

## DIVISION P - MECHANICAL SCIENCES

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### Division Rules & Regulations:

Pre-entry is required. **YOU MUST USE THE INTERNET ENTRY SYSTEMS FOUND AT [www.marylandstatefair.com](http://www.marylandstatefair.com). Internet entries are due July 15th.** Exhibitors without internet access should contact their County Extension Educator for assistance. All release forms are to be completed online through the entry system at time of registration.

1. Only 4-H Members may exhibit in this division. Exhibitors may only enter 1 exhibit per class.
2. Exhibitors and exhibits must comply with the "General State Fair Rules & Regulations", "General 4-H and FFA Rules & Regulations", these "Division Rules & Regulations," and the applicable "Section Rules & Regulations".
3. All entries must be the work of the Exhibitor and completed between September 2023 and August 2024.
4. All exhibits must be clean and free of labels and tags except for state fair tags, unless otherwise specified in the section rules or class description.
5. **Judging:** All exhibits will be judged on their own merit. The Judges will at their own discretion give placings up to 10<sup>th</sup> Place in each class. Unless otherwise noted in section, exhibits will be judged in one of the 4-H Age Divisions: Junior (ages 8-10 as of January 1 of the current year); Intermediate (ages 11-13 as of January 1 of the current year); Senior (ages 14-18 as of January 1 of the current year).
6. Entries not conforming to class description and/or division/section rules & regulations may be disqualified.
7. **Awards:** Ribbons will be awarded to the 1<sup>st</sup> – 10<sup>th</sup> Place exhibits in each class. Premiums: 1<sup>st</sup> (\$7), 2<sup>nd</sup>-10<sup>th</sup> (\$5). Rosettes will be awarded to the Junior, Intermediate and Senior Champions or Reserve Champions in each section if there are suitable entries as determined by the judges and Superintendent.
8. Entries for this division will be received Tuesday, August 20th from 2pm to 8pm in the 4-H/FFA Home Arts Building and released Monday, September 9th from 9am to 7pm. An early-bird release period will be made available on Sunday, September 10th from 8pm to 10pm AFTER the building is closed to the public.

### SECTION 1 – WOODWORKING AND METALWORKING

#### Section Rules & Regulations:

1. **A plan, blueprint, working drawing or sketch used in construction must accompany each exhibit, along with a statement of intended use.** Enclose all documentation in an envelope printed with the Exhibitor's name, age, 4-H County/City and class. Attach envelope to exhibit with string or tape. Notes: **Bird house plans must state the species of bird for whom the house is designed. Refinished item plans must include a "before paragraph and a statement of intended use for the item. Exhibitors may also include photographs that show various stages of the refinishing process.**
2. The maximum exhibit size is 3' x 6' x 5'. Where indicated in class description, LD is "largest dimension" and SD is "smallest dimension".
3. **All entries from kits are considered to be crafts and should be entered in that department if there are appropriate classes.** A kit is defined as an exhibit assembled or made from pre-cut pieces whether it is a commercially purchased kit or the pieces are pre-cut for a workshop and then assembled by the Exhibitor. All exhibits in the other wood classes must be made of wood worked by the Exhibitor (cut, shaped, etc.).
4. Special note regarding bird houses: **Bird houses with perches attract unwanted, non-native birds such as House Sparrows and European Starlings that are more aggressive than our native birds such as the Bluebird.** Currently, these non-native birds are primarily responsible for the decline of many of our native cavity-nesting species. **Only the decorative bird house class may have entries with perches.**
5. Judging criteria: design and plan, workmanship, choice of wood, suitability and quality of finish, usefulness.

#### CLASSES

Junior	Inter.	Senior	Class Description	Junior	Inter.	Senior	Class Description
P1001	P2001	P3001	Decorative Bird House	P1013	P2013	P3013	Kitchen Item
P1002	P2002	P3002	Bird or other Wild Animal Feeder	P1014	P2014	P3014	Item for Farm or Shop Use
P1003	P2003	P3003	Birdhouse (without a perch - see note above)	P1015	P2015	P3015	Small Refinished Item (LD less than 24")
P1004	P2004	P3004	Small Outdoor Furniture (LD less than 24")	P1016	P2016	P3016	Large Refinished Item (SD 24" or more)
P1005	P2005	P3005	Large Outdoor Furniture (SD 24" or more)	P1017	P2017	P3017	Outdoor Item (Planter, Flower Box, Sign, etc.)
P1006	P2006	P3006	Small Indoor Furniture (LD less than 24")	P1018	P2018	P3018	Bookshelf, Bookends, Rack or Key Holder
P1007	P2007	P3007	Large Indoor Furniture (SD 24" or more)	P1019	P2019	P3019	Clock
P1008	P2008	P3008	Lathed Turnings	P1020	P2020	P3020	Wooden Jewelry
P1009	P2009	P3009	Small Chest or Storage Box (LD less than 24")	P1021	P2021	P3021	Wooden Item that does not fit in one of the above classes
P1010	P2010	P3010	Large Chest or Storage Box (SD 24" or more)	P1022	P2022	P3022	Constructed Metal Item (Built by Exhibitor, non-welded)
P1011	P2011	P3011	Wooden Toy				

## SECTION 2—ELECTRICAL

### Section Rules & Regulations:

1. **A wiring diagram and statement of intended use must accompany each exhibit.** Enclose all documentation in an envelope printed with the Exhibitor's name, age, phone #, 4-H County/City and class. Attach envelope to exhibit with string or tape.
2. Used exhibits must be in a clean/presentable condition. Exhibits not meeting safety requirements (i.e. improperly wired) may be disqualified.
3. Judging criteria: design; workmanship; approved materials; practicality; originality; safety (must meet code); performance.

### CLASSES

Junior	Inter.	Senior	Class Description	Junior	Inter.	Senior	Class Description
P1030	P2030	P3030	Practical Electrical Appliance	P1034	P2034	P3034	Electrical Game, Demonstration, or Quiz
P1031	P2031	P3031	Lamp	P1035	P2035	P3035	Extension Cord or Drop Light
				P1036	P2036	P3036	Electronics Educational Display (electric motor, robotics, etc.)
				P1037	P2037	P3037	Electronics Item that does not fit in one of the above classes

## SECTION 3 – BICYCLE SAFETY & ATV SAFETY POSTER

### Section Rules & Regulations:

1. The poster must contain at least one of the following kinds of information: a safe-riding rule, proper use of safety equipment, illustration of safe riding practices, or promotion of general bicycle or ATV safety. Posters may be either horizontal or vertical but must be designed on or affixed to standard poster board. Exhibitors may use any medium: water color, ink, crayon, marker, acrylic, charcoal, oils or collage. Posters must not be three-dimensional.
2. **Copyrighted cartoon characters, such as Snoopy, Barney, Sponge Bob etc., cannot be used because they are protected by copyright law.**
3. **The following information must be printed on the back of the poster in the upper left-hand corner: Description of the poster's intent. Posters must include the 4-H Affirmative Action statement on the front (see General 4-H/FFA Rules & Regulations).**
4. Judging criteria: theme, originality, lettering; composition, use of color, construction/durability, safety information included.

### CLASSES

P1045 Bicycle Safety Poster - Junior  
P2045 Bicycle Safety Poster - Intermediate  
P3045 Bicycle Safety Poster – Senior  
P1046 ATV Safety Poster – Junior  
P2046 ATV Safety Poster – Intermediate  
P3046 ATV Safety Poster - Senior

## SECTION 4 - AEROSPACE CRAFTSMANSHIP

### Section Rules & Regulations:

1. This section is open to all model rockets except those from kits that are entirely made of pre-formed plastic parts. Plastic nose cone and payload section may be used. However, plastic fins are not allowed.
2. Judging criteria: properly shaped and sized fins; strength and smoothness of joints; smoothness and attractiveness of painting; overall beauty of the finished model.

### CLASSES

P1052 Aerospace Craftsmanship - Junior  
P2052 Aerospace Craftsmanship - Intermediate  
P3052 Aerospace Craftsmanship - Senior

## SECTION 5 - WELDING CRAFTSMANSHIP

### Section Rules & Regulations:

1. Items exhibited in this section must have been fabricated by the exhibitor in the current 4-H year.
2. The majority of the joints in the article must be welded electrically (MIG, SMAW, TIG) or with an oxy-fuel process.
3. **Welds MUST NOT be ground down or filed to improve their appearance.**
4. Items may or may not be painted to show them at their best appearance.
5. Used items must be clean. Dirt may be cause for disqualification.
6. Judging criteria: workmanship (including weld quality, squareness and fit of joints and finish), overall design, originality and usefulness.
7. A limit of one entry per class will be enforced.

### CLASSES

NOTE : Very large pieces may need to be displayed outside if space is limited. Please contact superintendents for any items over the size limit of 6'x6'.

P2060 Welding Craftsmanship Intermediate – Any article made from 4-H project series "Arcs and Sparks"  
P2061 Welding Craftsmanship Intermediate – Any other decorative item.  
P2062 Welding Craftsmanship Intermediate – Any other welded item  
P2065 Award Class (Fair Use Only) – Intermediate Champion  
P3060 Welding Craftsmanship Senior – Any article made from 4-H project series "Arcs and Sparks".  
P3061 Welding Craftsmanship Senior – Any other decorative item.

**NEW FOR 2024! SECTION 6 – 3-D DESIGN**

**Section Rules & Regulations:**

1. Each exhibit must include a 3-D print alongside a brief summary which includes: a) for the Functional classes, a detailed description of its intended usage and situations where it would be used; or b) for the Decorative classes, a description of where and when the item is supposed to be displayed or shown.
2. The brief summary of the designer's process for modeling and printing the exhibit should also include: a) what CAD software was used to design it; b) what 3-D printer(s) were used; c) what slicing software was used and relevant slicer/print settings (i.e. infill %, overhang, temperature, etc.); d) why the color and material were chosen; and e) a summary of their general process that went into idea generation and bringing the design to fruition.
3. Clear images of the 3-D model made using CAD software, such as TinkerCAD, Blender, AutoCAD, Solidworks, Autodesk Fusion, etc., must be submitted with each exhibit. Each exhibit must include at least 3 images, each showing a different angle of the design's important details, using screen capture software or akin. Up to 5 images can be submitted. NOTE: Each image is recommended to be at least 6" x 6" in size after printing to facilitate clarity.
4. 3-D models are expected to be fully designed by the entrant. Using models and designs that are already available online or purchased through others is NOT acceptable. Determining that this has occurred is grounds for immediate disqualification. If unique circumstances exist where an already-existing 3-D model is required to be used to complete the design, this must be explicitly identified in the imagery submitted with a clear explanation of why this previously-existing model had to be used to achieve the final design's purpose.
5. The maximum size of a submitted print is 12" x 12" x 12." If a print has multiple components, depending on its purpose, that separate and/or are to be assembled, the maximum size of the fully assembled item is still 12" x 12" x 12."
6. Enclose all documentation in an envelope printed with the Exhibitor's name, age, exhibitor number, phone #, 4-H County/City and class. Attach envelope to exhibit with string or tape. NOTE: This information will **not** be released to the public.
7. Judging criteria: Inclusion of required materials, Originality, Summary of overall functionality or decorative nature of 3-D Print, quality and attractiveness of submitted 3-D print (including durability), 3-D model details including images and design process, Material(s); settings used for 3-D print.
8. A limit of one entry per class will be enforced.

**Classes**

- P1080 Decorative 3-D Design - Junior
- P2080 Decorative 3-D Design - Intermediate
- P3080 Decorative 3-D Design - Senior
- P1081 Functional 3-D Design - Junior
- P2081 Functional 3-D Design - Intermediate
- P3081 Functional 3-D Design – Senior