

# MECHANICAL PROJECTS

## Department 24

**Check-In:**

Classes A - I & K - N, Tuesday, 1 - 7 p.m., Exhibition Hall  
 Class J (Lego), Tuesday, 1 - 7 p.m., Exhibition Hall

**Judging:**

Classes A - I & K - N, Tuesday, 1 - 7 p.m. Individual Conference  
 Judging, Exhibition Hall - in conjunction with Electricity Projects  
 Class J (Lego), Tuesday, 7 - 9 p.m., Danish Judging, Exhibition Hall

**Department Chairperson:** Mike Iselin - (608) 445-9367

**Superintendents: \*\*Superintendents Needed. Please email the Fair office at [info@danecountyfair.com](mailto:info@danecountyfair.com).**

**Eligible 4-H Project Areas:** Rocketry, Bicycling, Engines, Tractors, Aerospace, Geospatial, Robotics, Legos, STEM

**Regulations:**

1. Posters may not exceed 14"x22".
2. Display may not exceed 3'x3'.
3. Model airplanes and rockets must be made from scratch or kit. No snap together kits allowed. Project must be assembled and painted, ready for "show".
4. Rockets and powered airplanes must be painted and ready to fly. No rocket engines or radio control equipment may be exhibited.
5. Skill Levels: Must have level tag from the kit container as skill levels are determined by the level number on the kit.
6. Judge's decision is final.
7. Model airplane and model rocketry exhibitors are also encouraged to enter Class C.
8. Age categories for Junior and Senior Divisions are as follows: Junior - grades 3 - 7 and Senior - grades 8+.
9. All pre-painted, metal models must be entered in Class M, lots 13 or 30.
10. Lego: Any multi-section lego display must be mounted on a board or panel to allow the display to be moved for judging and display. Maximum size is 3' x 3'.

**Premiums:**

	<u>Blue</u>	<u>Red</u>	<u>White</u>	<u>Pink</u>
Class A-B, D-J, M-O	\$2	\$1.75	\$1.50	\$1.25
Class K-L	\$2.50	\$2.25	\$2	\$1.50
Class C	\$1.75	\$1.50	\$1.25	\$1

**CLASS A. Model Airplanes**

**Junior Division Lots**

- | <u>1</u>                | <u>2</u>                                    | <u>3</u> | <u>4</u> | <b>Skill Level</b>                            |
|-------------------------|---|----------|----------|---|
| 1)                      | 2)  | 3)       | 4)       | Rubber band powered model                     |
| 5)                      | 6)  | 7)       | 8)       | Small model - under one foot in any direction |
| 9)                      | 10)   | 11)      | 12)      | Airplane made from a plastic kit              |
| 13)                     | 14)   | 15)      | 16)      | Airplane made from a wood kit                 |
| <b>(no skill level)</b> |   |          |          |   |
| 17)                     | 14"x22"poster on basic parts of an airplane |          |          |   |

**Senior Division Lots**

- | <u>1</u>                | <u>2</u>                                     | <u>3</u> | <u>4</u> | <b>Skill Level:</b>                           |
|-------------------------|--|----------|----------|---|
| 18)                     | 19)  | 20)      | 21)      | Rubber band powered model                     |
| 22)                     | 23)  | 24)      | 25)      | Small model - under one foot in any direction |
| 26)                     | 27)  | 28)      | 29)      | Airplane made from a plastic kit              |
| 30)                     | 31)  | 32)      | 33)      | Airplane made from a wood kit                 |
| <b>(no skill level)</b> |  |          |          |   |
| 34)                     | 14"x22" poster on basic parts of an airplane |          |          |   |

**CLASS B. Model Rocketry**

(Plastic fins allowed for grade 3 exhibitors only)

**Junior Division Lots**

- | <u>1</u>                | <u>2</u> | <u>3</u>               | <u>4</u> | <b>Skill Level</b>   |
|-------------------------|----------|------------------------|----------|--|
| 1)                      | 2)       | 3)                     | 4)       | Single stage rocket - 3 - 4 fin model                          |
| 5)                      | 6)       | 7)                     | 8)       | Single stage rocket - 5 or more fin model                      |
| 9)                      | 10)      | 11)                    | 12)      | Multi-stage rocket - 2 or 3 stages                             |
| 13)                     | 14)      | 15)                    | 16)      | Payload rocket   |
| 17)                     | 18)      | 19)                    | 20)      | Any fired rocket - Certificate of Flight must accompany rocket |
| <b>(no skill level)</b> |          |                        |          |  |
|                         | 21)      | Homemade rocket        |          |  |
|                         | 22)      | Poster on rocket parts |          |  |

**Senior Division Lots**

- | <u>1</u>                | <u>2</u> | <u>3</u>               | <u>4</u> | <b>Skill Level</b>   |
|-------------------------|----------|------------------------|----------|--|
| 23)                     | 24)      | 25)                    | 26)      | Single stage rocket - 3 - 4 fin model                          |
| 27)                     | 28)      | 29)                    | 30)      | Single stage rocket - 5 or more fin model                      |
| 31)                     | 32)      | 33)                    | 34)      | Multi-stage rocket - 2 or 3 stages                             |
| 35)                     | 36)      | 37)                    | 38)      | Payload rocket   |
| 39)                     | 40)      | 41)                    | 42)      | Any fired rocket - Certificate of flight must accompany rocket |
| <b>(no skill level)</b> |          |                        |          |  |
|                         | 43)      | Homemade rocket        |          |  |
|                         | 44)      | Poster on rocket parts |          |  |

**CLASS C. Models**

**Junior Division Lots**

- | <u>1</u> | <u>2</u>  | <u>3</u> | <u>4</u> | <b>Skill Level</b>                         |
|----------|---|----------|----------|--|
| 1)       | 2)  | 3)       | 4)       | Any plastic model vehicle made from a kit  |
| 5)       | 6)  | 7)       | 8)       | Any model ship or boat made from a kit     |
| 9)       | 10)   | 11)      | 12)      | Any model not listed above made from a kit |
| 13)      | Any pre-painted metal model made from a kit                                 |          |          |  |
| 14)      | Any model not listed above not made from a kit                              |          |          |  |
| 15)      | Model displayed in an appropriate setting (Dioramas)                        |          |          |  |
| 16)      | Photo story on the construction of a model (gluing, painting, decals, etc.) |          |          |  |
| 17)      | Poster story on construction of a model (gluing, painting, decals, etc.)    |          |          |  |

**Senior Division Lots**

- | <u>1</u> | <u>2</u>  | <u>3</u> | <u>4</u> | <b>Skill Level</b>                         |
|----------|---|----------|----------|--|
| 18)      | 19)   | 20)      | 21)      | Any plastic model vehicle made from a kit  |
| 22)      | 23)   | 24)      | 25)      | Any model ship or boat made from a kit     |
| 26)      | 27)   | 28)      | 29)      | Any model not listed above made from a kit |
| 30)      | Any pre-painted model made from a kit                                       |          |          |  |
| 31)      | Any model not listed above not made from a kit                              |          |          |  |
| 32)      | Model displayed in an appropriate setting                                   |          |          |  |
| 33)      | Photo story on the construction of a model (gluing, painting, decals, etc.) |          |          |  |
| 34)      | Poster story on construction of a model (gluing, painting, decals, etc.)    |          |          |  |

**CLASS D. Flying**

**Junior Division Lots**

- 1) Poster on history of flight
- 2) Poster on principle of flight
- 3) Poster on structure and instruments
- 4) Poster on air safety

**Senior Division Lots**

- 5) Poster on history of flight
- 6) Poster on principle of flight
- 7) Poster on structure and instruments
- 8) Poster on air safety

## **CLASS E. Bicycle**

### Lots

- 1) Display of bicycle parts and maintenance
- 2) Any other bicycle exhibit

## **CLASS F. Geospatial**

### Lots

- 1) Any display relating to this project

## **CLASS G. Robotics**

### Lots

- 1) Any display relating to this project

## **CLASS H. Wind Energy**

### Lots

- 1) Any display relating to this project

## **CLASS I. Aerospace**

### Lots

- 1) Any display relating to this project

## **CLASS J. Lego**

### Lots

#### Gr 3-7 Gr 8+

- 1) 2) Lego display relating to vehicles from a kit
- 3) 4) Lego display relating to vehicles original design
- 5) 6) Lego display relating to buildings from a kit
- 7) 8) Lego display relating to buildings original design
- 9) 10) Any other Lego display from a kit
- 11) 12) Any other Lego display original design

## **CLASS K. Science, Engineering, Technology**

### Lots

- 1) Any display relating to this project

## **CLASS L. Welding**

### Regulations:

1. Welding: Exhibit entry size must fit within a 3'x3'x3' space.
2. Welding: Exhibitors must be grade 7 and above.

### Lots

- 1) Welding for mechanical use
- 2) Any other welding

## **CLASS M. Four - Cycle Engines**

### Lots

- 1) Exhibit identifying parts of an engine and their function
- 2) Display panel of damaged parts of an engine caused by poor maintenance. Identify type of engine and parts - include explanation of cause of damage and prevention suggestions.
- 3) Exhibit on proper engine care and lubrication - include tune-ups, adjustments or modifications necessary for good engine operation and fuel economy.
- 4) Exhibit of events in the engine - include brief explanation
- 5) Exhibit of transmission of power in a mechanical machine - include sketch and explanation of how the power travels.
- 6) Exhibit showing preparation of an engine for storage
- 7) Safety display - some suggestions:
  - a. Safe operation of an engine
  - b. Safe use of power driven equipment
  - c. Causes of equipment accidents
- 8) Article or exhibit for a petroleum power project made in Technology Education, Agriculture Education Class or Shop
- 9) Any other four - cycle engine exhibit

## **CLASS N. Two - Cycle Engines**

### Lots

- 1) Exhibit identifying parts of an engine and their functions
- 2) Display panel of damaged parts of an engine caused by poor maintenance - identify explanation of cause of damage and damage prevention suggestions
- 3) Exhibit on proper engine care and lubrication - include tune-ups, adjustments or modifications necessary for good engine operation and fuel economy
- 4) Exhibit of events in the engine - include brief explanation
- 5) Exhibit of transmission of power in one mechanical machine - include a sketch and explanation
- 6) Exhibit showing preparation of an engine for storage
- 7) Safety display - some suggestions:
  - a. Safe operation of an engine
  - b. Safe use of power driven equipment
  - c. Causes of equipment accidents
- 8) Article or exhibit for petroleum power project made in Technology Education, Agriculture Education Class or Shop
- 9) Any other two-cycle engine exhibit

## **CLASS O. Tractor**

### Lots

- 1) Exhibit identifying parts of the tractor and their function
- 2) Exhibit showing maintenance and safety check (i.e., daily maintenance, periodic lubrication and maintenance, care of tires, etc.)
- 3) Safety display - some suggestions:
  - a. Causes of tractor accident
  - b. Safe operation of tractor on public roads
- 4) An article or exhibit made in Technology Education, Agriculture Education Class or Shop
- 5) Any other tractor exhibit

### Special Awards and Sponsorships:

**Miller & Sons Supermarket** - All ribbons. Trophy to Champion and Rosette to Reserve Champion of designated class.