Department 24 – Mechanical Projects

Rules

All posters shall be 14”x22” or smaller.

Class A: Aerospace – Pre-Flight

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

101. Chart or exhibit on history of flight
102. Homemade space helmet
103. Edible rocket

Class B: Aerospace – Lift-Off

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

101. Model rocket from scratch
102. Model rocket from kit
103. Homemade kite
104. Gnome rocket
105. Poster any aerospace topic
106. Paper airplane
107. Paper glider with soaring record
108. Drinking straw rocket
109. Hot air balloon model

Class C: Aerospace – Reaching New Heights

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

101. Paper flight simulator
102. Controllable glider
103. Model airplane/rocket made from kit, not made to fly.
104. Model airplane/rocket made from kit, made to fly.
105. Poster describing the parts of a helicopter
106. Homemade Nagasaki Hata Fighter Kite.
107. Balloon shuttle
108. Drinking straw and balloon rocket
109. Paper hang glider
110. Poster on remote control parts and their functions

Class D: Aerospace – Pilot in Command

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Fact sheet on steps to getting a pilot's license
102. Display of a flight plan
103. Display on celestial navigation
104. Homemade Brouhaha Box Kite
105. Photo story of project activities
106. Chart or exhibit on aircraft structure or instruments/FAA regulations
107. Poster about aerospace activity/navigation
108. Model rocket
109. Altitude tracker

Class E: Tractor Maintenance

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Exhibit showing safe and unsafe operating procedures in maintenance or driving
102. Any poster/display/fact sheet on tractor maintenance/safety
103. Scrapbook/exhibit on farm safety promotion or activity
104. Poster on engines/pistons and how they work
105. Any other educational project exhibit

Class F: Small Engines – Crank It Up!

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Poster any small engine topic
102. Exhibit identifying small engine parts
103. Small engine model

Class G: Small Engines – Warm It Up!

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Poster classifying small engines/illustrating the transmission of power
102. Exhibit or poster on small engine tools - identify and list uses
103. Chart comparing grades of oil
104. Safety poster for lawn mowers
105. Air cleaner cutaway - identify parts
106. Carburetor cutaway - identify parts
107. Panel showing diagram of ignition, fuel or lubrication systems (actual parts may be used)
108. Chart or poster comparing diesel and gasoline engines
109. Poster showing correct steps in preparing small engine for off-season storage/alternative energy sources
110. Poster/display showing small engine parts/ explaining compression/lawnmower safety
111. Riding safety for ATV's and/or snowmobiles

Class H: Small Engines – Tune It Up!

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

101. Small engine cutaway - identify parts
102. Exhibit or poster on small engine diagnostic tools - identify and list uses
103. Safety poster on chain saw use, outboard motor, motorcycle or other small engine
104. Panel showing worn or faulty engine parts with a statement as to cause and prevention
105. Display showing diagram or ignition, fuel or lubrication systems (actual parts may be used)
106. Poster showing the troubleshooting of small engine problems/reduction of air pollution
107. Exhibit identifying small engine parts
108. Document showing estimated costs and income of starting your own business
109. A rebuilt small engine

Class I: Bicycle

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

Level 1: Bicycle Adventures I
101. Poster any bicycle topic
102. Display helmet types
103. Bike scrapbook or adventure journal
104. Report: Group ride

Level 2: Bicycle Adventures II
105. Poster: Purchase information for a bike, bike parts, tire inflation, chain maintenance, bike adjustments or any other bike topic
106. Report, quiz bowl
107. Bicycling: Adventure journal/planning a bike trip
108. Display: Dodging obstacles

Level 3: Bicycle Adventures III
109. Price comparison of bikes to buy
110. Display how to replace and adjust brake cables
111. Poster making emergency turns (**advanced)**
112. Poster/display: Riding safely at night, in bad weather
113. Poster/display chain maintenance (**advanced)**
114. Display: How to fix a flat tire
115. Poster: Using gears efficiently
116. Any other

Class J: Model Projects

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

101. Self-made model, not from kit
102. Pre-painted model, from kit
103. Hand painted model from kit
104. Customized model, from 2 or more kits

105. Lego model – any type
106. Lego model – kit/freestyle design
107. K'nex model
108. K'nex model – motorized
109. Hand crafted model
110. Doll house
111. Miniature furniture from kit
112. Miniature furniture not from kit
113. Any agricultural/military/pioneer/small town scene
114. Any other item

Class K: Robotics

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

Level I
101. Basic LEGO tankbot I designed and built
102. Poster: Differences among machines, computers & robots
103. Program I have made for my tankbot to follow
Level II
104. Robot that I designed and built
105. Program I have made for my robot to follow
106. Poster on types of gears
107. Compound gear train
108. Any other Robotics Project

Class L: Geospacial

Lot No.		Blue	Red	White	Pink
	All lots	2.00	1.75	1.50	1.25

Level I
101. Display of the essential geographic data on my house
102. Poster: types of geographic tools & uses
103. Display: types of maps and uses
    1. Map of my neighborhood with list of features

Level II
    2. Poster: difference between geographic and geospatial data
    3. Poster: difference between population and road maps
    4. Display: my thematic map
    5. Display my general purpose map

Level III
    6. Brochure about my favorite place
    7. Map of my favorite place
    8. Display: types of G2 data about my community
    9. Poster: map of my community with several data layer
    10. Exhibit: my map gallery

114. Any Other

Class M: Handyman
All items are those that have been repaired, refinished, or constructed

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Item used in workshop
102. Item used for sport or recreation purposes
103. Item used in the home
104. Item used out-of-doors
105. Photo display of large project with explanations

Class N: Off-Road Vehicles

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Poster off-road vehicles, any topic (including safety)
102. Scrapbook describing activities of using off-road vehicle

Class O: Stem

Lot No.	Blue	Red	White	Pink
All lots	2.00	1.75	1.50	1.25

101. Visual display of engineering/design process; Ask, Imagine, Plan, Create, Improve - other words may be used per your research/preference
102. Junk drawer STEM; utilizing materials in new ways to solve a problem or build a prototype
103. Engineering design display; must include 2 parts: 1) an engineering notebook detailing the engineering/design components and how they were used in the project AND 2) the end result
104. Item designed and created using Fabrication Lab equipment: 3-D printer
105. Item designed and created using Fabrication Lab equipment: Laser Engraver/Cutter
106. Item designed and created using Fabrication Lab equipment: Vinyl Cutter
107. Item designed and created using Fabrication Lab equipment: Other
108. Any project relating to Science, Technology, and Engineering