JUNIOR FAIR MECHANICAL PROJECTS

2021

Department 24 – Superintendent – Jackie Mueller – 920-973-4930
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1. Judging Day (Individual Conference Judging) – **Monday, August 23**, as follows: 10am to 2pm, and 2:30pm to 6pm in the Exhibition Building.
2. Release Day – **Sunday, August 29**, between 6pm and 7:30pm. Vehicle access begins at 6:30pm. **Exhibits released prior to release date and time will not receive premiums.**
3. **Four (4) exhibits per class per exhibitor.**
4. **One (1) entry/exhibitor per lot number**.
5. Entry tags must be stapled to the lower left hand corner. Identify all "any other" exhibit on entry tag and registration form.
6. No changes will be allowed after registration forms are submitted.
7. All posters must be 14"x22".
8. Display areas can be no larger than 2'x4'. All models should be mounted on an appropriate sized base or platform **(except for scale models)**.

CLASS A: TRACTOR

Premiums for Lot Numbers 100-130 are as Follows:
Blue Ribbon - $2.50 Red Ribbon - $2.25 White Ribbon - $2.00 Pink Ribbon - $1.50

Lot Numbers:

100. Tractor or farm machinery safety poster.
101. Mounted exhibit of defective engine parts, explaining the cause of defect and the suggested method of prevention or remedy.
102. Display: Show different kinds of nuts, bolts, screws, rivets, and other fasteners used on farm machinery, properly labeled.
103. Periodic lubrication and maintenance chart.
104. Display panel of damaged parts caused by poor tractor maintenance, collected by members with explanation of cause and how it can be prevented.
105. Exhibit, Display, or Chart: Tractor lubrication. Display might include type of lubricants, how to lubricate properly, what lubricant to use in a specific location, and how often the job needs doing.
106. Chart or Poster with information on proper tractor care and adjustments as they relate to good tractor operation (example: spark plugs, batteries, tires, air cleaners, carburetors, etc).
107. Display: Tractor records and operating costs.
108. Chart: Follow the transmission of power in one piece of machinery. Sketch out and further explain where and how the power goes to reach the job.
109. Demonstrate outline for machine adjustment. Follow through on one piece of machinery.
110. Poster: Displaying farm machinery management records.
111. Restored toy tractor, plus booklet on work done.
112. Restored pedal tractor, plus booklet on work done.
113. Any other tractor exhibit not listed, identify.

CLASS B: AUTOMOTIVE – Grades 3-5

Appropriate card should accompany the exhibit to explain it

Lot Numbers:

114. Automotive Safety Hazards Poster – this exhibit must include a map and at least 6 photographs showing safety hazards in your community.
115. Illustrated poster showing proper car keeping procedures.
116. Exhibit showing blind driveways – use model buildings, shrubs, cars, etc.
117. Exhibit showing obstructed intersections – a miniature showing plan laid out on a board.
118. Exhibit showing marked crosswalks – toys, miniatures, and models can be used here also.
119. Exhibit of dull versus protected auto finish. Use pieces of fenders or hoods.
120. Exhibit of soiled versus clean car interiors. Use a discarded car cushion. Clean one side, leave the other side as is.
121. Poster of types of signs, signals, and markings in Wisconsin.
122. Any other automotive exhibit not listed, identify.

CLASS B: AUTOMOTIVE – Grades 6-13

Appropriate card should accompany the exhibit to explain it

Lot Numbers:

123. Exhibit showing neglected versus serviced oil filtered caps and crankcase breather filters.
124. Exhibit of worn versus safe fan belts.
125. Exhibit of worn brake linings and damaged brake drum versus new linings and smooth drums.
126. Display or drawing showing any of these following items (2'x4' display only allowed).
    a) Carburetor System b) Ignition System
    c) Four-Stroke Cycle of Motor d) Cooling System
127. Illustrated poster describing what to look for in buying a used car.
128. Miniature scale model display showing stopping distances required for different road conditions at different mile per hour (mph) ranges.
129. Poster with information concerning car costs – possible gasoline consumption and oil, tire service records seasonal service, etc.
130. Any other automotive exhibit not listed, identify.

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CLASS C: SMALL ENGINE EXHIBITS – Grades 3-5
Crank It Up

Premiums for Lot Numbers 131-138 are as Follows:
Blue Ribbon - $1.75 Red Ribbon - $1.50 White Ribbon - $1.25 Pink Ribbon - $1.00

Lot Numbers:
131. Panel exhibit of small engine parts with identification of parts (2'x4' display only allowed).
132. Poster illustrating steps in a small engine service job.
133. Poster showing correct steps in preparing a small engine for off-season storage.
134. Small engine safety poster.
135. Poster showing the events in a four-cycle engine with a brief explanation.
136. Display of tools for working with small engines.
137. Display of engine oil grades.
138. Any other small engine exhibit not listed, identify.

CLASS C: SMALL ENGINE EXHIBITS – Grades 6-8
Warm It Up

Premiums for Lot Numbers 139-267:
Blue Ribbon - $2.00 Red Ribbon - $1.75 White Ribbon - $1.50 Pink Ribbon - $1.25

Lot Numbers:
139. Poster: Show events in a two-cycle engine with a brief explanation.
140. Panel exhibit of carburetor parts with an explanation of function of parts. Float-type or diaphragm-type.
141. Poster listing preventative maintenance measures recommended for two-cycle engine.
142. Safety poster on chain saw use or outboard motorcycles or motorbikes.
143. Small engine types.
144. Internal small engine parts.
145. Steps in disassembling a small engine.
146. Transmission of power in a small engine.
147. Mowing safety rules.
148. Any other small engine exhibit not listed, identify.

CLASS C: SMALL ENGINE EXHIBITS – Grades 9-13
Tune It Up

Lot Numbers:
149. Poster showing events in a two-cycle engine with a brief explanation.
150. Panel exhibit of carburetor parts with an explanation of function of parts. Float-type or diaphragm-type.
151. Poster or Display of diagnostic tools.
152. How to disassemble and assemble an engine's fuel and air system.
153. How to disassemble and assemble an engine's electrical system.
154. My small engine business plan.
155. Any other small engine exhibit not listed, identify.

CLASS D: BICYCLE – Grades 3-4
Bicycling for Fun

Lot Numbers:
156. Poster – protective gear to wear when bicycling.
157. Poster – proper way to wear and size a helmet.
158. Display or poster of bicycle parts.
159. Poster – bicycle safety check.
160. Display or poster of riding a bicycle in traffic
161. Display or poster of traffic signs.
162. Poster – how to operate a bike safely.
163. Display or poster or planning a bicycle trip.
164. Any other bicycle exhibit not listed, identify.

CLASS D: BICYCLE – Grades 5-6
Wheels in Motion

Lot Numbers:
165. Poster – comparing tire features.
166. Display on how to fix a flat tire.
167. Display on chain maintenance.
168. Display on how to replace caliper brake cables and brake shoes.
169. Poster – plotting a safe bicycle route.
170. Poster – using gears to ride effectively.
171. Poster – nutritious menu for an all-day bicycle ride.
172. Report on bicycle related career opportunities.
173. Any other bicycle exhibit not listed, identify.

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CLASS D: BICYCLE – Grades 7-13

Lot Numbers:

174. Safety Poster – showing one or more safety hazards and corrective measures.
175. Poster on proper care, maintenance, or use of a bicycle.
176. Display of bicycle parts – indicate functions of these parts.
177. Scrapbook showing your biking activities.
178. A study project on the types of bicycles, past and present.
179. Poster of traffic control signs.
180. Any other bicycle exhibit not listed, identify.

CLASS E: AEROSPACE – Grades 3-5
Lift Off

Lot Numbers:

181. Poster showing parts of a model airplane/rocket.
182. A model airplane/rocket propelled by a rubber band (include flight pattern).
183. A model airplane/rocket propelled by a gas engine (include flight pattern).
184. Small model of homemade airplane/rocket made with no kit, but with balsa wood, paper, cardboard, etc., not made to fly.
185. Small model of homemade airplane/rocket made with no kit but with balsa wood, paper, cardboard, etc., made to fly.
186. Small model of homemade airplane/rocket, made from kit, not made to fly.
187. Small model of homemade airplane/rocket, made from kit, made to fly.
188. Poster – Types of Aircraft
189. Poster – How weather affects flying.
190. Kite – Box, Diamond, etc.
191. Hot Air Balloon Model
192. Airplane/Rocket parts and their function.
193. Any other model airplane/rocket exhibit not listed, identify.

CLASS E: AEROSPACE – Grades 6-8
Reaching New Heights

Lot Numbers:

194. Poster showing parts of a rocket engine and relation to thrust-time curve and flight trajectory.
195. A non-metallic model rocket the Exhibitor has built and flown (include a flight log of recent flight).
196. Model of rocket, not kit.
197. Small model of rocket with explanation of parts, finishing involved, launching system, tracking results, etc.
198. Poster of basic parts of a rocket with their functions.
199. A non-metallic model rocket kit.
200. Nagasaki Hata Fighter Kite.
201. Poster – Remote control parts and their functions.
202. Poster – Helicopter parts and their functions.
203. Any other model rocketry exhibit not listed, identify.

CLASS E: AEROSPACE – Grades 9-13
Pilot in Command

Lot Numbers:

204. Poster on history of flight.
205. Poster on basic parts of an airplane.
206. Poster on aircraft propulsion.
207. Booklet on instruments, navigation, weather charts, regulations, safety – identify and explain.
208. Scrapbook of any phase of flying.
209. Poster – How to earn a pilot's certificate.
210. Poster – Navigation System.
211. Box Kite
212. Personal Career Profile.
213. Any other aerospace exhibit not listed, identify.

CLASS F: SNOWMOBILES

Lot Numbers:

214. Poster on safety rules for snowmobiles.
215. Poster on maintenance of snowmobiles.
216. Notebook on history of snowmobiles.
217. A homemade snowmobile survival kit.
218. Poster identifying snowmobile parts and their function.
219. Panel with exhibit and identification of snowmobile parts with possible worn parts and proper repair methods (2'x4' display maximum).
220. Poster or notebook of proper snowmobile gear.
221. Poster on snowmobile ethics.
222. Any other snowmobiles exhibit not listed, identify.

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CLASS G: SCALE MODELS

1. No snap together models. The judge looks for a model that was a challenge, glue together, decals, etc.

Lot Numbers:

223. Aircraft.
224. Boat or Ship or Train.
225. Car.
226. Farm Scene.
227. Military Equipment.
228. Truck or Van.
229. Any other scale models exhibit not listed, identify.

CLASS H: LEGOS

Lot Numbers:

230. Poster on the Legos project, identify.
231. Lego display mounted on a base (landscape, village, scene, etc). Max size 2'x2'.
232. Lego display from a kit. Max size 2'x2'.
233. Any other building material (not Legos) such as K'Nex, Magnetix, Erector, Gears, etc. exhibit, not listed identify.

CLASS I: POWER OF WIND

Lot Numbers:

234. Poster: Power of Wind.
235. Display: Power of Wind.
236. Any other Power of Wind exhibit not listed, identify.

CLASS J: ROBOTICS

1. **Exhibitors bring all equipment needed to demonstrate programming, either via a live presentation or a prerecorded video of your work including equipment to display the video for the judge. Video must be on a screen greater than 6".**
2. **Exhibitor must provide a printed written description of the programming commands used and must be left with the display.**

Lot Numbers:

237. Marshmallow catapult that you have built.
238. Poster: Describe sense of balance (torque, force, distance.
239. Display or Poster: Demonstrate a pivot point and how it helps robots grip projects.
240. Can-can robot that you have built.
241. Poster: Teach about the different types of gears.
242. Poster: Explain about gear sizes.
243. Poster: Show your design for an underwater remotely operated vehicle (ROV).
244. Basic LEGO robot, exhibitor designed and built and must have the robot for judging. Exhibitor may leave a picture of the robot for display.
245. Demonstrate a robot that goes forward for 4 seconds.
246. Demonstrate a robot that goes left 3 different ways.
247. Demonstrate a robot that stops using a sensor.
248. Demonstrate a robot that follows a path for a length of time.
249. Demonstrate a robot that determines distance using rotational sensor.
250. Demonstrate a robot that completes a maze or challenge course.
251. Demonstrate a robot that does multiple tasks at the same time.
252. Poster: Show activities and involvement in robotics project from the current year.
253. Poster: Explain the differences among machines, computers, and robots.
254. Poster: Parts of a robot.
255. Poster: Robotics related careers and industries.
256. Any other robotics exhibit not listed, identify.

CLASS K: GEOSPATIAL

Lot Numbers:

257. Display: Essential geographical data on my house.
258. Poster: Types of geographical tools.
259. Poster: Uses of geographical tools.
260. Poster: Coordinated-grid reference system.
261. Map of my neighborhood with list of features.
262. Poster: Differences between geographic and geospatial data.
263. Display: Differences between population and road maps.
264. Display: My thematic map.
265. Display: My general purpose map.
266. Display: Types of G2 data about my community.
267. Any other geospatial exhibit not listed, identify.