses for that species, etc.), may be included in an attached notebook, poster, etc. to enhance educational value.

WILDLIFE CONSERVATION - Division 5

FISHING

BIRD BEHAVIOR

AMPHIBIANS

TAXIDERMY

Premium Category 6

Exhibitor is encouraged to show evidence of your personal field experiences, study, or observations that relate to their exhibit. This helps judges understand what the 4-H member did and learned in the process that led to the exhibit. Show proper credit by listing the sources of plans or other supporting information used in exhibits. The word "animal" or "wildlife" includes wild fish, amphibians, reptiles, birds, or mammals. Follow wildlife laws; ex: wildlife laws do not allow collection of bird nests, eggs, or any of their parts.

The exhibitor's name, age, and county must be on the back or bottom of all displays. Related project material include: Exploring Your Environment series, 4-H Shooting Sports, Amphibians, Bird Behavior (EC 5-93-81), Fishing for Adventure, Wildlife Conservation (4-H 125), Outdoor Skills: Learning Science in the Outdoor series (Science Signature Outcome Program).

Board and Poster Exhibits- Show educational information about a topic of interest. Board exhibits can hold objects such as fishing equipment or casts of animal tracks. Mount all board exhibits on 1/4" plywood, masonite, or similar panel no larger than 24" high by 24" wide. Poster exhibits should be on regular poster sheets, no larger than 22" x 28" but 14" x 22" is recommended.

Classes #58-61 are board or poster exhibits. Display may show any aspect of wildlife, wildlife habitat, or related conservation, restoration, or management. Ex: Life history or other facts about one type of wildlife; how to manage wildlife on a farm or in town; managing habitat for one kind of wildlife; life requirements for one kind of wildlife during one season or through the year; wildlife study methods; wildlife behavior (ex: when nesting, finding food, moving, etc.); habitats (ex: grasslands, wetlands, river or stream corridors) and what wildlife is found there; habitat needs for a specific kind of wildlife. Refer to project manuals for ideas.

53. Wildlife Journal
54. Wildlife Photography- 8"x10" exhibit print
55. Wildlife Art- Drawing, painting, etc.
56. Wildlife Experiment- Include comparisons and conclusion
57. Wildlife Exhibit of Choice

Wildlife and How They Live

*58. Mammal Display

*59. Bird Display

*60. Fish Display

*61. Reptile or Amphibian Display

*62. Wildlife Connections- Board or poster exhibit. Purpose of display is to show interconnections and related aspects among animals, plants, and other habitat components. All displays should show two or more interactions (connections) that occur between/among animals or between animals and their habitat. Displays might show how animals interact with other animals, with people, or with their habitat. Ex: 1) Food chain display. Use pictures, drawings, or other items to illustrate the source of food energy and where it goes - who eats whom or what. Use arrows to show the direction of the energy (food) flow. 2)Show the role of predators, scavengers, insect eaters, or others in nature. 3) Show how wildlife numbers (populations) change through the year or with their habitat. 4) Show predation, competition, or other behavioral interactions of wildlife. 5) Choose one kind of wildlife and make observations through a season or year, keep notes of interactions, then make a display of what you saw. For more ideas, refer to project manuals.

*63. Wildlife Tracks- Board or diorama-type box exhibit. Make a display of animal tracks using plaster-of-paris casts. Include a brief description of your experiences in making the tracks so the judges better understand what you did and learned. Positive casts (impressions as they would be in nature) are preferred. Option 1) Show plaster-of-paris tracks of five or more kinds of wildlife along with a picture or illustration of each kind of

animal. Option 2) Show two or more plaster-of-paris tracks of one specific kind of wildlife and include a picture or illustration of the animal, what the animal may eat, and what may eat the animal. Option 3) Show two tracks and include the animal's habitat needs including preferred food, shelter, water, and space, in addition to picture or illustration of the animal.

*64. Wildlife Knowledge Check- Use electrical circuits, pictures, or other methods of teaching wildlife identification or other wildlife related knowledge. Maximum size 24"x24". Ex: prepare a list of animals and questions about where each would most likely live. Ex: rabbits- bushy areas along field borders, ducks- marshes, etc.

*65. Wildlife Diorama- Box must be no larger than 24"x24". Exhibit should show a grassland, prairie, agricultural, woodland, riparian (stream or river corridor), wetland, and/or other area with wildlife habitat. Ex: show a large unbroken grassland or prairie for area-sensitive species such as meadowlarks, greater prairie-chicken, lark bunting, grasshopper sparrows, Ferruginous hawk, burrowing owl, horned lark, upland sandpiper, or pronghorn; AND/OR show an area interspersed with several habitats such as windbreaks, farm fields, woods, waste areas, ditches, and pastures for edge-adapted species such as white-tailed deer, Northern bobwhite, ring-necked pheasants, mourning doves, cottontail rabbits, fox squirrels, Northern cardinals, or blue jays. Label the habitats displayed and show at least five kinds of wildlife in their proper habitats.

*66. Wildlife Essay- Learn how to share educational information by writing. Choose a conservation or wildlife topic that interests you and write an essay about it. Ex: write about a particular species of wildlife that you have observed or about the values of wildlife on a farm, in town, in a backyard, at a backyard feeder, or at other places. You might write about hunting, fishing, or ethics and proper behavior for hunting or fishing. For other ideas, refer to project booklets. Essay should be between 100 and 1000 words long, typed, double spaced, or written so that it can be easily read. Standard paper (8 1/2" x 11") format preferred. You might use books, magazines, or personal interviews as resources, but you must give credit to all sources by listing them.

*67. Wildlife Values Scrapbook- A scrapbook about the various values of wildlife (commercial value, genetic value, aesthetic value, ecological value, scientific value) following guidelines in the Wildlife Conservation booklet (4-H 125).

*68. Wildlife Arts- Purpose of this class is to allow artistic exhibits that contain educational information about conservation and wildlife. Ex: paintings, photographs, wood carvings, painted duck decoys, or songs or poems written by exhibitor. Entries must be appropriate for fair display and no larger than 24"x24". Ex: paintings or photographs should be displayed in notebook format or mounted on a sturdy display panel. All entries must include a title and brief explanation of the purpose or message (what exhibit is meant to show).

69. Self-Determined Wildlife Exhibit- Purpose of this class is to allow original or creative exhibits that contain educational information about conservation and wildlife. The exhibitor determines what this exhibit will be. Entries must be appropriate for fair display and no larger than 24"x24". Include title and brief explanation of purpose or message (what the exhibit is meant to show or do). For thought starters, think about: computer programs written by the exhibitor, observations and records of a wildlife food plot; exhibit of factual information from study, interviews, and/or observations related to conservation and wildlife (exhibit on landowner/hunter relations, endangered species, etc.)

Wildlife Habitat

*70. Houses- Make a house for wildlife. Ex: Bird houses (bluebird, purple martin, woo duck, kestrel, barn owl, etc.), or bat house. No insect houses. Make the house functional so that dimensions, hole size, etc. are appropriate to fit the intended species' needs. Include the following information: 1) the kinds of animal(s) for which the house is intended, 2) where and how the house should be located for best use, 3) any seasonal maintenance needed. Check NebGuide on bird houses and shelves.

*71. Feeders/Waterers- Make a bird bath or feeder. Ex: seed, suet, or nectar feeders. Squirrel feeder is acceptable; no insect feeders. Indicate the kind of animal(s) for which the feeder or waterer is intended. Make the item functional so that it fits wildlife needs.

Include the following information: 1) where and how the feeder or waterer should be located for best use, 2) how it should be maintained. Check NebGuide on feeding birds.

*72. Wildlife Habitat Design- Board or poster exhibit. Choose a backyard, acreage, or farm, and design a habitat plan to meet the food, water, shelter, and space needs of at least three kinds of animals you would like to attract. Draw an outline of the area and show what plants or other habitat will be provided. Indicate how the various parts of your plan provide the desired habitat needs. You might include an aerial photo of the area if you have one. For ideas, check the Wildlife Habitat Evaluation Handbook, Participants Manual (NE 4H4300).

Harvesting Equipment

*73. Fish Harvesting Equipment- Board exhibit. Display of equipment used in fish harvesting. Ex: fishing knots, lures, hooks (with corks over hook ends to improve safety). Label all items displayed. Include in your exhibit the following information: 1) purpose of each item, 2) when or where it is used in relation to other equipment, 3) any personal experiences with the item/s.

*74. Building a Fishing Rod- Build your own fishing rod for exhibit and for fishing use. Rod building blanks and kits with instructions are available for this purpose. Fishing rod educational exhibit may not exceed 96" length. Exhibit must be mounted on a board and labeled with exhibitor's name, county and class number. Include with exhibit the following items as a brief attachment: 1) Explanation of cost of materials/components, where materials/components were purchased, how made, and number of hours required for construction. 2) Identify all parts. Necessary components which must be included are grip, line guides (based on manufacturer's specifications), guide wraps, and hook keeper. Reel seat needs to be aligned with guides, and guides aligned accurately down rod. Guide wraps of size A to D, nylon or silk thread.

*75. Casting Target- Make a casting target for exhibit and use; follow guidelines in Fishing for Adventure manuals.

*76. Wildlife Harvesting Equipment- Board exhibit. Display equipment used in harvesting wildlife. Ex: expanded ammunition casing (no live ammunition permitted), steel traps, hide stretchers, fleshers, etc. For displays of shotguns, rifles, or bows, use drawings or pictures. Label all items displayed. Include in your exhibit the following information: 1) purpose of each item, 2) when or where it is used in relation to other equipment, 3) any personal experiences with the item/s.

*77. Inventing Wildlife/Fish Harvesting Equipment, Aid or Accessory- Use engineering principles to invent or adapt equipment that helps you harvest fish or wildlife. Ex: wildlife calls, adapted fishing pole for shallow water, a blind, decoys, etc. Share your drawing (or adapted plans), how the equipment works, how you tested it, and the results of testing your prototype and any adjustments you made.

Taxidermy

*78. Tanned Hides or Taxidermy- Any legal fish, bird, or other wild animal properly processed by the member. No requirement as to size or mounting. Include the following information: 1) the animal's name, 2) information about the exhibitor's personal field experiences, study, or observations that relate to the exhibit.

Other Natural Resources

*79. Design Your Own Exhibit in Natural Resources, Conservation, or Ecology- Educational exhibit about natural resources, conservation, wildlife, or ecology that do not fit into other categories. Entries must be appropriate for fair display and no larger than 24"x24". Entries must include a title and be clear (a brief explanation or other method) about the intended purpose or message - what the exhibit is meant to show. Think about accuracy, creativity, educational value for viewers, and evidence of exhibitor's personal experiences and learning.

ENTOMOLOGY - Division 6

Creepy Crawlies U-1 What's Bugging You U-2

Dragons, House & Other Flies U-3

Insectigator

Premium Category 7

Monarch on the Move Challenge - Nebraska Ag Innovators Experience Instructors: Hannah Parde, Autumn Bartlett

- Potted Flowering Plant that attracts butterflies to your yard or garden
- Poster - 14" x 22"
- You Be the Teacher- Educational notebook, display, collection of materials that relate to project. Include 8 1/2"x11" page describing exhibit and summary of learning.
- My Favorite Insect or Butterfly - Mounted for display.
- Insect or Butterfly Display - Collection 10-20 insects; follow directions for mounting and labeling.
- Insect or Butterfly Photo - 5" x 7" photo on 8" x 10" posterboard
- Build a Bug Barn
- Build a Butterfly House
- Build a Bug or Butterfly
- Bugs Don't Bug Me - Essay, poem or writing; exhibit in clear plastic cover.
- Life Cycle Exhibit of Choice
- Stepping Stone
- Exhibit of Choice

Premium Category 4

Specimens should be mounted properly and labeled with location and date of collection, name of collector, and order name. Follow mounting and labeling instructions in the old edition of the Nebraska 4-H Entomology Manual.
(Online PDF file: <http://4h.unl.edu/web/4hcurriculum/entomologyhttp:///>) Purchased insects and other insects not collected by the participant can be included, but must have accurate labels and will not be counted in meeting minimum requirements for the exhibit. Maximum box size - 12" high x 18" wide.

- Entomology Display (First Year)- Collection to consist of 25 or more different kinds (species) of insects representing at least 6 orders. Limit 1 box.
- Entomology Display (Second Year)- Collection to consist of a minimum of 50 kinds (species) of insects representing at least 8 orders. Replace damaged or poorly mounted specimens. About 25 species should be present from after July 1 of the previous year. Limit 3 boxes.
- Entomology Display (Third or more years)- Collection to consist of a minimum of 75 kinds (species) of insects representing at least 10 orders. Replace damaged or poorly mounted specimens. About 25 species should be present from after July 1 of previous year. Limit 3 boxes.
- Special Interest Display - Educational display developed according to personal interests and/or advanced identification capability. This also is an opportunity to highlight favorite insects in a creative arrangement. Insects should conform to pinning and mounting standards and be protected in an insect box. Each specialty display should include names of the insects, interesting information about them, and why the display was made. Advanced identification collections should have insects grouped with labels that correspond with identification level (Ex: family, genus, species). A specialty collection may consist of insects by taxonomic group (Ex: butterflies, grasshoppers, dragonflies, scarab beetles) or by host, subject, or habitat (Ex: insect pests of corn, aquatic insects, insect mimicry, insect galls, insects from goldenrod, insect pollinators, etc.)
- Insect Habitat- Consisting of any hand-crafted objects, made of natural or artificial materials, placed outdoors, which promote or conserve insects in the environment. Insects may include bee pollinators, butterflies, beneficial insects, etc. One-page report must accompany the exhibit.

*98. Macrophotography - Subject should be insects, spiders or other arthropods, or any nests, webs or constructions they make. Exhibit prints should be 8 1/2" x 11", and mounted on rigid, black 11"x14" poster or mat board, either vertical or horizontal.No frames or mat board allowed. Caption of a few sentences should explain the subject, and be printed on white paper and glued below the print on the posterboard.

*99. Insect Poster/Display Exhibit – Exhibit a poster or three-dimensional display, with artistic creativity. Poster (maximum 22" x 28") should be instructional and attractive and can have pictures, drawings, charts or graphs. Posters and displays may show any aspect of insect life, habitat or related conservation or management. Ex: life history and other facts about an insect; insect anatomy;, how to manage insects in a farm, home, lawn or garden setting; experiences rearing one kind of insect; survey of an important insect; insect behavior (Ex: nesting, finding food, mobility, defenses, etc); habitats (Ex: forests, grasslands, wetlands, rivers or lakes) and what insects are found there, etc. Three-dimensional displays, such as dioramas, sculptures, models or decorative boxes should have a page of explanatory information and fit within a 22" x 28" area.

*100. Report or Journal – Report may be informational, that is, an original article about a favorite insect, a history of insect outbreaks, diseases caused by insects, insects as food, etc. Or it may be a research report about an investigation or experiment done in a scientific manner. Include a basic instruction of the insect studied, methods used, observations, and results of the project. Tables, graphs and images are helpful. A journal is an observational study over a period of time with personal impressions. It may cover watching changes of kinds of butterflies over the summer, rearing a specific insect from egg to adult, managing a bee hive, observations of insects in a specific habitat, accounts of insect behavior in a forest or flower garden, etc.

BEEKEEPING - Division 7

Premium Category 7

- Honey/Wax Product Made by 4-H Member
- Bee Essay - Exhibit in clear plastic cover
- Poster - 14" x 22"
- You Be the Teacher- Educational notebook, display, collection of materials that relate to project. Include 8 1/2" x 11" sheet describing exhibit and summary of learning.
- Exhibit of Choice

SHOOTING SPORTS - Division 8

Exhibit should be self-explanatory and educational to viewers. Exhibit must have a 5"x8" note card securely attached describing: 1) The project and how it applies to Shooting Sports; 2) Experience gained in making the project; 3) How the project will be used. Information should be neatly hand-written or typed on one side only of the card. No firearms may be exhibited, however information can be shared through pictures. All sharp items (knives, broadheads, etc.) must be enclosed in display case and displayed so the judges can open them to examine items. Items must be secured in the case.

Premium Category 7

- Educational Exhibit- Poster or display may include safety, building or using equipment, or any aspect of the discipline. Must be mounted on 1/4" or 3/8" thick plywood, masonite, or similar panel, 24" high x 24" wide. Poster (14"x22) may be 3-dimensional, not to exceed 2" from face of poster.
- You Be the Teacher- Educational notebook, display, poster (14"x22"), collection of materials that relate to project. Include 8 1/2" x 11" page describing exhibit and summary of learning.

Premium Category 5

- Accessory Made by Exhibitor- Ex: quivers, targets, survival kit, shooting mats, slings, powder horn, pouch, holster, belt, shell holder, etc.
- Equipment Made by Exhibitor- Ex: arrows, gun rack, target stand, pistol grip, custom sights, etc.

- *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".

