

# 2024

## JUNIOR FAIR MECHANICAL PROJECTS

Department 24 – Superintendent –

Email:

1. Judging Day (Individual Conference Judging) – **Monday, August 19**, as follows: 10am to 2pm, and 2:30pm to 6pm in the Exhibition Building.
2. Release Day – **Sunday, August 25**, 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’ maximum. All models should be mounted on an appropriate sized base or platform. Boards larger than 2’x4’ will be disqualified.
9. **Expo is not liable for damage or loss to exhibitor’s property through theft, fire, accident or any other cause.**

### 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.   | 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). |
| 101. Mounted exhibit of defective engine parts, explaining the cause of defect and the suggested method of prevention or remedy.  | 107. Display: Tractor records and operating costs.  |
| 102. Display: Show different kinds of nuts, bolts, screws, rivets, and other fasteners used on farm machinery, properly labeled.  | 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.   |
| 103. Periodic lubrication and maintenance chart.  | 109. Demonstrate outline for machine adjustment. Follow through on one piece of machinery.  |
| 104. Display panel of damaged parts caused by poor tractor maintenance, collected by members with explanation of cause and how it can be prevented.   | 110. Poster: Displaying farm machinery management records.  |
| 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. | 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. | 118. Exhibit showing marked crosswalks – toys, miniatures, and models can be used here also.                                |
| 115. Illustrated poster showing proper car keeping procedures.   | 119. Exhibit of dull versus protected auto finish. Use pieces of fenders or hoods.  |
| 116. Exhibit showing blind driveways – use model buildings, shrubs, cars, etc.   | 120. Exhibit of soiled versus clean car interiors. Use a discarded car cushion. Clean one side, leave the other side as is. |
| 117. Exhibit showing obstructed intersections – a miniature showing plan laid out on a board.  | 121. Poster of types of signs, signals, and markings in Wisconsin.  |
|  | 122. Any other automotive exhibit not listed, identify.   |

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## CLASS B: AUTOMOTIVE – Grades 6-13 Appropriate card should accompany the exhibit to explain it

### Lot Numbers:

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

## 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). | 134. Small engine safety poster.  |
| 132. Poster illustrating steps in a small engine service job.                                       | 135. Poster showing the events in a four-cycle engine with a brief explanation. |
| 133. Poster showing correct steps in preparing a small engine for off-season storage.               | 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.                                       | 142. Safety poster on chain saw use or outboard motorcycles or motorbikes. |
| 140. Panel exhibit of carburetor parts with an explanation of function of parts. Float-type or diaphragm-type. | 143. Small engine types.   |
| 141. Poster listing preventative maintenance measures recommended for two-cycle engine.                        | 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.                                     | 152. How to disassemble and assemble an engine's fuel and air system. |
| 150. Panel exhibit of carburetor parts with an explanation of function of parts. Float-type or diaphragm-type. | 153. How to disassemble and assemble an engine's electrical system.   |
| 151. Poster or Display of diagnostic tools.  | 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:

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

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

### Lot Numbers:

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

## CLASS D: BICYCLE – Grades 7-13

### Lot Numbers:

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

## CLASS E: AEROSPACE – Grades 3-5 Lift Off

### Lot Numbers:

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|--|---|
| 181. Poster showing parts of a model airplane/rocket.  | 186. Small model of homemade airplane/rocket, made from kit, not made to fly. |
| 182. A model airplane/rocket propelled by a rubber band (include flight pattern).  | 187. Small model of homemade airplane/rocket, made from kit, made to fly.     |
| 183. A model airplane/rocket propelled by a gas engine (include flight pattern).   | 188. Poster – Types of Aircraft   |
| 184. Small model of homemade airplane/rocket made with no kit, but with balsa wood, paper, cardboard, etc., not made to fly. | 189. Poster – How weather affects flying.                                     |
| 185. Small model of homemade airplane/rocket made with no kit but with balsa wood, paper, cardboard, etc., made to fly.      | 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:

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|--|--|
| 194. Poster showing parts of a rocket engine and relation to thrust-time curve and flight trajectory.              | 198. Poster of basic parts of a rocket with their functions. |
| 195. A non-metallic model rocket the Exhibitor has built and flown (include a flight log of recent flight).        | 199. A non-metallic model rocket kit.                        |
| 196. Model of rocket, not kit.   | 200. Nagasaki Hata Fighter Kite.                             |
| 197. Small model of rocket with explanation of parts, finishing involved, launching system, tracking results, etc. | 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:

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

## CLASS F: SNOWMOBILES

### Lot Numbers:

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

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

## CLASS H: LEGOS

### Lot Numbers:

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|---|--|
| 230. Poster on the Legos project, identify.   | 233. Any other building material (not Legos) such as K'Nex, Magnetix, Erector, Gears, etc. exhibit, not listed 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'.   |  |

## CLASS I: POWER OF WIND

### Lot Numbers:

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

## CLASS J: ROBOTICS

- 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".**
- Exhibitor must provide a printed written description of the programming commands used and must be left with the display.**

### Lot Numbers:

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

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## 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.