2022

SCIENCE, ENGINEERING AND TECHNOLOGY

All exhibits must be labeled. Label each item with the exhibitor name, project division, exhibit class number and years in the project before entering at county fair. The name and county of each exhibitor should appear separately on the back of each board, poster or article and on the front cover of the notebooks so owner of exhibit may be identified if the entry tag is separated from the exhibit. Each individual is limited to one exhibit per class. All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Several classes require a display board which should be a height of 24 inches and not to exceed 1/4" in thickness. A height of 23 7/8" is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4' X 8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. (Example: Woodworking & Electricity.) For the safety of the models, models must be brought to the fair on a steady surface. Board such as plywood, composition board, or particle-type lumber must be used for demonstration displays and LEGO models.

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. Demonstration boards should include an overall title for the display, plus other necessary labeling.

Reports should be written using the scientific method whenever possible (background, the question or hypothesis, what you plan to do and what you did, method used and observations, results: what you learned. All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

4-H'ers can exhibit in only one level, and once they have progressed to a higher level they cannot exhibit or enroll in a lower project level. This does not apply to Aerospace Model Rockets Levels 3 and 4 and Woodworking Levels 3 and 4.

*H930001. Careers Interview – Interview someone who is working in any field associated with science, engineer and technology and research that career (i.e. computer programmer, architect, engineer, pilot, etc.). Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12-point font, and 1" margins. Multimedia reports should be between 3 to 5 minutes in length.

MODEL BUILDING

Displays should be no greater than 24" x 24".

Purple, $2.50; Blue, $2; Red, $1.50; White, $1

H845001 Ages 8-10. Model builders will be able to display "snap" type models or e-z glue model. Prefinished models are allowed.

Purple, $3; Blue, $2.50; Red, $2; White, $1.50

H845002 Ages 11 and up. Glue type model — Prefinished or painted. Level Easy or Level 1, as printed on box.

H845003 Ages 11 and up. Glue type model — Must be painted by exhibitor. Level 2 model, as printed on box.

H845004 Ages 11 and up. Glue type model — Must be painted by exhibitor. Level 3 or 4 model, as printed on box.

H845005 Any other models.

H845006 Freestyle Legos – Legos made without using a kit.

AEROSPACE

This category gives 4-H'ers a chance to display the rockets and drones they have created. Through participation in this category 4-H'ers will show judges what they learned about and how they adapted their exhibit throughout this project. Involvement in SET Aerospace gives participants a first-hand experience in modern technology.

Rocket must be supported substantially to protect the rocket from breakage. Rockets are to be mounted on a base that has dimensions equal to or less than 12 inches by 12 inches, and the base should be ¾ inch thick. No metal bases. If the rocket fins extend beyond the edges of the required base (12 inches by 12 inches), then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins. The rockets must be mounted vertically. Please do not attach sideboards or backdrops to the displays. In addition, a used engine or length of dowel pin should 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. Rockets entered with live engines, wrong base size, or side boards will be disqualified.

Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: What you learned, All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

An accompanying report typed, protected in a clear plastic cover, 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
7. Conclusions

The flight record should describe engine used, what rocket did in flight and recovery success. Points will not be deducted for launching, flight or recovery failures described. This includes any damage that may show on the rocket. Complete factory-assembled rockets will not be accepted. Rockets from all skill levels will be accepted. Judging is based upon display appearance, rocket appearance, workmanship, design or capabilities for flight, and number of times launched and report. Three launches are required to earn the maximum launch points given on the score sheets. For scoring, only actual launches count; misfires will not count toward one of the required three launches.

For self-designed rockets only, please include a digital recorded copy of one flight. In the documentation, please include a description of stability testing before the rocket was flown.

Several classes require a display board which should be a height of 24" and not to exceed ¼" thickness. A height of 24 7/8" is acceptable to allow for the saw kerf (width) if two 24" boards are cut from one end of a 4 foot by 8 foot sheet of plywood. Nothing should be mounted within ¾" of the top or bottom of the board. Fabricated board such as plywood, composition board, or particle type lumber may be used for demonstration display. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.

4-H Rocket project levels are not intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels. Skill level of project is not determined by number of years in project. Skill level is determined by the level listed on the manufacturing packaging.

High power rockets (HPR) is similar to model rocketry with differences that include the propulsion power and weight of the model. They use monitors and ranges over "G" power and/or weigh more than laws and regulations allow for unrestricted model rockets. These rockets are NOT appropriate for 4-H projects and will be disqualified.

Rockets must be supported substantially to protect the rocket from breakage. Rockets are to be mounted on a base that has dimensions equal or less than 12" x 12" and the base should be ¾" thick. No metal bases. If the rocket fins extend beyond the edges of the required base (12" x 12"), then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins.

The rockets must be mounted vertically. Please do not attach sideboards or backdrops to the displays. In addition, a used engine or length of a dowel pin is to be glued and/or screwed into the board and extended up into the rockets engine mount to give add stability.

Rockets must be equipped as prepared for launching, with wadding and parachute or other recovery system. Rockets entered with live engines, wrong base size or sideboards will be disqualified.

*Denotes State Fair Entry

Purple, $3; Blue, $2; Red, $1.50; White, $1

H850050 Rocket — Any Skill Level 1 Rocket with plastic fins. **First year only.**

*H850001 Rocket — Any Skill Level Rocket with wooden fins and cardboard body tubes painted by hand or air brush.

*H850002 Aerospace Display — Poster or display board that displays or exemplifies one of the principles learned in the Lift Off project. (Examples include display of rocket parts and purpose, explains the parts of a NASA rocket or shuttle, interview of someone in the aerospace field, or kite terminology. Include notebook containing terminology (definition), and what was learned. Display can be any size up to 28 inches by 22 inches.)

*H850003 Rocket — Any Skill Level Rocket with wood fins and cardboard body tubes painted using commercial application (example: commercial spray paint).

*H850004 Rocket — Any self-designed rocket with wooden fins and cardboard body tubes.

DRONES

*H850005 Drone Poster – Exhibit must be designed to educate yourself and others on one or more of the following topics: drone technologies, uses of drones, the different types of drones, types of training needed to operate drones, and the laws and regulations users must follow. Posters can be any size up to 28" x 22".

*H850006 Drone Video – Exhibit must demonstrate how the drone interacts with the outside world. Examples include: field scouting, surveying damage from natural disasters, drones used in commercial applications and settings, and drones used for structural engineering. Video should not exceed 5 minutes.

Kites

Purple, $3; Blue, $2; Red, $1.50; White, $1

H850030 Kite — Entry of one kite built from scratch by exhibitor. No purchased kites or kites made from purchased kits will be allowed. Plans must be included with entry. Exhibitor may use plans from manual, plans designed by the exhibitor or plans from another source. If plans from manual are modified, these changes need to be noted on the plans.

A report (handwritten or typed), protected in a clear plastic cover, must be included describing:

1. Number of flights
2. Flight pictures
3. Record of "How Did Your Kite Fly?" Include weather factors, general observations, and what you felt and heard while flying your kite.