Northeast Kansas
Judging Day

Monday July 8, 2019

Rules & Class Numbers
For: Entomology, Geology, Forestry, Wildlife, & Space Tech
**Fair Entry Form**
Due to Extension Office by **June 17, 2019.**

Name ___________________________ Co/Dist __________________________

Club Name: ____________________________

**FORESTRY, ENTOMOLOGY, GEOLOGY, WILDLIFE**

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**Space Tec- Includes Rockets, GPS, Robotics and Computers**

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**** Judging will be held in Horton, KS on Monday, July 8th from 3-9 pm at the Horton Community Building (Blue Building).****
A 4-H member enrolled in the Entomology Project may exhibit in the ENTOMOLOGY COLLECTION, ENTOMOLOGY NOTEBOOK and/or EDUCATIONAL DISPLAY categories. Within each category, there are classes in Beginning, Intermediate or Advanced phases in which they enroll. The Notebook category also has an Introductory class that 4-Hers may exhibit in the State Fair as long as they meet age requirements and County Fair ribbon placing requirements. An Introductory Entomology Collection Class exhibit is encouraged for county fairs (first year members only), but these may not be exhibited at the State fair. See class descriptions within categories for requirements.

Resources for exhibiting can be found on the Kansas 4-H Entomology project page.

COLLECTION CLASSES

1. All entries should be submitted in an 18 x 24 x 3.5 inch wooden display box with a clear plastic top (such as Plexiglas). Boxes can be handmade or purchased as long as they are of the correct size.

2. 4-Hers may choose to use one of two taxonomies:
   a. As printed in "Insects in Kansas" book or
   b. As printed on the "Insects in Kansas Book: 2016 Revised Taxonomy", which follows www.bugguide.net

   Each exhibitor is required to identify each box with two identification labels bearing Exhibitor’s name, county or district, the collection class 4-H'er is enrolled in and statement of taxonomy used:
   One label goes in the upper left corner of the box (inside) and the other on the lower right corner of the box (outside). Arrange specimens in the box so the box can be displayed lengthwise.

3. The number of orders, specimens (and families where required) must be included on both of the exhibitor’s box identification labels. Arrangement of specimens: The preferred method is to arrange the insects in groups or rows parallel to the short sides of the box. Specimens are to be arranged by Order in the box, then Family where required. Two labels should be centered on the pin beneath each specimen. First (closest to the specimen) is the common name label and the second label should include date/locality. Full county name and state abbreviation should be on the second label. Collector’s name (or host) on the date/locality label is optional.

4. The specimens should be collected by the exhibitor and should focus on Kansas insects. Insects may be collected from one county into bordering states and labeled accordingly. Please refer to “Entomology Collection Exhibit Resource” for full details on out-of-state insects in collections.

5. Only specimens of the class Insecta should be included.

6. Purchased insects are not to be exhibited in collections, but they may be used in educational displays.

7. Specimens of soft bodied insects such as aphids, lice, termites, etc. should be exhibited in alcohol filled vials; however, the use of alcohol filled vials should be limited to only those specimens that lose their shape when pinned, since the vials pose a significant hazard to the rest of the collection if they become loose in transit.

2400 BEGINNING I ENTOMOLOGY COLLECTION

Display in one standard box a minimum of 50 and maximum of 125 species representing at least 7 orders. Follow the guidelines listed for Collections. Members can exhibit in this class a maximum of 3 years or until they receive a purple ribbon at the Kansas State Fair, whichever comes first.

2415 BEGINNING II ENTOMOLOGY COLLECTION

Display in one standard box a minimum of 75 and maximum of 150 species representing at least 9 orders. Follow the general guidelines listed for Collections. Members can exhibit in this class a maximum of 3 years or until they receive a purple ribbon at the Kansas State Fair, whichever comes first.

2425 INTERMEDIATE ENTOMOLOGY COLLECTION

Display a minimum of 100 and a maximum of 300 species representing at least 10 orders. Two standard boxes can be used. Follow the general guidelines listed for Collections. In addition, family identification is required for all insects in any two of the following six orders: (Only two will be counted for judging)
A) "Insects in Kansas" book - Orthoptera, Hemiptera, Homoptera, Coleoptera, Hymenoptera, and/or Diptera or
B) "Insects in Kansas Book: 2016 Revised Taxonomy", which follows www.bugguide.net - Odonata, Orthoptera, Hemiptera, Homoptera, Coleoptera, Hymenoptera, and/or Diptera

On a piece of paper list what you did to improve your collection during the current year. Members can exhibit in this class a maximum of 3 years. A 4-H'er may move up if they receive a purple ribbon.

2435 ADVANCED ENTOMOLOGY COLLECTION

Display a minimum of 150 and a maximum of 450 species representing at least 12 orders. Three standard boxes can be used. Follow the general guidelines listed for Collections. Family identification is required for all insects belonging to the six basic orders as outlined under the Intermediate phase. Only families in the above six orders will be counted for judging. Family identification of insects in the remaining orders is optional, but desirable as long as accuracy is maintained. On a piece of paper list what you did to improve your collection during the current year. Examples: what insects did you add or replace; what orders and/or families you added; what Leadership you provided in this project; and/or what insects you have studied. Attach paper to the back of one of the display boxes. Members may continue to exhibit in this class at the Kansas State Fair for an unrestricted number of years as long as they remain eligible for 4-H membership.

NOTEBOOK CLASSES

1. Individual entries are to be placed for display in a three-ring notebook for competition.
2. 4-Hers may choose to use one of two taxonomies:
   a. as printed in "Insects in Kansas" book or
   b. as printed on the "Insects in Kansas Book: 2016 Revised Taxonomy", which follows www.bugguide.net
3. 4-Hers who have been previously enrolled in or are currently enrolled in the other phases of the Entomology project need to start with the Beginning Phase of Entomology Notebooks, not the introductory phase.
4. Each exhibitor is required to identify the notebook by placing a Title Page in the front of the notebook bearing the exhibitor’s name, county or district and class 4-H'er is enrolled in and statement of taxonomy used:
   a. "Insects in Kansas" book or
   b. "Insects in Kansas Book: 2016 Revised Taxonomy", which follows www.bugguide.net
5. Specimen pages should be grouped according to order and should include one page per species. If more than one insect is in the photo, an arrow to indicate identified insect should be used.
6. Date, common name, full county name and state abbreviation should be included for each species. Collector’s name on the specimen page is optional.
7. Specimen pages should have two different views of the insect if possible. If pictures are taken on different dates/localities, include information for both.
8. A statement describing the habitat where found/host plant may be included and is encouraged and will be worth a bonus 10 points total, not per page. For Intermediate and Advanced notebooks, this is strongly encouraged.
9. A divider page is to be placed in front of each order of insects with the order name printed on the tab for the page as well on the front of the divider page.
10. For the Intermediate and Advanced classes, insects are also to be grouped by family behind each order divider.
11. If the exhibitor has been in the same class for more than one year, a separate sheet of paper needs to be added stating how many years the exhibitor has been in this class of the project and what the exhibitor did this year to improve their notebook. Place the paper just behind the Title Page in the front of the notebook.
12. A special project must be completed each year and included in the notebook. See project guideline materials for specifications.

2445 INTRODUCTORY ENTOMOLOGY NOTEBOOK
Display a minimum of 10 and a maximum of 30 insect species representing at least 6 different orders. Follow the general guidelines listed for Notebooks, including the Special project. A 4-H member must be of minimum age to compete at the Kansas State Fair. A 4-H member may exhibit in this class for a maximum of two years.

2450 BEGINNING ENTOMOLOGY NOTEBOOK
Display a minimum of 20 and a maximum of 60 insect species representing at least 7 different orders. Follow the general guidelines listed for all Notebooks, including the Special project. Members can exhibit in this class a maximum of 3 years or until they receive a purple ribbon at the Kansas State Fair, whichever comes first.

2455 INTERMEDIATE ENTOMOLOGY NOTEBOOK
Display a minimum of 60 and a maximum of 100 species representing at least 9 orders. Follow the general guidelines listed for Notebooks, including the Special project. In addition, family identification is required for all insects in any two of the following six orders: (Only two will be counted for judging)

a. “Insects in Kansas” book - Orthoptera, Hemiptera, Homoptera, Coleoptera, Hymenoptera, and/or Diptera or
b. “Insects in Kansas Book: 2016 Revised Taxonomy” which follows www.bugguide.net - Odonata, Orthoptera, Hemiptera, Coleoptera, Hymenoptera, and/or Diptera

Members can exhibit in this class a maximum of 3 years. A 4-H'er may move up if they receive a purple ribbon.

2460 ADVANCED ENTOMOLOGY NOTEBOOK
Display a minimum of 100 and a maximum of 200 species representing at least 12 orders. Follow the general rules listed for Notebooks, including the Special project. Follow the general guidelines listed for Notebooks. Family identification is required for all insects belonging to the six basic orders as outlined under the Intermediate phase. Only families in the above six orders will be counted for judging. Family identification of insects in the remaining orders is optional, but desirable as long as accuracy is maintained. Members may continue to exhibit in this class for an unrestricted number of years as long as they remain eligible for 4-H membership.

EDUCATIONAL DISPLAYS
1. Share with others what you learned in this project. Exhibit any activity or learning experience related to the field of entomology or the Teaming with Insects curriculum that does not fit into Entomology Collection or notebook classes above.
2. Follow copyright laws as explained in the General Rules.
3. The exhibit may be, but isn’t limited to, original works, digital presentations (must provide printed hardcopy for exhibit purposes for duration of state fair), programs, websites, games, apps, display box, notebook, display or poster which you have made.
4. If the exhibit is a wooden display box, it must be 18 X 24 X 3.5 inches with a clear plastic top (such as plexiglass) and displayed horizontally. If the exhibit is a poster, it must not be larger than 22” X 28”. If the exhibit is a display, maximum size is not to exceed a standard commercial 3’ X 4’ tri-fold display board.
5. Name and county/district must clearly be marked on educational exhibits.

2410 BEGINNING EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Beginning I and II Collection or Beginning Notebook Classes. If only exhibiting in this category, then ages 9-12.

2420 INTERMEDIATE EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Intermediate Collection or Intermediate Notebook Classes. If only exhibiting in this category, then ages 11-14.

2430 ADVANCED EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Advanced Collection or Advanced Notebook Classes. If only exhibiting in this category, then ages 13 or older.

4-H GEOLOGY and LAPIDARY

1. The exhibit box should be 18" x 24" x 3½". Plexiglas covers are required. Boxes with glass covers WILL NOT be accepted. All specimens are to be arranged across the narrow (18") dimension of the exhibit box, making the exhibit 18" across the top and 24" deep exactly. If a box has a sliding Plexiglas cover, it must be removable from the top. Screws, locks, or other devices that would prevent judges from removing the cover should not be used. For Lapidary classes 4026-4030 only, the dimensions of the box should be appropriate for the display, but should not exceed 18"x24"x31/2".

2. Each exhibitor is required to identify each display box by placing an identification label bearing name, county or district, and number of specimens in the upper left hand corner of the Plexiglas cover (inside—use clear double sided tape to adhere gummed labels), and by attaching a label with the same information on the lower right corner of the box (outside).

3. Exhibitor may enter in both geology and lapidary classes. Exhibitor may show in only one of the first four geology classes (4020, 4021, 4022, 4023). Exhibitor may also show in geology class 4024 (special exhibit), 4025 Mineralogy and in one lapidary class.

4. Geology specimens should be labeled with the number of the specimen, date collected, specimen name or description, and locality (county only) where collected.

5. For the geology classes 4020, 4021, 4022, 4023 specimens should be mounted in the box by proper groups: rocks, minerals, fossils. Fossils must be identified to the Phylum, Class and Genus level. Genus name is to begin with a capital letter. Species name is all lower case. Species names must either be italicized or underlined, not both. The words “phylum, class, genus” on labels are to be spelled out, not abbreviated. More than one specimen of the same kind of rock or mineral or species of a fossil may be exhibited if this duplication represents different geological formations. Specimen label must show this distinction (Fort Hays limestone, not just limestone; calcite from the Greenhorn Formation, not just calcite; Phylum: Brachiopoda Class: Articulata Genus: Composita from the Morrill Limestone Member, not just Phylum: Brachiopoda Class: Articulata Genus: Composita).

6. For geology classes 4020, 4021, 4022 4023, and 4025 all specimens must be collected (not purchased) from locations in Kansas, with the exception of Tri-State Mining Area specimens collected from these three adjacent counties: Ottawa County, OK; Newton and Jasper Counties, MO. Other out of state specimens will not count in the minimum number for the class, nor will they be considered in the judging.

4020 Geology. Display at least 15 rocks, minerals, and fossils collected during the current 4-H year. Exhibitor is limited to one exhibit box. Only those exhibiting at State Fair for the first time may enter this class.

4021 Geology. Display at least 30 different rocks, minerals, or fossils, at least 5 of each. **Fifteen must be collected during the current 4-H year.** Exhibitor is limited to one exhibit box. This class is open to those exhibiting either first or second time at State Fair.

4022 Geology. Display at least 45 rocks, minerals, or fossils, at least 5 of each. **Fifteen must be collected during the current 4-H year.** Exhibits limited to two boxes. This class is open to those exhibiting either the third or fourth time at the State Fair. Identify the rocks as igneous, metamorphic or sedimentary. These rock types must be spelled out on labels or have a legible key.

4023 Geology. Display at least 60 rocks, minerals, or fossils, at least 5 of each. **Fifteen must be collected during the current 4-H year.** Exhibit limited to two boxes. This class is open to those exhibiting the fifth time or more at the State Fair. Identify the rocks as igneous, metamorphic or sedimentary. These rock types must be spelled out on labels or have a legible key.

4024 Geology Educational Exhibit: Exhibit relating to everyday living; or to a mineral test, a rock formation, geological history, species of a fossil, forms of one mineral, a variation of one kind of rock, archaeological artifacts, or Indian artifacts. Digital formats are accepted. Please make arrangements for the judge to view your exhibit and have a hard copy for display. Exhibit limited to 4 feet of table space. **Care should be taken to use durable materials that will withstand State Fair conditions.** Exhibitor may show in the class
regardless of number of times he or she has exhibited at State Fair or whether exhibitor has entries in classes 4020, 4021, 4022, or 4023. Exhibitor may also exhibit in lapidary class.

4025 Mineralogy. Display a minimum of 15 mineral specimens collected in Kansas, at least 5 of which have been collected during the current 4-H year. The minerals are to be grouped by mineral class (i.e. Carbonates, Oxides, Silicates) and at least 3 classes must be represented. The member must use one standard display box (see #1). The specimens must be labeled with the number of the specimen, date collected, name of specimen, county where collected and chemical composition (i.e. CaCO₃ for calcite) if known.

**LAPIRARY CLASSES**

The lapidary will be judged on the following criteria:

- Workmanship and Content .......................................................... 60 points
- Presentation and Showmanship ................................................... 30 points
- Accuracy of Information ............................................................ 10 points

All lapidary specimens should be labeled with the following information:

- Specimen name
- Place of origin (country, state, or county; county required for Kansas specimens)
- Purchased or self-collected
- Date lapidary treatment began
- Date lapidary treatment completed (Treatment completed after the State Fair is considered a new year specimen).

4026 Lapidary. Display at least 5 varieties of polished (tumbled) specimens and 5 varieties of unpolished specimens that have not yet received lapidary treatment. These do not have to be an example of “before and after”, nor do they have to be self-collected. Locales must be identified. Only those exhibiting lapidary at the State Fair for the first time may exhibit in this class.

4027 Lapidary. Display before-and-after examples of at least 3 varieties of specimens, at least 2 tumble-polished and 2 unpolished of each. There is no requirement that the 4-H’er collect any of these. Locales must be identified. Lapidary work should be done during the current 4-H year.

4028 Lapidary. Display before-and-after examples of at least 6 varieties of specimens, at least 2 tumble-polished and 2 unpolished of each. At least two varieties should be collected from the native site by the 4-H’er, at least one of which comes from Kansas. Locales must be identified. Lapidary work on at least three varieties should be done during the current 4-H year.

4029 Lapidary. Display before-and-after examples of at least 9 varieties of specimens, at least 2 tumble-polished and 2 unpolished of each. At least three varieties should be collected from the native site by the 4-H’er, at least two of which comes from Kansas. Locales must be identified. Lapidary work on at least three varieties should be done during the current 4-H year.

4030 Lapidary. Exhibit at least 6 specimens that have not previously been exhibited, which have received lapidary treatment. Lapidary treatment may consist of polishing, and end, face, or flat lapping. Specimens must represent at least 3 different varieties and include at least three cabochons of any size or shape, only one of which may be free-formed. A cabochon is a style of cutting in which the top of the stone forms a domed or curved convex surface. Three of the specimens must be mounted into jewelry findings.

Special lapidary exhibits should be entered in class 4030. Please note that each member is limited to one entry in this class.

**4-H FORESTRY**

1. All leaf exhibits (except Class 5106) are to be mounted on 8½” x 11” heavy stock paper and placed in loose leaf binders. (Magnetic or adhesive filler sheets for photographic prints are recommended.) Twigs and fruit collections may be exhibited in whatever manner you choose (maximum exhibit size 2’ x 3’).
2. Name, club, age, and year in project should be on front cover or in a prominent location.
1. Leaves should be identified with an appropriate label located near the leaf on the same page. These labels should include (1) The proper common name as listed in the 4H334, “List of Native Kansas Forest Trees”; (2) Location (city and/or county) where collected; and (3) date (day, month, year) or (month, day, year) collected.

2. Intermediate Forester. Exhibit only in phase(s) enrolled.

3. Senior Forester enrolled in Self Determined can exhibit in Self Determined Forestry at the State Fair.

4. Divide specimens into the following two sections: Native Kansas Trees, and Non-Native Trees.

5. New specimens are those specimens collected during the current 4-H year and cannot be a duplicate tree species of previously displayed specimens.

6. Group specimens according to the years collected (ex. “old-previous years” and “new”).

7. Variations of varieties do not count as different species or specimens.

8. When replacing previously displayed samples, due to degradation, improper mounting or incorrect identification, the specimen label must also be updated. Replacements do not count as new specimens. Replacements should be displayed in the “old previous” section of the display.

9. If you retrieve information for your forestry exhibit, you must include a reference citation to the source.

10. In all leaf collections (Division A – Intermediate Forester), exhibit one complete leaf where possible. If leaf is too large, exhibit as much as possible. Sketch in reduced scale the entire leaf and illustrate where the exhibited portion is from. Note: A “leaflet” is incorrect when displayed as the complete leaf for the tree.

11. All work must show originality. Leaf collections and displays should not closely resemble work done by others in the same club.

DIVISION A – INTERMEDIATE FORESTER

Knowing Trees as Individuals (Leaf Collections**)

5100 Beginning (Choose either A or B)
A. Exhibit a minimum of 10 different leaves from native Kansas trees collected within the year. Exhibit can include non-native leaves in addition to the required number of leaf specimens collected from native Kansas trees.
B. Exhibit a minimum of 5 native Kansas trees showing leaf, twig and fruit from each species collected.

5101 Intermediate (Choose either A or B)
A. Exhibit a minimum of 20 different leaves (including 10 new specimens) from native Kansas trees. Exhibit can include non-native leaves in addition to the required number of leaf specimens collected from native Kansas trees.
B. Exhibit a minimum of 10 native Kansas trees showing leaf, twig and fruit from each species collected. This exhibit must include 5 new leaf, twig and fruit specimens.

5102 Senior (Choose either A or B)
A. Exhibit a minimum of 30 different leaves (including 10 new specimens) from native Kansas trees. Exhibit can include non-native leaves in addition to the required number of leaf specimens collected from native Kansas trees.
B. Exhibit a minimum of 15 native Kansas trees showing leaf, twig, and fruit from each species collected. This exhibit must include 5 new leaf, twig and fruit specimens.

5103 Advanced (Choose either A or B)
A. Exhibit a minimum of 40 different leaves (including 20 new specimens) from native Kansas trees. Exhibit can include non-native leaves in addition to the required number of leaf specimens collected from native Kansas trees.
B. Exhibit a minimum of 20 native Kansas trees showing leaf, twig, and fruit from each species collected. This exhibit must include 10 new leaf, twig and fruit specimens.

How a Tree Grows

5104 Entry may include a project notebook with 10 or more seeds collected with pictures showing a germination study or a mounting of a thin section of wood cut from the end of a log or top of stump labeled with information such as kind of wood and age of tree when cut or exhibits an illustration of how a tree grows.
Tree Appreciation
5105 Display: Entry may include a research or reporting project notebook with no more than 10 pages based on the exhibitor’s selected tree. This notebook may include sketches, drawings, pictures, a story, or any other things which will help tell about the tree you have selected.

DIVISION B – SENIOR FORESTER
Growing and Protecting Trees
5106 Display: Entry requires project notebook telling about project and pictures before, during, & after planting seedlings. Maximum tri-fold size is 3’ x 4’.

Tree Culture
5107 Display: Entry requires project notebook showing your project work and includes pictures of before, during and after wood lot improvement. Maximum tri-fold size is 3’ x 4’.

How Forests Serve Us
5108 Display: Entry may include collected wood samples (all or partial) and 500 word essay. Wood sample display to be mounted on poster board or any stiff material no larger than a 3’ x 4’ tri-fold. Essay should be displayed in a covered binder.

Educational/Creative Exhibit
5109 Display: Entry must be directly related to tree identification or Forestry. Type of exhibit is open (notebook, poster, collection box, etc.) given a maximum tri-fold size of 3’ x 4’. Care should be taken to use durable materials that will withstand State Fair conditions. This is a good class to exhibit an unusual collection.

4-H SPACETECH-ROBOTICS
1. 4-H members must be currently enrolled in the Kansas 4-H SpaceTech project to exhibit in this division.
2. Each exhibitor may enter one robot per class. Exhibit must have been constructed and/or completed during the current 4-H year. The robot must have been selected at the county level for entry at the State Fair. Counties or districts should select only top blue or purple ribbon robot exhibits which meet State Fair guidelines.
3. Each robot must be free-standing, without the need for additional supports in order to be moved or exhibited.
4. Robots must have automated reticulated structures (arms, wheels, grippers, etc.). Game consoles that display on a screen are not considered robots and should either be entered in computer systems division or energy management project. Robots requiring no assembly, just programming, such as Ozobots, are considered computer systems projects as the skill is focused on the programming not on the construction of the robot.
5. Robot dimensions should not exceed 2 feet high, by 2 feet wide, by 2 feet deep. Weight may not exceed 15 pounds. If displayed in a case (not required or encouraged) the outside case dimensions may not be more than 26 inches in height, width, or depth.
6. Materials including but not limited to obstacles, spare batteries, and mats for testing the robot may be placed in a separate container, which is not included in the robots dimensions, that container may not be larger than 576 cubic inches as measured along the outside of the container. (Examples: 4”X4”X36” or 4”X8”X18” or 6”X6”X16”) The container, if used, and/or any large objects (such as mats or obstacles) should be labeled with the exhibitors name(s) and county or district.
7. All electric components of the robot must be adequately covered or concealed with a protective enclosure. Paper is NOT considered an adequate enclosure or covering for electrical components.
8. Robots may be powered by an electrical, battery, water, air or solar source only. Junk drawer robots may be powered by a non-traditional power source. Robots powered by fossil fuels/flammable liquids will be disqualified. Robots that include weaponry of any kind will be disqualified. Weaponry is defined as any instrument, possession or creation, physical and/or electrical that could be used to inflict damage and/or harm to individuals, animal life, and/or property.
9. Remote controlled robots are allowed under certain conditions provided that the robot is not drivable. Remote controlled cars, boats, planes and/or action figures, etc. are not allowed.

10. Each robot must be in operable working condition. The judges will operate each robot to evaluate its workmanship and its ability to complete the required tasks for this current 4-H year. In the event the robot uses a phone, tablet, or similar device for programming AND control of the robot a video will be used to evaluate the working condition of the robot.

11. Each exhibitor is required to complete the “4-H SpaceTech Robotics Exhibit Information Form” which is available through your local K-State Research and Extension office. This form must be attached to the outside of a 10” x 13” manila envelope. The exhibit must include written instructions for operation (the instructions should be written as if they were to tell a grandparent or elderly person how to operate the robot), construction plans, and one to three pages of project photographs. In addition a 5 minute video presentation placed on a CD, DVD, USB drive, or similar removable storage device, if applicable. For robots that can be programmed, robot programming information must be included. This information should be placed inside the 10” x 13” manila envelope mentioned above. The exhibitor may enter their electronic project listed under the electric program as under the SpaceTech robotics project if the exhibitor so chooses. No exhibitor will be allowed to set up their robot in person.

12. In the event that the robot uses a device like a phone, iPad, or tablet for programming AND operation, DO NOT include the device (phone, tablet, etc.). The device’s safety cannot be insured. Instead record a video demonstrating the instructions included for your robot. It should show, setting up the robot, starting the robot, the robot executing its task, and powering off the robot, just like the instructions are written.

13. Creativity, workmanship, and functionality will be strong criteria in judging the “Robot designed by Exhibitor” classes. All robots should have a purpose or intended function, examples include, but are not limited to: following a line, sweeping the floor, solving a rubix cube, sorting colors, or climbing stairs.

14. Exhibitor’s name(s) and county or district must be tagged or labeled in a prominent location on the robot.

15. There are no county or district boundaries that must be adhered to in order to form a Kansas 4-H SpaceTech Robotics team. However, as mentioned in #1, each team member must be currently enrolled in the Kansas 4-H SpaceTech project.

**Division A - Novice – One to Two Years in Robotics Project**

5505 Robot made from a commercial (purchased) kit.

5506 Robot designed and constructed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.

5507 Programmable robot made from a commercial (purchased) kit.

5519 Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device.

5543 Junk Drawer Robotics-based curriculum robot

**Division B – Intermediate – Three to Four Years in Robotics Project**

5509 Robot made from a commercial (purchased) kit.

5510 Robot designed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.

5511 Programmable robot made from a commercial (purchased) kit.

5546 Robot designed and constructed by exhibitor or from a commercial kit that is operated by a remote controlled device.

5544 Junk Drawer Robotics-based curriculum robot

**Division C – Professional – Five or More Years in Robotics Project**

5513 Robot made from a commercial (purchased) kit.

5514 Robot designed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.

5515 Programmable robot made from a commercial (purchased) kit.

5547 Robot designed and constructed by exhibitor or from a commercial kit that is operated by a remote controlled device.
Division D – Team Robotics Project

Robot designed and constructed by two or more 4-H SpaceTech project members. The robot must not be a mere modification of an existing robot kit or plan. The robot may be a programmable type that is made from a commercial (purchased) kit. This division is designed to encourage teamwork and cooperation among fellow 4-H SpaceTech members. As with many high tech projects today, no one person designs and builds a robot alone. It takes the brainstorming, planning, problem solving, and cooperation of an entire team to complete a given robotics project.

4-H SPACETECH – ROCKETRY

The Kansas 4-H SpaceTech Rocketry program is designed to allow 4-H members to explore aerospace through rockets of various sizes. Kansas 4-H has adopted the National Association of Rocketry's rules, regulations, and safety guidelines.

A. Exhibit Information for ALL rocketry categories:
1. All revisions of all forms previously released for the SpaceTech division either undated or dated prior to current year are void for use and new forms must be obtained and used that are dated by the State 4-H Office for the current year. Use of old forms will result in the loss of one ribbon placing for exhibits.
2. Relevant documents may be obtained from County Extension Offices or from www.KansasSpaceTech.com
3. NAR refers to the National Association of Rocketry and its governing board.
4. Tripoli refers to the Tripoli Rocketry Association and governing board.
5. All NAR documents, with the exception of the “pink book,” referenced herein can be found at http://www.nar.org.
6. If a fire burn ban is in effect for any county in Kansas, exhibitors in any Kansas County are not required to launch their rocket(s). All requirements for the launching of rockets for the state fair and the documenting of the launching are suspended for the duration of the ban.
7. See the last section for full details about exhibiting posters, display boards and notebooks.

B. Exhibit Definitions for ALL rocketry categories:
1. As defined by the National Association of Rocketry (NAR), a scale model is “any model rocket that is a true scale model of an existing or historical guided missile, rocket vehicle, or space vehicle.” The intent of scale modeling is, according to the NAR, “to produce an accurate, flying replica of a real rocket vehicle that exhibits maximum craftsmanship in construction, finish, and flight performance.” (NAR “Pink Book” 50.1 4-1)
2. Adult supervision is defined as being under the direct supervision of someone 18 years of age or older.
3. For the purposes of Kansas 4-H SpaceTech a mid-powered rocket is defined as a rocket that uses an ‘E’, ‘F’, ‘G’, or equivalent engine for launch. In addition, rockets also qualify for mid-power if they meet any of the following criteria:
   a. Is 2 inches or greater in diameter (not including fins) and taller than 3 feet (36 inches including fins) and do not use an engine(s) exceeding 160.01 Newton seconds of total impulse (an ‘H’ engine equivalent or above).
b. The total impulse of all engines used in the rocket is greater than 20.01 Newton-seconds and less than 160.01 Newton-seconds.

4. For the purposes of Kansas 4-H SpaceTech a high powered rocket is defined as a rocket that meets any of the following criteria:
   a. Weighs more than 3.3125 pounds (53 ounces or 1500 grams) at the time of launch;
   b. Uses a ‘H’ engine or larger to launch
   c. The total impulse of all engines used in the rocket is greater than 160.01 Newton-seconds of thrust.
   d. Includes any airframes parts of ductile, metal, though, the use of ductile metal is strongly discouraged.
   e. Models powered by rocket motors not classified as model rocket motors per NFPA 1122, e.g.:
      ii. Average thrust in excess of 80.01 Newtons
      iii. Contains in excess of 125 grams of propellant and are limited to only H and I motors.
      iv. Uses a hybrid motor or a motor designed to emit sparks

1. High power certification is defined as having successfully completed a certification program for high-powered rocketry through the NAR or Tripoli and maintaining that certification. This applies to all membership levels in the NAR and Tripoli. Specifically the “Formal Participation Procedure” for the “Junior HPR Level 1 Participation Program” as outlined by the NAR and the “Tripoli Mentoring Program (TMP) as outlined by Tripoli.

2. NAR rules for launching and construction of all rockets are assumed to be used by all 4-H SpaceTech exhibitors and will be considered during judging.

3. For the purposes of Kansas 4-H SpaceTech, NO rocket may be launched using engines totaling more than an ‘I’ impulse engine or 640 Newton-seconds of total thrust.

C. Exhibit Rules for ALL rocketry categories:
   Purpose: These rules apply to how rockets are to be displayed at the fair and what those displays should and should not contain. These rules apply to all rockets displayed in the SpaceTech division.

   1. 4-H members must be currently enrolled in the 4-H SpaceTech-Rocketry program to exhibit in this division.

   2. Entries must be selected at the county level for entry at the State Fair. Counties/Districts should select top blue or purple ribbon rocketry exhibits which meet Kansas State Fair guidelines.

   3. Each exhibitor may enter up to two rocket exhibits that have been constructed during the current year. If two rockets are entered, one rocket must be “model rocket kit” and the second may be entered into any other applicable class. An exhibitor may not enter two rockets in the same class.

   4. The report that accompanies the rocket must be limited to the 4-H SpaceTech Rocket Exhibit Information Form which is affixed to a 10” x 13” envelope. This envelope should NOT be attached to the rocket stand or rocket. The information form should be signed by the exhibitor. This may be downloaded from www.KansasSpaceTech.com. Any rocket exhibit not including this completed envelope will receive an automatic participation ribbon.

   5. Plans (or a photocopy) must be placed inside the envelope.
      a. This includes original design rockets.
      b. If a rocket kit has been modified structurally (Which must provide all necessary details to construct an original design rocket.), notations need to be given indicating the changes made, either by notations on the Rocket Exhibit Information Form or by placing notes in the plans. Such modifications require the rocket to be swing tested and documented to show a stable flight.

   6. One or more photographs of the rocket during construction and at the launch site are required.
      a. Photographs showing the rocket at the moment of ignition are preferred.
      b. Photographs must be mounted on one side of 8 ½” x 11” page(s).
      c. There must be at least 1 page of photos and no more than 5 pages of photos.
      d. Include at least one photo showing rocket construction, preferably with the exhibitor included.
e. Do not include photos of members catching their rockets as they return to earth. This is an unsafe practice, and we do not recommend or condone this practice.

f. Pictures at the launch site are not required in the event of a burn ban.

7. To exhibit in this division:
   a. The rocket must have been flown, unless a burn ban is in effect.
   b. Support rods must not extend past the tip of the highest nosecone on the model.
   c. Support rods must remain in the upright position, 90 degrees to the display base, do not angle. If support rods are not perpendicular to the base, the judge should deduct two ribbon placings.
   d. No model may be submitted on a launch pad.

8. Launches should not be conducted in winds above 20 mph, and will constitute a disqualification of rocket exhibit.

9. All rockets must have a safe method of recovery, e.g., parachute, streamer or tumble recovery. Any rocket without a recovery system will be disqualified.

10. The altitude achieved by the rocket is to be determined using a method other than estimation. Examples of accepted methods include altimeter, computer software, range finders, etc. If additional space is needed to show calculations of how the altitude was achieved one additional page may be added to the rocketry information pack.

11. Flight damage is to be documented by the participant on either the construction plans or the 4-H SpaceTech Rocket Exhibit Information Form.

12. The judging of flight damage is to be secondary to all other aspects of the model and only then may it even be considered. However under no circumstance may flight damage be grounds for disqualification.

13. Engines and igniters, under any circumstance, ARE NOT permitted with the exhibit and constitute an immediate disqualification.

14. If an engine becomes stuck, jammed, wedged, or in any other way permanently affixed in or to a rocket and cannot be removed from the rocket, the rocket will be subject to immediate disqualification. This is because it is not possible to make a full and immediate assessment of the safety of the rocket when it is being judged and safety is paramount.

15. Engines may not be used as display stands hollowed out or otherwise. This is a significant change from previous year’s rules. Engines used as a display stand will be subject to immediate disqualification.

16. Rocket engines should not be used to join multi-stage rockets together.
   a. Multi-stage rockets can be displayed without having the stages connected together. In that case the final stage (the one with the nose cone) should be placed on the display stand, and other stages with a loop of string to the display stand.
   b. The different stages must be included to complete the rocketry exhibit, incomplete exhibits will be deducted at least one ribbon placing.
   c. Use of any engines to join the stages together will be subject to immediate disqualification.

17. Multi-stage rockets can be flown using just the final stage and be considered fully flown.

18. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor’s rocket, at the judges’ discretion, will receive a participation ribbon. All information necessary will be given to the NAR and/or TRIPOLI for investigation and possible revocation of membership.

D. Construction Rule for All Rockets

Purpose: These rules apply to the construction of all rockets displayed in the SpaceTech division.

1. Rockets are to be properly assembled according to the assembly instructions.

2. Beginner kits with prefabricated fin assemblies and pre-finished rockets requiring no painting are not acceptable, and will be disqualified.

3. Plastic snap together fins and prefabricated fin assemblies that do not require fin alignment are not acceptable, and will be disqualified.
   a. This rule does not apply to plastic fins that must be manually aligned and do not utilize a fin alignment mechanism, including, but not limited to fin alignment rings or spacing blocks.
b. This rule does not apply to fiberglass, Kevlar, extruded foam, composite, or wood fins; especially when used for "through-the-wall" fin attachment techniques that are common in larger rockets.

c. In addition, plastic parts for decorative and mechanical purposes (i.e. decorative nozzles and moving landing struts) are not considered fins and can consist of plastic. Decorative nozzles, etc. need to be securely fastened and not pose a safety hazard.

d. Fin assemblies that are printed using a 3D printer are excluded from this rule. Through detailed instructions on the creation of the fin assemblies must be provided and an additional page of photos may be included to show the creation/printing of fin assemblies.

4. Angles of fins must fall within a plus or minus 2 degree variation using an approved fin alignment guide (such as KSSTAC10). An official fin guide is available from www.KansasSpaceTech.com.

5. Fins should be rounded or streamlined according to instructions. If the other edges are rounded to reduce drag on all exposed sides, there should be no ribbon deduction, unless instructions indicate to leave flat.

6. Fins and body tubes are to be sealed with sanding sealer and/or primer to eliminate the appearance of body grooves and wood grain.

7. Fins and launch lugs are to be filleted to reduce drag and properly secure them to the model.

8. Engine mounts are to be securely attached to the body tube.

9. Any seams on plastic parts are to be sanded smooth.

10. Body tubes/airframes/engine mounts can be made from suitable materials, including, but not limited to: reinforced paper, cardboard, phenolic resin, specialized polymer resins, fiberglass, Kevlar, or other suitable structural materials. However, foam may not be used for external body or other external rocket parts.

11. The nose cone is to fit snugly but still allow for easy removal.

12. Exibits must be uniformly painted and smoothly finished or finished as per rocket instructions, and have decals applied smoothly.

13. Non-standard surfacing (such as textured paint) may be used if directed by the instructions, this includes scratch built rockets.

14. Models may not be judged based on their paint scheme (colors and placement on the rocket), with the exception of rockets that fit the definition of a ‘scale model.’ All other rockets do not have to follow the suggested paint scheme, allowing the 4-H’er to display maximum creativity in the finishing of their rocket. Under no circumstances is the weight given to the paint scheme to be sufficient enough, by itself, to move the model from one ribbon placing to another.

15. “Scale models” may be judged based on their paint scheme. The judge may deduct up to one ribbon placing for not following the paint scheme.

16. Scale Model Rockets are to be finished and completed with a majority (greater than 70%) of decals.

17. If a modification is made to the rocket, for example, adding a fin, a swing test must be conducted on the rocket, and the documentation provided. Failure to test and document flight stability following modifications will result in two ribbon placing deductions.

E. Model Rocketry Specific Guidelines (ages 9 and up):

Purpose: Model rockets are generally small-to-medium sized rockets that can be purchased at hobby stores that an individual(s) builds from parts similar to those found in model rocket kits.

1. Rockets classified as high or mid powered may not be entered in this category.

2. Each rocket must be able to stand freely by itself or be supported by a solid base, not to exceed 4-1/4" (four and one quarter inch) thick and 8" square. The exhibitor’s name, county or district, and age must be labeled on the base. Rod materials should be sturdy, and not made of flimsy materials, such as coat hangers.

3. If the model rocket is greater than 4 feet tall it can be displayed without a base, or displayed parallel to the ground with up to 3 notched blocks not to exceed 4" in height width and depth. The exhibitor’s name, county or district, and age must be labeled on the base(s).

4. All exhibitors must comply with the NAR Model Rocket Safety Code that is in effect as of October 1st of the current 4-H year. However in the event that there is a modification in this code, the SpaceTech Action Team may review and implement the modified code.
F. Original Design Specific Rocket Guidelines (ages 11 and up):  
Purpose: To allow for youth to develop their own rockets (model, mid, and high powered) in a safe manner that displays maximum craftsmanship.

1. Original design rockets cannot be a modification of a pre-existing kit and must be of original design.
2. Original design rockets must be designed by the exhibitor(s).
3. Original design rockets must include detailed instructions, so that someone could construct the original designed rocket just like a kit purchased at a store. Instructions can be as many pages as needed to convey full and complete construction techniques.
4. Original design rocket instructions should not include copies of instructions in part or in whole from existing kits.
5. For a rocket entered in the original design classes, describe in the summary how the rocket was tested for stability prior to flying. Swing testing of the rocket is required. Other tests and calculations are encouraged. Exhibitors must include documentation of the swing test. Failure to swing test a rocket will result in a deduction of TWO ribbon placings.
6. Up to 4 additional pages can be added to the rocketry information pack detailing the test(s) performed to insure stability. 4-Her’s are strongly encouraged to provide as much detail as possible. Failure to provide adequate written documentation will result in a disqualification.

Division A - Exhibitors 9 through 13 years old
5520 Rocket made from kit. Include plans.

Division B - Exhibitors 11 through 13 years old (9-10 year olds may not enter in this class)
5521 Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans.

Division C - Exhibitors 14 years and older
5525 Rocket made from kit. Include plans.
5526 Rocket designed by exhibitor: not merely a modification of an existing kit. Include original plans.
5527 Rocket designed by exhibitor: that uses alternative skins; not merely a modification of an existing kit. Include original plans.

Division D - Exhibitors 11 years and older
This class is designed to encourage teamwork among individuals and clubs to work on a rocket from the initial design to the finished product.
5530 Rocket designed by 2 or more exhibitors: not merely a modification of an existing kit. Include original plans.

Mid-power Rocketry (2x'D' to ‘G’ Engines) Guidelines:
Purpose: To allow for improved safety and judging of rockets that meet the requirements of 4-H mid-power rockets.

1. Exhibitors must be at least 14 years of age by January 1 of the current year.
2. The rules for ALL categories apply.
3. In addition to the information packet completed for all rockets, a high/mid power information form is to be completed and placed inside of the information packet. This may be downloaded from http://www.kansas4-H.org/. Click on KSF Packet link.
4. Exhibitors in this division must hold memberships in either NAR or Tripoli organizations.
5. The NAR Model Rocket Safety code applies to the construction and launching of all rockets displayed in this division. As such all exhibitors must comply with the NAR Model Rocket Safety Code that is in effect as of October 1st of the current year. However in the event that there is a modification in this code the SpaceTech Action Team may review and implement the modified code.
6. All rockets in this division are to be launched under adult supervision by the 4-H member who constructed the rocket.
7. High power rockets as defined above (‘H’ or ‘I’ engines) may not be launched in this division.
8. If according to Federal Aviation Regulations Part 101, a waiver is required to fly the rocket, a copy of that waiver is to be attached to the High Power Information Form. In the case where the launch was a public event a substitute to a copy of the waiver is the Range Safety Officers (RSO’s) contact information.

9. Mid- Power rockets may be displayed without a supporting stand. If a supporting stand is used, it is not to exceed 4-1/4” (four and one-quarter inch) thick and 8” square. The exhibitor’s name, county or district, and age must be labeled on the base.

Division E- Exhibitors 14 years and older
5536 Mid-power rocket made from kit or original design.

High Power Rocketry (‘H’ or ‘I’ engines) Guidelines:
Purpose: To allow for improved safety and judging of rockets that meet the requirements of 4-H high power rockets.
1. Exhibitors must be at least 14 years of age by January 1 of the current year.
2. The rules for ALL categories apply.
3. In addition to the information packet completed for all rockets, a high power information form is to be completed and placed inside of the information packet. This may be downloaded from http://www.Kansas4-H.org/. Click on KSF Packet link.
4. Exhibitors in this division must hold memberships in either NAR or Tripoli organizations.
5. The NAR High Power Rocket Safety Code applies to the construction and launching of all rockets displayed in this division. As such all exhibitors must comply with the NAR High Power Rocket Safety Code that is in effect as of October 1st of the current 4-H year. However in the event that there is a modification in this code the SpaceTech Action Team may review and implement the modified code.
6. All rockets in this division are to be launched under adult supervision by the 4-H member who constructed the rocket.
7. For rockets launched using an engine(s) that have 160.1 (‘H’ engine or equivalent amount of smaller engines) Newton’s-seconds or larger, adult supervision must be provided by an individual having at least a level 1 high power certification. The 4-H member should also hold or be attempting to attain their level 1 high power certification, and should include supporting documentation of such (a copy of Level 1 card is sufficient).
8. If according to Federal Aviation Regulations Part 101, a waiver is required to fly the rocket, a copy of that waiver is to be attached to the High Power Information Form. In the case where the launch was a public event a substitute to a copy of the waiver is the Range Safety Officers (RSO’s) contact information.
9. High Power Rockets may be displayed without a supporting stand. If a supporting stand is used, it is not to exceed 4-1/4” (four and one-quarter inch) thick and 8” square. The exhibitor’s name, county or district, and age must be labeled on the base.

Division F -Exhibitors 14 years and older
5535 High power rocket made from kit or original design.

4-H SPACETECH – UNMANNED AERIAL SYSTEMS
Purpose: The 4-H unmanned aerial systems or UAS project explores the world from above the trees and discovers new frontiers with UASs. UASs are commonly known as Unmanned Aerial Vehicles (UAVs) or drones. Members explore the uses and applications of unmanned aerial systems including how UASs link to other projects such as geology, robotics, electronics, crop science and many more.
1. The 4-H members must be currently enrolled in the 4-H SpaceTech project to exhibit in this division.
2. Each exhibitor may enter one exhibit per class. Exhibit must be completed during the current 4-H year and be selected at the county level for entry at the State Fair level. Counties or district should select only top blue or purple ribbon exhibits which meet State Fair guidelines.
3. The information that accompanies the UAS must be limited to the 4-H SpaceTech Exhibit Information Form which is affixed to a 10” x 13” envelope. This envelope should NOT be attached to the UAS. This may be
4. Exhibitor’s name, county or district, age, and years(s) in project must be tagged or labeled in a prominent location on the exhibit, educational display, notebook, and/or poster.

5. Unmanned Aerial Systems that include or depict weaponry of any kind will be disqualified.

6. See the last section for full details about exhibiting posters, display boards and notebooks.

7. If modifications are made to the exhibit a page should be attached noting those modifications.

**Division A – Junior, 9-13 years old**

5701 Unmanned Aerial System designed and constructed by exhibitor that is operated by a remote controlled device. The UAS must not be a mere modification of an existing kit or plan. You may not exhibit a UAS that is purchased off the shelf in this class.

5702 Practical application of an Unmanned Aerial System constructed from a commercial (purchased) kit. This includes the UAS, plus one or more of the following: video, notebook, poster, display board, etc. This class is separate from educational exhibits. A tangible use would be mapping Russian olive trees, eroded soils, and bindweed in fields, etc. There are also many other non-agricultural UAS uses that would be appropriate for this class.

**Division B – Senior, 14 years and older**

5706 Unmanned Aerial Systems designed and constructed by exhibitor that is operated by a remote controlled device. The UAS must not be a mere modification of an existing kit or plan. You may not exhibit a UAS that is purchased off the shelf in this class.

5707 Practical application of an Unmanned Aerial System constructed from a commercial (purchased) kit. This includes the UAS, plus one or more of the following: video, notebook, poster, display board, etc. This class is separate from educational exhibits. A tangible use would be mapping Russian olive trees, eroded soils, and bindweed in fields, etc. There are also many other non-agricultural UAS uses that would be appropriate for this class.

**4-H SPACETECH EDUCATIONAL EXHIBITS – POSTERS, NOTEBOOKS AND DISPLAY BOARDS**

Purpose: To allow 4-Hers to explore SpaceTech outside the bounds of traditional projects for rockets, robotics, astronomy, computers and unmanned aerial systems. All posters, notebooks and display boards are listed in this section and have been removed from the individual sections to save space.

1. The General Exhibit rules for ALL categories apply.

2. Entries must be selected at the county level for entry at the Kansas State Fair. Counties/Districts should select top blue or purple ribbon Educational Rocketry Exhibits which meet State Fair guidelines.

3. For notebooks, display boards, and posters, no additional exhibit information is required; no manila envelope is needed for these exhibits.

4. Exhibits in posters, notebooks and display boards may not be just a static project, but must contain substantial supporting educational materials in the form of posters, notebooks, or display boards, etc.

5. Educational display boards, posters and notebooks should be creative and showcase details about the knowledge learned in the project during the current 4-H year. Value is placed on youth who can demonstrate how their skills have increased while completing the project. Each exhibit will be judged on uniqueness, creativity, neatness, accuracy of material, knowledge gained, and content. An exhibit judging score sheet will be available at www.kansasspacetech.com. For example, a rocket may have crashed and/or is highly damaged that can’t be launched again may be made into an educational display or poster that tells a great story with many lessons learned.

6. Follow copyright laws, citing all sources of information in a standard notation on the “4-H Educational Rocketry Exhibit Information Form.” Additional pages can be added inside the Information Packet and should be labeled “Citations.” Sources of scientific information must be cited on the front of your exhibit, including all posters and educational display boards.
7. Educational displays are not to exceed a standard commercial 3' x 4' tri-fold display board. No cardboard table exhibits will be allowed.
8. “Construction Kits” that are part of Educational displays must be contained in cases (tackle boxes, sealable containers, etc.) that may not be larger than 1' X 2' X 2' and must have a latch which securely keeps all components contained in the “Construction Kits”. Other components are to adhere to appropriate dimensions as stated elsewhere.
9. Educational Project notebooks must be organized in a 3-ring binder.
10. Educational posters must be no larger than a 20” X 30” poster board. Exhibitors are encouraged to laminate all posters and diagrams or cover them with clear plastic film. Any three dimensional display exhibits may not be thicker than 1”.
11. Engines and igniters in rockets ARE NOT permitted with the exhibit and constitute an immediate disqualification. This is for safety reasons and includes both spent and live engines.
12. Exhibitor’s name, county or district, age, and year(s) in project must be tagged or labeled in a prominent location on the notebook, and/or “Construction Kit,”. For education displays and/or posters the exhibitor’s name, county, or district, age, and year(s) in project must be tagged or labeled on the back of the exhibit. Failure to label an exhibit may result in one ribbon placing deduction.
13. Exhibits should possess the following qualities (in no particular order):
   a. A Central theme
   b. What you want others to learn
   c. Be designed and constructed in a manner befitting the exhibit
   d. Be something you are interested in
   e. Be related to Computer systems, Robotics, Rocketry, or Unmanned Aerial Systems
   f. And those characteristics described above.
14. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor’s exhibit, at the judge’s discretion, will receive a participation ribbon.

Astronomy - Junior Division – 9-13 years old
5731 Junior Astronomy Educational Display
5732 Junior Astronomy Educational Notebook
5733 Junior Astronomy Educational Poster

Astronomy- Senior Division – 14 years and older
5736 Senior Astronomy Educational Display
5737 Senior Astronomy Educational Notebook
5738 Senior Astronomy Educational Poster

Rocketry Division F – Exhibitors 9 through 13 years old
5741 Rocketry Educational Display
5742 Rocketry Notebook
5743 Rocketry Poster Board

Rocketry Division G – Exhibitors 14 years and older
5746 Rocketry Educational Display
5747 Rocketry Notebook
5748 Rocketry Poster Board

Robotics Division A - Novice – One to Two Years in Robotics Project
5751 Robotics Educational Display
5752 Robotics Educational Notebook
5753 Robotics Educational Poster

Robotics Division B – Intermediate – Three to Four Years in Robotics Project
5756 Robotics Educational Display
1. A member may make only one entry in this division.
2. **Exhibitors must comply with state and federal laws.** It is illegal to possess threatened or endangered wildlife, or the feathers, nests, or eggs of non-game birds. Game birds and game animals taken legally during an open season may be used. The use of live wild animals in educational exhibits is prohibited.

3. Name, county or district, age and year in project should be in a prominent location on the exhibit.

4. Notebooks and Educational Displays will be judged on the following points:
   - **Stopping Power.** ................................................................. 15
   - Is the main idea specific? Is the idea presented clearly, simply, forcefully?
   - **Interest, Holding Power.** ................................................................. 15
   - Does the exhibit give the observer additional facts in a clear, concise, informative way?
   - **4-H Project Application.** ................................................................. 15
   - Is the subject matter an effective showcase?
   - **Mechanical Power.** ................................................................. 15
   - Correct letter size, pleasing color combination, appropriate symbols, and models
   - **Personal Growth.** ................................................................. 25
   - How much knowledge was gained by exhibitor? Was enthusiasm shown?
   - **Educational Value.** ................................................................. 25
   - Knowledge Shared. Note: Credit all citations, websites or other resources used in creating your exhibit.

5. Posters will be judged on the following points:
   - **General Appearance.** ................................................................. 30
5400  Notebook. Contents pertain to some phase, results, story or information about the wildlife project
5401  Promotional Poster. Must be related to something learned in the wildlife project. (Flat poster board or foam board no larger than (22” x 28”))!
5402  Educational Display. Must be directly related to the wildlife project. Maximum tri-fold size is 3’ x 4’.
5403  Taxidermy/Tanning Exhibit. Should include an attachment that shows the work in progress through photos with captions, or a detailed journaling of the process.