



Department 24 - Mechanical Science

ATCP 160.70

REGISTRATION DATE: APRIL 22 TO MAY 22, 2025

CHECK-IN & JUDGING: SATURDAY, JULY 12, 2025 @ 9 AM TO 1:30 PM

JUDGING STYLE: FACE-TO-FACE

Lead Superintendents: Owen Johnson, owen.johnson.1986@gmail.com or
Christina Johnson, christinakayjohnson08@gmail.com

Rules and Instructions

- a) **Read the General Fair Rules & Instructions** document!!!
- b) Exhibitors are responsible for securing to the display or exhibit all loose pieces of the entry (i.e. wire, zip ties, string, or glue).
- c) Posters can be no larger than 14"x22", and displays can be no larger than 28"x40".
- d) Exhibitors must enter in their grade division.
- e) Posters must consist of at least 50% to 75% original work.
- f) Rockets must be displayed on stands.
- g) All engines must be removed from all model rockets before entry.
- h) All fuel must be removed from engines before entry.
- i) **Write exhibitor grade and number of years in department on back of entry tag/card.**
- j) All items and pieces of exhibit must be firmly in place and secure.

TRACTOR MAINTENANCE

Premiums: \$2.50 \$2.25 \$2.00 \$1.75

CLASS A – Gr. 3-5

Lot

- 1. Exhibit: parts of a tractor
- 2. Exhibit: tractor safety features
- 3. Exhibit: how to start and stop a tractor
- 4. Exhibit: safety hazards when operating a tractor
- 5. Exhibit: role of ROPS (rollover protective structures)
- 6. Exhibit: commonly used hand signals with tractors
- 7. Exhibit: machine hazards
- 8. Exhibit: types of fire extinguishers and how they are used
- 9. Exhibit: proper clothing worn while working around tractors/machinery
- 10. Any other exhibit

CLASS B – Gr. 6-9

Lot

- 15. Exhibit: general farm safety rules
- 16. Exhibit: PTO (power-take-off) safety
- 17. Exhibit: causes of tractor rollovers
- 18. Exhibit: how to prevent tractor rollovers

- 19. Exhibit: maintenance checks before operating a tractor
- 20. Exhibit: types of tractor fuel
- 21. Exhibit: recycling tractor batteries and oil
- 22. Exhibit of nuts, bolts, screws and other fasteners used on the farm
- 23. Exhibit charting the operating costs and maintenance of a typical piece of farm equipment
- 24. Any other exhibit

CLASS C – Gr. 10 & up

Lot

- 30. Exhibit: flowing grain hazards
- 31. Exhibit showing proper lawn mower safety
- 32. Exhibit: how to use conveyors and augers safely
- 33. Exhibit: cooling system safety
- 34. Exhibit: hydraulic system and fuel safety
- 35. Exhibit: tractor maintenance log
- 36. Exhibit: servicing oil fuel and hydraulic filters
- 37. Exhibit: engine air requirements
- 38. Exhibit: types of air filters
- 39. Any other exhibit

CLASS D – FARM DISPLAY

Premiums: \$2.50 \$2.25 \$2.00 \$1.75

Lot

- 45. Gr. 3-7 Model Farm – 2'x3' farm scene on plywood using model buildings, animals and equipment showing seasonal farm operations (include a description of the activity depicted in the farm scene)
- 46. Gr. 8 and up, Model Farm – 2'x3' farm scene on plywood using model buildings, animals and equipment showing seasonal farm operations (include a description of the activity depicted in the farm scene)

MODELS PROJECTS

Premiums: \$2.50 \$2.25 \$2.00 \$1.75

- a) Exhibits must be the result of the exhibitor's efforts since the previous year's fair.
- b) Lots 50-60 are single items, not dioramas or scenes.
- c) All models should be securely mounted on a base no larger than 2'x3'. All bases must be solid (no clumsy bases such as cardboard or paper).
- d) NO flying items!

CLASS E – Snap Kit Models

*Snap Kits such as Legos, Erector or K'nex.
Please include instructions.*

Lot

50. Buildings
51. Animal or People
52. Vehicles (land & sea)
53. Motorized/powerd
54. Other kit model – not fitting into above categories
55. Exhibitor's Original Design
56. Any other exhibit related to snap kit models

CLASS G – SMALL ENGINES

Premiums: \$2.00 \$1.75 \$1.50 \$1.25

Lot

75. Rebuilt engine or machine part for 2 or 4 cycle engine
76. Any exhibit showing a two-cycle or four-cycle engine
77. Exhibit showing correct steps in preparing for in season use
78. Exhibit showing correct steps in preparing for off season storage
79. Exhibit illustrating steps in a small engine service job
85. Exhibit illustrating steps in a small engine service job
86. Any other exhibit related to engines

CLASS F – Traditional Models

*NOT snap kits such as Legos, Erector or K'nex.
Please Include Instructions.*

Lot

57. Scratch built model – not a kit
58. Model's assembled with glue (no snap together components)
59. Modified or customized model made from one or more kits, assembled with glue (no snap together components)
60. Action model featuring lights, sounds, motors, or substantial moving parts
61. Diorama or panorama exhibit (not model farm)
62. Poster with 5 photos of your model railroad setup
63. Photo story on the construction of a scale model
64. Any other exhibit related to traditional models

CLASS H – BICYCLE

Premiums: \$2.00 \$1.75 \$1.50 \$1.25

Lot

95. Rebuilt or refinished bicycle
96. Any exhibit about bicycle parts
97. Any exhibit about bicycle safety, rules of the road
98. Exhibit on bicycle maintenance
99. Any other exhibit related to bicycles



AEROSPACE

Premiums: \$2.00 \$1.75 \$1.50 \$1.25

CLASS J – Gr. 3-5

Lot

- 105. Small model of homemade airplane or rocket (not a kit)
- 106. Small model of homemade airplane or rocket (kit)
- 107. Exhibit of parts of an aircraft or rocket
- 108. Exhibit of how weather affects flying
- 109. Exhibit on any other related phase of the project
- 110. Launched rocket – including a card describing the results of the rocket flight (rocket not exhibited at a previous fair)

CLASS K – Gr. 6-8

Lot

- 115. Model rocket built by member – not kit – include explanation of finishing involved, launching system, tracking system, and any flight results
- 116. Model rocket built by member – from kit – include explanation of finishing involved, launching system, tracking system, and any flight results
- 117. Model airplane built by member – from a kit
- 118. Exhibit of rocket parts and their function
- 119. Exhibit matching parts and functions of remote control
- 120. Exhibit on any other related phase of the project

- 121. Launched rocket – including a card describing the results of the rocket flight (rocket not exhibited at a previous fair)

CLASS L – Gr. 9 and up

Lot

- 125. Model rocket built by member – not a kit – include explanation of finishing involved, launching system, tracking system, and any flight results
- 126. Model rocket built by member – from a kit – include explanation of finishing involved, launching system, tracking system, and any flight results
- 127. Model airplane built by member – from a kit
- 128. Exhibit of flat-style box kite (see page 20 of State 4-H Curriculum)
- 129. Exhibit explaining aircraft navigation
- 130. Exhibit on any other related phase of the project
- 131. Launched rocket – including a card describing the results of the rocket flight (rocket not exhibited at a previous fair)
- 132. Drone built by member – include explanation of the operation system, registration process and any flight results.

GEOSPATIAL

Premiums: \$2.50 \$2.25 \$2.00 \$1.75

CLASS M

Lot

- 140. Any exhibit related to maps/map-making
- 141. Any exhibit related to GPS/geocaching

ROBOTICS

Premiums: \$2.50 \$2.25 \$2.00 \$1.75

Focus is on the mechanical aspect of the robot, NOT the programming of it.

CLASS O

Lot

- 170. Display or poster describing the parts of a robot you built, programmed, or researched; fully explaining the function of each part.
- 171. Display, poster or booklet featuring one or more real world robots & the ways in which they are used.
- 172. Display or poster describing one or more ways that robotic technology is improving humankind's quality or length of life.
- 173. Any other exhibit

