



<b>Entries Due:</b>	July 15 <sup>th</sup>	<b>Arrival:</b>	Tuesday, 1:30 – 5:30 p.m.
		<b>Judging (Face-to-face):</b>	Tuesday, 1:30 – 6:00 p.m.
		<b>Release:</b>	Sunday, 6:00 p.m.

IN ADDITION TO THE RULES LISTED BELOW, PLEASE REFER TO ALL THE RULES AND REGULATIONS LISTED IN THE FRONT SECTION OF THIS BOOK.

**GENERAL RULES:**

1. Exhibitors must be enrolled in the Mechanical Science project or doing similar work in another youth organization in order to exhibit/show.
2. All posters must be no larger than 14" x 22" and displays must be no larger than 36" x 36".

<b>PREMIUMS FOR DIVISIONS 188-200:</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>
	\$2.00	\$1.75	\$1.50	\$1.25

**DIVISION 188 – AUTOMOTIVE**

**CLASS NO.**

1. Exhibit on auto safety
2. Exhibit on auto maintenance
3. Exhibit on auto mechanics
4. Exhibit relating to buying a car
5. Any other exhibit not listed above

**DIVISION 189 – SMALL ENGINES, UNIT 1**

**RULES:**

1. All projects are to be based on the four-cycle engine.

**CLASS NO.**

1. **Cause & Prevention:** Panel showing worn or faulty engine parts with a statement as to cause and prevention
2. **Engine Block:** Complete four-cycle engine block with all internal parts exposed and labeled (not a panel exhibit)
3. **Engine Service Job:** Poster illustrating steps in small engine service job
4. **Four-Cycle Engine:** Poster showing events in a four-cycle engine with brief explanation
5. **Model:** Model of a four-cycle engine
6. **Off Season Storage:** Poster showing steps in small engine service for off season storage
7. **Parts Identification:** Panel exhibit on small engine parts with identification of parts (actual parts may be used)
8. **Small Engine Parts:** Complete small engine, labeling all external parts
9. **System Diagram:** Panel exhibit showing diagram of ignition system, fuel system or lubrication system (actual parts may be used)
10. Any other exhibit not listed above

## **DIVISION 190 – SMALL ENGINES, UNIT 2**

### **RULES:**

1. All projects are to be based on the two-cycle engine.

### **CLASS NO.**

1. **Carburetor Parts/Functions**: Panel exhibit of carburetor parts with explanation of functions of parts; float type diaphragm type
2. **Disassembling**: Poster showing the steps in disassembling a small engine
3. **Event/Explanation**: Poster showing events in a two-cycle engine with a brief explanation
4. **Lawn Mower Setting**: Poster explaining how to set lawn mower height
5. **Lawn Mowers**: Poster showing different types of lawn mowers
6. **Model**: Model of a two-cycle engine
7. **Mowing Safety**: Safety poster on lawn mowing
8. **Preventative Maintenance**: Poster listing preventative maintenance measures recommended for two-cycle engines
9. **Safety**: Safety poster on chain saw use, outboard motors, motorcycles or motor bikes
10. **Types of Small Engines**: Poster illustrating different types of small engines
11. Any other exhibit not listed above

## **DIVISION 191 – SMALL ENGINES, UNIT 3**

### **CLASS NO.**

1. **Business Plan**: Small engine business plan
2. **Diagnostic Tools**: Poster or display on diagnostic tools
3. **Electrical Systems**: Display on how to disassemble and assemble an engine's electrical system
4. **Engine Base**: Display on how to disassemble and assemble an engine's base
5. **Engine Sounds**: Display on engine sounds
6. **Fuel & Air Systems**: Display on how to disassemble and assemble an engine's fuel and air system
7. **Industry Trends**: Poster or display on trends in the small engines industry
8. **Lawn Mower Maintenance**: Display on lawn mower maintenance
9. **Laws & Regulations**: Poster or display on small engine machine laws and regulations
10. **Price Comparisons**: Comparison of small engine machine prices
11. Any other exhibit not listed above

## **DIVISION 192 – BICYCLING, UNITS 1 AND 2**

### **CLASS NO.**

1. **Care & Maintenance**: Poster or display on bicycle care and maintenance
2. **Parts**: Poster or display related to the parts of the bicycle
3. **Safety**: Poster or display on bicycle safety
4. **Trips**: Poster or display related to bicycle trips
5. **Types & Features**: Poster or display on the different types of bicycles and/or features
6. Any other exhibit not listed above

## **DIVISION 193 – AEROSPACE**

### **CLASS NO.**

#### **Unit 1, Model Airplanes**

1. **Basic Parts:** Poster or display on basic parts of an airplane
2. **Model:** Small model of homemade airplane (no kits) no larger than one foot in any direction

#### **Unit 2, Model Rocketry**

6. **Basic Parts:** Poster or Display on Basic Parts for Rockets
7. **Homemade Rocket**

#### **Unit 3, Flying**

11. **Air Safety:** Poster or display on air safety
12. **History of Flight:** Poster or display on history of flight
13. **Homemade Kite**
14. **Kite from a Kit**

## **DIVISION 194 – SNOWMOBILE PROJECT**

### **CLASS NO.**

1. **Clothing:** Poster or display on snowmobile clothing
2. **Internal Parts:** Poster or display on the internal parts of a snowmobile

## **DIVISION 195 – SELF-DETERMINED MECHANICAL SCIENCE**

### **CLASS NO.**

1. **Home:** Repaired, refinished, or constructed article for use in the home
2. **Outdoors:** Repaired, refinished, or constructed article for use out of doors

## **DIVISION 196 – TRACTORS/FARM EQUIPMENT**

### **CLASS NO.**

1. **Proper Maintenance:** Detailed poster or display showing proper maintenance procedures of at least 2 types of farm equipment

## **DIVISION 197 – MODELS** (\*\*\*)Legos or K'nex may not be used for Lot No.'s listed below unless specified. (\*\*\*)

### **CLASS NO.**

1. **Boat/Ship**
2. **Building Structure**
3. **Car**
4. **Drawing of an Object to Scale**
5. **Farm Scene Module** (limit size to 3 ft. x 3 ft.)  
Legos may be used, but only up to 50% of the display
6. **Motorcycle**
7. **Railroad Car/Locomotive**

3. **Plastic Kit:** Airplane made from a kit, plastic
4. **Wood Kit:** Airplane made from a kit, wood
5. Any other exhibit not listed above
  
8. **Multi-Stage Rocket**
9. **Single Stage Rocket**
10. Any other exhibit not listed above
  
15. **Principles of Flight:** Poster on the principles of flight
16. **Propulsion:** Poster or display on aircraft propulsion
17. **Structure & Instruments:** Poster or display on structure and instruments
18. Any other exhibit not listed above

3. **Maintenance:** Poster or display on snowmobile maintenance
4. **Safety:** Poster or display on snowmobile safety
5. Any other exhibit not listed above

3. **Sport/Recreation:** Repaired, refinished, or constructed article for sport or recreational purposes
4. **Workshop:** Repaired, refinished, or constructed article for use in the workshop
5. Any other exhibit not listed above

2. **Safety Procedures:** Detailed poster or display showing safety procedures to be observed while using at least 2 types of farm equipment
3. Any other exhibit not listed above

8. **Tank/Military Vehicle**
9. **Truck**
10. **Any other item from Construction Blocks**  
(i.e. Legos, K'nex, Lincoln Logs, etc.)
11. **Any other Module Scene** (Limit: 3 ft. x 3 ft.) –  
Legos may be used, but only up to 50% of the display
12. Any other Scale Model

## **DIVISION 198 – GEOSPATIAL**

### **CLASS NO.**

1. **4H Meting Locations**: Map made of Brown County 4-H Club meeting locations
2. **Careers**: Poster or display illustrating careers that use GPS and GIS technology
3. **Compass v. GPS**: Poster or display explaining the difference between a compass and GPS
4. **Elements & Symbols**: Poster or display explaining elements and symbols found on maps
5. **Geographical Terms**: Poster or display explaining geographical terms
6. **Geographical Tools**: Poster or display of different types of geographical tools
7. **GIS**: Poster or display explaining GIS and how it is used
8. **GPS/GIS Integration**: Poster or display explaining how GPS integrates with GIS
9. **GPS/GIS Technology Map**: Map made using GPS and GIS technology
10. **GPS**: Poster or display explaining what GPS is
11. **Map Route**: Map made showing a route from my home to the UW-Extension Office or Brown County Fairgrounds
12. **Navigation with Compass**: Poster or display explaining how to use a compass for navigation
13. **Recreational Activities**: Poster or display illustrating recreational activities that use GPS
14. **Types & Uses**: Poster or display showing different types of maps and their uses
15. **Using a GPS**: Poster or display explaining how to use GPS
16. **Using Geographical Tools**: Poster or display illustrating how different geographical tools are used
17. Any other exhibit not listed above

**DIVISION 199 – ROBOTICS**: \*\*\*Robots will not be on display during the fair. The youth should bring a picture or pictures of them working on the project which will be displayed at the Fair\*\*\*

### **CLASS NO.**

#### **Poster or Display:**

1. **Basic LEGO robot** that I designed and built
2. Poster or display illustrating the **difference of machines, computers and robots**
3. Poster or display illustrating **different types of robots and their uses**
4. Poster or display illustrating a **good and bad example of a flowchart and how it relates to programming**
5. Poster or display illustrating the **features of the NXT intelligent brick**
6. Poster or display illustrating at least **3 types of sensors used with robots and their purpose**
7. Poster or display that illustrates how **to troubleshoot a program problem**
8. Poster or display that illustrates an **experiment conducted by a robot I built and programmed**

**Programming:** Youth should bring a copy of the program for the judge to see.

9. Program designed to make robot **go forward, reverse, and stop**
10. Program designed to make robot **go forward 1 second, turn left 3 rotations, and stop**
11. Program designed to make robot **turn left 3 different ways**
12. Program designed to make robot **stop, using touch sensor**
13. Program designed to make robot **follow a curved line using a light sensor**
14. Program designed to make robot **go forward indefinitely and stop, using a sound sensor**
15. Program designed to make robot **avoid an obstacle, using an ultrasonic sensor**
16. Program designed to make robot **navigate a maze, race track, or obstacle course**
17. Any other exhibit not listed above

## **DIVISION 200 - POWER OF THE WIND**

### **CLASS NO.**

1. **Beaufort Scale**: Exhibit illustrating the Beaufort Scale
2. **Engineering Design**: Exhibit illustrating the engineering design process
3. **History of Windmills**: Exhibit illustrating the history of windmills
4. **Information about Wind Turbines**: Exhibit illustrating specific information about wind turbines in your county
5. **Location of Wind Turbines**: Exhibit illustrating where wind turbines are located in the county, state, country, or world
6. **Low & High Solidarity Turbines**: Exhibit comparing a low solidity and a high solidity turbine
7. **Measuring Wind Speed**: Exhibit illustrating various ways to measure wind speed
8. **Motors & Generators**: Exhibit illustrating how motors and generators work
9. **Pinwheels**: Exhibit of 3 different pinwheels that you designed, built, and tested. Include written test results
10. **Turbine**: Exhibit of a turbine that you designed, built, and tested. Include written test results
11. **Wind in Art & Literature**: Poster or display showing examples of wind in art and literature
12. **Wind Powered Boat**: Exhibit of a wind powered boat that you designed, built, and tested. Include written test results
13. **Wind Resources**: Exhibit showing wind resources in the United States including wind power density and wind speeds
14. **Wind-Powered Device**: Exhibit of a wind powered device that you designed, built, and tested. Include written test results
15. **Wind-Powered Sculpture**: Exhibit of a wind powered sculpture that you designed, built, and tested. Include written test results
16. **Wind-Powered Turbine**: Exhibit of a wind powered turbine that creates electricity that you built and tested. Include written test results of how much energy was produced
17. Any other exhibit not listed above

A mechanical superintendent coordinates and oversees construction, maintenance, and repair activities at a facility that houses large mechanical equipment. He or she ensures that gas lines, plumbing fixtures, boilers, and other elements are kept in proper working order at all times. The job requires expert knowledge of the detailed physical properties of mechanical systems, and many superintendents possess several years of experience in the construction and maintenance field. Mechanical superintendents work full-time at industrial factories, manufacturing plants, and large facilities such as o Mike Pruett. Lead Superintendent at Renasci Homes. Location. El Dorado Hills, California. I have directed superintendents and sales associates on how to achieve outstanding customer satisfaction results while staying on schedule and on budget. 5+ years of supervising the renovation of foreclosure and auction properties. Skilled in teambuilding, budgeting, scheduling while achieving outstanding customer satisfaction results. I have 5 years of building \$1M custom homes as a GC. Experience. Lead Superintendent. Renasci Homes. July 2018 – Present 9 months. El Dorado Hills. Superintendent. DH Construction. May 2017 – Present 1 year 11 months. The legendary racer Scott Pruett announces his retirement after five decades of racing and we look back at the highlights of his racing career. youtube.com. Scott Pruett. 16 March at 15:49. Thank you @ShaySpence and People.com. Inside Motorsports Star Scott Pruett's New Life As a Full-Time Winemaker. The retired race car driver is used to winning, but now he's focusing on his success in a different arena: the booze business. people.com. As the last two laps ran in the weekend's Rolex 24 At Daytona, one of the race's greatest victors, Scott Pruett, 57, leaned on his team's pit wall taking in the emotions of his last competitive checkered flag. imsa.com. Scott Pruett.