

DEPARTMENT 124 - MECHANICAL PROJECTS

CLASS A - AEROSPACE

All posters & charts are 14"x22" or 28"x22" Exhibits can be exhibited in a low cut box or tray

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

Open to members enrolled in "Pre-Flight"

1. An edible rocket
2. Display showing comparison of birds & airplanes
3. A homemade space helmet
4. Poster or display identifying parts of a rocket
5. Poster or display of different types of aerospace careers
6. A chart identifying cloud types

Open to members enrolled in "Lift-Off"

10. A straw rocket
11. A paper airplane
12. Photos of types of aircraft with descriptions
13. A homemade diamond kite
14. Hot air balloon model with parts identified
15. Homemade paper helicopter

Open to members enrolled in "Reaching New Heights"

20. A straw and balloon rocket
21. A flight simulator
22. A feather wing glider
23. A "shuttle on a string"
24. Nagasaki hata fighter kite
25. Match parts & functions of a remote control
26. Homemade hang glider

Open to members enrolled in "Pilot in Command"

30. A model rocket
31. An altitude tracker
32. Evaluation of navigation systems display
33. Homemade flat-style box kite

CLASS C - BICYCLE PROJECT

Open to members enrolled in Mechanical Sciences-Bicycling Projects. Members enrolled in Adventure Project - Bicycling must exhibit in Department 116 - Class L

All posters and charts are 14"x22" or 28"x22"

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

Lot No.

- 70. A chart or display board showing the basic parts of the bicycle.
- 71. A chart of bicycle laws.
- 72. A chart of labeled traffic control signs.
- 73. Bicycle safety poster
- 74. A poster on bicycle care and maintenance
- 75. A bicycle repair and maintenance kit.
- 76. A picture story of a bike trip.

CLASS D - SMALL ENGINES

Unit 1 - Crank It Up!

All posters and charts are 14"x22" or 28"x22"

Group "A"	Group "B"	Group "C"	Group "D"
\$1.75	\$1.50	\$1.25	\$1.00

- 80. Small engine safety poster
- 81. Display or exhibit of basic tools used for small engine repair & maintenance
- 82. Display or poster of parts found in a small engine (example: lawnmower, go cart, snow blower, etc.)

Unit 2 - Warm It Up!

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

- 90. Poster showing events in a two stroke and four stroke engine with a brief explanation.
- 91. A display of internal parts or pictures of parts, labeled
- 92. Poster showing correct steps in preparing a small engine for off season storage
- 93. A display of different types of oil illustrating viscosity & service classification

94. A poster or display of specialty tools used in the maintenance or repair of small engines

Unit 3 - Tune It Up!

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

100. Safety poster on chain saw use, out board motors, motorcycles, or dirt bikes
101. Panel exhibit showing diagram of: Ignition systems, fuel system, or lubrication system (actual parts may be used)
102. Panel showing worn or faulty engine parts with a statement as to cause and prevention
103. Poster or display on comparison shopping of engines, parts, & tools

CLASS E – GEOSPATIAL

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

Geospatial 1 – Getting Out

1. Exhibit of a map you designed using GIS/GPS to introduce someone to your community
2. Exhibit on history/development of compasses, globes, maps or GIS/GPS
3. Report on why we still need to know about compasses, globes and paper maps
4. Exhibit on how using maps can help solve community problems
5. Exhibit on what can affect a GIS/GPS receiver's ability to maintain connection to satellites
6. Chart about the main pages and sub pages of a GIS/GPS receiver
7. Poster about the control buttons and other external features of a GIS/GPS receiver
8. Exhibit on how to use GIS/GPS to create a treasure hunt
9. Exhibit on how to hold a GIS/GPS skillathon
10. Exhibit on consumer choices when buying GIS/GPS equipment

Geospatial 2 – On the Trail

20. Exhibit on careers that use GIS/GPS skills and knowledge
21. Example of map layering using transparencies
22. Exhibit on remote sensing, aerial photography or satellite imaging, as related to GIS/GPS
23. Exhibit on the differences between geographic data and geospatial data-include examples from newspapers
24. Exhibit about using plant life, the stars or sun, or sextants to find your way
25. Report on a famous cartographer
26. Exhibit about letterboxing

- 27. Exhibit on how to use GIS/GPS to make a history or nature trail
- 28. Report on the differences between stationary and movement data
- 29. Exhibit about satellites as related to GIS/GPS
- 30. Exhibit on how GIS/GPS is used in everyday life

Geospatial 3 – Reaching Your Destination

- 40. Report on how GIS/GPS can be used for sustainable development solutions
- 41. Exhibit showing importance of cardinal points, grid, title, symbols and labels in making maps
- 42. Exhibit showing two maps comparing their audiences, information and presentation
- 43. Report from interviewing a geographer or city planner about how he/she uses GIS/GPS and map layers at work
- 44. Collage showing as many types and sources of data (including GIS/GPS data) as you can find related to dealing with a specific community issue – i.e. traffic flow, development, etc.
- 45. Exhibit on how to determine accuracy and reliability of data
- 46. Exhibit on geocaching and rules
- 47. Exhibit on how GIS/GPS is used for search and rescue operations
- 48. Report on effects of GIS/GPS on society
- 49. Report on ethics related to GIS/GPS usage

CLASS F - TRACTOR

All posters and charts are 14"x22" or 28"x22"

Group "A"	Group "B"	Group "C"	Group "D"
\$2.50	\$2.25	\$2.00	\$1.50

- 110. Poster or log about tractor maintenance
- 111. Poster emphasizing tractor safety
- 112. Display about tractor parts
- 113. Exhibit about ways tractors are used
- 114. Exhibit about purchasing decisions for tractors
- 115. Photographs and documentation of the steps you took in restoring, reconditioning or rebuilding a tractor

CLASS G - SCALE MODELS

Open to members enrolled in the Scale Model Project Models for display only

Group "A"	Group "B"	Group "C"	Group "D"
\$2.00	\$1.75	\$1.50	\$1.25

Exhibitor: Grades 3-8

- 120. Car, from a kit
- 121. Car, original design, not from a kit
- 122. Ship, from a kit
- 123. Ship, original design, not from a kit
- 126. Tank, from a kit
- 127. Tank, original design, not from a kit
- 128. Train, from a kit
- 129. Train, original design, not from a kit
- 130. Model made from wood
- 132. Spaceship, from a kit
- 133. Spaceship, original design, not a kit
- 134. Doll house
- 135. Doll house furniture
- 136. Horse drawn vehicle
- 137. Scale model diorama (include card indicating scale)
- 138. Other model except those listed above

Exhibitor: Grades 9 and above

- 140. Car, from a kit
- 141. Car, original design, not from a kit
- 142. Ship, from a kit
- 143. Ship, original design, not from a kit
- 146. Tank, from a kit
- 147. Tank, original design, not from a kit
- 148. Train, from a kit
- 149. Train, original design, not from a kit
- 150. Model made from wood
- 152. Spaceship, from a kit
- 153. Spaceship, original design, not from a kit
- 154. Doll house
- 155. Doll house furniture
- 156. Horse drawn vehicle
- 157. Scale model diorama (include card indicating scale)
- 158. Other model except those listed above

CLASS H – ROBOTICS

Group “A”	Group “B”	Group “C”	Group “D”
\$2.00	\$1.75	\$1.50	\$1.25

Robotics Explorer

1. Exhibit on differences between machines, computers and robots
2. Exhibit on programming sensors
3. Exhibit on programming language
4. Exhibit on forks in programming
5. Exhibit on 3 different types of robots or 10 robot trading cards you created
6. Chart of 20 robotics terms and their definitions
7. Exhibit about aspects of setting up a robotics skillathon
8. Exhibit comparing point turns, non-point turns and reverse non-point turns
9. Exhibit or timeline illustrating past and future robots
10. Exhibit about how robots influence our lives
11. Exhibit showing the parts of a robot
12. Exhibit of newspaper clippings about robots
13. Scrapbook about your robotics project
14. Exhibit about where you can find robotics supplies to purchase

Robotics Probe

20. Exhibit on using a rotational sensor
21. Exhibit on measured turns
22. Exhibit on pulleys and belts
23. Exhibit on programming with subroutines
24. Exhibit on loop programming
25. Exhibit on electrical circuitry or battery power and robotics
26. Exhibit on helpful approaches to use in figuring out complicated directions
27. Exhibit on cryptology and the use of codes in robotics
28. Exhibit about possible careers as a roboticist
29. Exhibit on 10 different tasks robots can accomplish
30. Exhibit about gears and ratios and effects on distance traveled and travel speed
31. Exhibit on types of wheels robots use and their effects
32. Exhibit about robots used either in space, underwater or in the military
33. Exhibit about how robots are used to assist people with disabilities
34. Your robotics sketchbook