MIDDLE SCHOOL SECTION
CATEGORY BASED PROJECTS

Technology Students Association

2018-2019

CHANGES HAVE BEEN MADE:
NEW CATEGORIES HAVE BEEN ADDED &
SOME CATEGORIES HAVE BEEN MERGED/DELETED
DO NOT USE PREVIOUS YEARS RULES BOOK!

April 25, 26, & 27, 2019
Texas TSA MEMBERSHIP

School chapters must be an affiliated member with the National TSA and Texas TSA in order to participate and/or compete in the Texas TSA State Contest. Students names must be specifically listed in membership rolls with Texas TSA in order to compete at the Texas TSA State Contest. Affiliation will be completed online through http://www.tsaweb.org/. Chapters must be affiliated prior to November 16, 2018 to avoid a $100.00 late fee. Membership application closes on February 1st each year.

Schools that affiliate and/or upload students after the February 1st, 2019 deadline will be ineligible to receive school awards at the Texas TSA State Contest AND will incur a $500.00 sanction by the Texas TSA Board of Directors.

Chapters may affiliate and compete in ONE TSA REGION only. Chapters may NOT affiliate and/or compete in multiple TSA Regions.

TEXAS TSA STATE CONTEST ENTRY FEE

After qualifying through a Texas TSA regional contest, students are eligible to participate and compete in the Texas TSA State Contest. The 2018-2019 contest will be held in Fort Worth on April 25, 26, & 27 of 2019. The entry fee is $12.00 for each entry.

Texas TSA does not refund any money for unused state entries. Texas TSA does not require a student to be present at State Contest to enter their project(s), unless they are competing in an event that requires the student to be physically present for the event. Those events include NQE Events, UTE Written tests or Graphic Solutions. and most TSA Onsite Events.

HOTELS

Hotel Room Blocks: All hotel rooms will be booked through the Texas TSA hotel block. Any school booking outside of conference block will incur a penalty of $100/attendee registered for that chapter. Additionally, all schools participating in on-site events, will be required to stay on-site in the hotel block. The only exception to this policy, are schools who are within a 20 mile radius of the Fort Worth Convention Center.
Texas TSA State Conference Attendance Registration & Conference Registration Attendance Fee

All persons who attend the Texas TSA State Conference & Contest are required to register for the Conference. The Conference Registration Attendance Fee is $15.00 per person. This includes students, teachers, administrators, drivers, parents and all guests.

Registration will open February 15, 2019 and close March 25, 2019 at 11:50 pm CST. NO CHANGES OR REFUNDS WILL BE MADE AFTER THIS DATE. Please do not wait until the last minute to complete your registration.

All payments – registration fees, entry fees and bus parking will be paid to Texas TSA.

All Purchase Orders and/or payments must be received by Friday, April 19, 2019. Purchase Orders may be emailed to executive.director@texastsa.org.

Credit Cards may be taken on-line through the Registration System.

Checks are to be made payable to Texas TSA and mailed to:
Texas TSA
189 Candelara Drive
Carthage, TX 75633

NOTE: ALL forms of payments MUST include the SCHOOL NAME, not just the ISD.
7. COPYRIGHT: All entries must be the original work of the student participant or student team. **ALL** ideas, text, images (photos, computer generated, video and/or other), and sounds from other sources must be cited, including anything that is from the public domain. References and resources are to be cited using MLA (Modern Language Association) style, the most current edition. If copyrighted material is used, proper written permission must be included. Failure to follow this procedure **WILL AUTOMATICALLY RESULT IN DISQUALIFICATION OF THE STUDENT (ALL PROJECTS)** and may potentially disqualify the entire chapter from the 2019 Texas TSA State Competition.

**UNIQUENESS OF STUDENT WORK**

All student entries **MUST** be made from a single unique native file. Each project must be unique in both the final product and any associated electronic file regardless of file type. The **ONLY** exception is the use of common library parts such as the Content Center in AutoDesk.

**REQUIRED MINIMUM DOCUMENTATION:**

Documentation should be attached to the back projects or least conspicuous location as possible.

The following is required for BOTH Level 1 & Level 2 entries:

Documentation **MUST** be computer generated on the required form found in Part 2: Rulebook Forms of the Texas TSA Rules Book. Sketches are allowed on otherwise computer generated forms. **Documentation is required for ALL entries.** Deductions can only be applied for lack of content, quality of writing, neatness, completeness of drawings, etc. unless otherwise noted.

Documentation can be housed in clear plastic page protector or folder. No 3-Ring Binders unless specified by NQE or other rules.
INTERDISCIPLINARY DISPLAY

The interdisciplinary display encompasses the application of the academic courses (science, math, history, Language Arts) through the project method of instruction. The emphasis of this category is on the student’s ability to correlate the academics as they apply to the development and manufacture of a product or the construction of a product. In addition, to the documentation required by the individual units within the Technology course, further evidence is needed to specifically address the application of skills acquired in the academic courses. *(Individual or Team)*

DRAFTING

<table>
<thead>
<tr>
<th>Classification</th>
<th>Pages from exercise books, blueprints or other reproductions are not acceptable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Sketching/Free hand - May be Single or Multi-Part. May be Single View or Multi-View. Pictorial allowed. Only hand rendering allowed.</td>
</tr>
<tr>
<td></td>
<td>Mechanical/Technical Drafting (pencil or ink) - May be Single or Multi-Part. May be Single View or Multi-View. Pictorial allowed. Only hand rendering allowed.</td>
</tr>
<tr>
<td>MP2001</td>
<td>CADD - Single View - One sheet with pictorial</td>
</tr>
<tr>
<td>MP2002</td>
<td>CADD - Single View - One sheet without pictorial</td>
</tr>
<tr>
<td>MP2003</td>
<td>CADD - Two View - One sheet with pictorial</td>
</tr>
<tr>
<td>MP2004</td>
<td>CADD - Two View - One sheet without pictorial</td>
</tr>
<tr>
<td>MP2005</td>
<td>CADD - Three View - One Sheet with pictorial</td>
</tr>
<tr>
<td>MP2006</td>
<td>CADD - Three View - One Sheet without pictorial</td>
</tr>
<tr>
<td>MP2007</td>
<td>CADD - Pictorial - One Sheet</td>
</tr>
<tr>
<td>MP2008</td>
<td>CADD - Working Drawing</td>
</tr>
<tr>
<td>MP2009</td>
<td>CADD - Architectural - Maximum four sheets (May include plot plan, floor plan, elevations, and/or door/window schedule etc.)</td>
</tr>
<tr>
<td>MP2010</td>
<td>CADD - Aerospace related drawings - Max 2 page</td>
</tr>
<tr>
<td>MP2011</td>
<td>CADD - Machine - Maximum two sheets</td>
</tr>
<tr>
<td>MP2012</td>
<td>CADD 3-D designs</td>
</tr>
<tr>
<td>MP2013</td>
<td>CADD - Presentation Drawing - Engineering</td>
</tr>
<tr>
<td>MP2014</td>
<td>CADD - Presentation Drawing - Architectural</td>
</tr>
<tr>
<td>MP2015</td>
<td></td>
</tr>
<tr>
<td>MP2016</td>
<td></td>
</tr>
</tbody>
</table>
All photos will use mounting adhesive along the top edge of photograph not to exceed 3/4-inch and be mounted on white typing paper not to exceed 8.5” by 11”. **No additional matting will be allowed.** All photos will be student processed unless otherwise stated.

**Printing** - Can use either method listed below:

- Photo is developed by a professional lab, instore photo lab, or a kiosk film printer in a commercial setting. This includes self-service photo printers in Wal-Mart, CVS, Walgreens, etc…
- Photo is developed by the student in a traditional film processing lab using traditional methods and practices or digitally in the lab, classroom, or home using a printer.

**COPYRIGHT**

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**UNIQUENESS OF STUDENT WORK**

All student entries MUST be made from a single unique native file. Each project must be unique in both the final product and any associated electronic file regardless of file type.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin hole photograph</td>
<td>MP2030</td>
</tr>
<tr>
<td>Still Life - Color</td>
<td>MP2031</td>
</tr>
<tr>
<td>Still Life - Black and White</td>
<td>MP2032</td>
</tr>
<tr>
<td>Action/Motion - Black and White</td>
<td>MP2033</td>
</tr>
<tr>
<td>Action/Motion - Color</td>
<td>MP2034</td>
</tr>
<tr>
<td>Landscape - Black and White</td>
<td>MP2035</td>
</tr>
<tr>
<td>Landscape - Color</td>
<td>MP2036</td>
</tr>
<tr>
<td>Marine - Black and White</td>
<td>MP2037</td>
</tr>
<tr>
<td>Marine - Color</td>
<td>MP2038</td>
</tr>
<tr>
<td>Portraits - Black and White</td>
<td>MP2039</td>
</tr>
<tr>
<td>Portraits - Color</td>
<td>MP2040</td>
</tr>
<tr>
<td>Special Effects - Black and White OR Color: MUST include Original Photo for comparison.</td>
<td>MP2041</td>
</tr>
<tr>
<td>Close-up (MACRO) - Black and White</td>
<td>MP2042</td>
</tr>
<tr>
<td>Close-up (MACRO) - Color</td>
<td>MP2043</td>
</tr>
<tr>
<td>Photo essay four to six prints with captions or titles not to exceed a maximum of 36” x 36” display area. Must tell a story, process or concept.</td>
<td>MP2044</td>
</tr>
<tr>
<td>Photo essay – 7 or more prints with captions or titles not to exceed a maximum of 36” x 36” display area. Display or manual format.</td>
<td>MP2045</td>
</tr>
<tr>
<td>Slide Series - Maximum of 20 slides arranged to tell a story or explain a process. Slides must be arranged in order in a top-loading carousel.</td>
<td>MP2046</td>
</tr>
<tr>
<td>Classification</td>
<td>Individual</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Screen Print - one color - hand cut</td>
<td>MP2047</td>
</tr>
<tr>
<td>Screen Print - multi-color - hand cut</td>
<td>MP2048</td>
</tr>
<tr>
<td>Screen Print - one color - thermal screen</td>
<td>MP2049</td>
</tr>
<tr>
<td>Screen Print - multi-color - thermal screen</td>
<td>MP2050</td>
</tr>
<tr>
<td>Screen Print - one color - photo emulsion</td>
<td>MP2051</td>
</tr>
<tr>
<td>Screen Print - multi-color - photo emulsion</td>
<td>MP2052</td>
</tr>
<tr>
<td>Computer Generated Design Transfer - one color</td>
<td>MP2053</td>
</tr>
<tr>
<td>Computer Generated Design Transfer - multi-color</td>
<td>MP2054</td>
</tr>
<tr>
<td>Computer digital transfer</td>
<td>MP2055</td>
</tr>
<tr>
<td>Business Cards/Name Tags, etc.</td>
<td>MP2056</td>
</tr>
<tr>
<td>Certificate</td>
<td>MP2057</td>
</tr>
<tr>
<td>Form - Single Sheet</td>
<td>MP2058</td>
</tr>
<tr>
<td>Product description</td>
<td>MP2059</td>
</tr>
<tr>
<td>Fly sheet</td>
<td>MP2060</td>
</tr>
<tr>
<td>Product specification sheets</td>
<td>MP2061</td>
</tr>
<tr>
<td>Owners/Operators manual</td>
<td>MP2062</td>
</tr>
<tr>
<td>Brochure 1-2 printed panels</td>
<td>MP2063</td>
</tr>
<tr>
<td>Brochure 3 - 4 printed panels</td>
<td>MP2064</td>
</tr>
<tr>
<td>Brochure 5 or more printed panels</td>
<td>MP2065</td>
</tr>
<tr>
<td>Thematic Portfolio - A collection of four or more graphic images following a</td>
<td></td>
</tr>
<tr>
<td>central theme (Example: section pages in a yearbook, etc. - Could be created</td>
<td></td>
</tr>
<tr>
<td>from an art program, scanned and/or original art work - Not limited to these</td>
<td></td>
</tr>
<tr>
<td>examples)</td>
<td>MP2074</td>
</tr>
<tr>
<td>Student original - Computer Graphics - BW</td>
<td>MP2075</td>
</tr>
<tr>
<td>Student original - Computer Graphics - COLOR</td>
<td>MP2076</td>
</tr>
<tr>
<td>Student edited - Computer Graphics - BW (must show original)</td>
<td>MP2077</td>
</tr>
<tr>
<td>Student edited - Computer Graphics - COLOR (must show original)</td>
<td>MP2078</td>
</tr>
<tr>
<td>Computer based multi media Entries with academic themes</td>
<td>MP2079</td>
</tr>
<tr>
<td>Computer based multi media Entries with technology themes</td>
<td>MP2080</td>
</tr>
<tr>
<td>Computer animation One-minute, subject: any area</td>
<td>MP2081</td>
</tr>
<tr>
<td>Computer animation One-minute, subject: safety</td>
<td>MP2082</td>
</tr>
<tr>
<td>Database Minimum of 25 entries; at least 5 fields. (Must show original input</td>
<td>MP2083</td>
</tr>
<tr>
<td>data and two data sorts)</td>
<td></td>
</tr>
<tr>
<td>Spreadsheet Minimum of 5 columns and 5 rows - Must have at least 2 calculations</td>
<td>MP2084</td>
</tr>
<tr>
<td>A word-processing document, any subject, (8.5 x 11 inch page size, two-pages</td>
<td></td>
</tr>
<tr>
<td>double spaced minimum); No graphics</td>
<td>MP2085</td>
</tr>
<tr>
<td>A word-processing document, any subject (8.5 x 11 inch page size, two-pages</td>
<td></td>
</tr>
<tr>
<td>double spaced minimum); With graphics</td>
<td>MP2086</td>
</tr>
<tr>
<td>Document using word-processing, spreadsheet, and database</td>
<td>MP2087</td>
</tr>
<tr>
<td>Newsletter must include: Letterhead or masthead, graphics and have at least</td>
<td></td>
</tr>
<tr>
<td>two columns</td>
<td>MP2088</td>
</tr>
</tbody>
</table>
## DIGITAL VIDEO

### USB Drive ONLY or Printouts - MP4 or QuickTime format ONLY
- Still Capture - Black & White – 1 Frame Capture from Video: MP2089
- Still Capture - Color – 1 Frame Capture from Video: MP2090
- Still Capture - edited paint - (must show original) - Black & White – 1 Frame Capture from video: MP2091
- Still Capture - edited paint - (must show original) - Color – 1 Frame Capture from video: MP2092
- Video Capture – B/W – Multiple Frame Video Clip: MP2093
- Video Capture– Color – Multiple Frame Video Clip: MP2094
- Video Capture – Black & White- (must show original) – Multiple Frame Video Clip: MP2095
- Video capture - Color - (must show original) – Multiple Frame Video Clip: MP2096
- Static or working model of a telecommunication device or system: MP2097

## ROBOTICS

### USB Drive or Printouts - no other formats accepted

#### Programming to 25 lines (moves) of program maximum
- Minimum documentation must include hard copies of codes and 3 to 6 photographs or video (maximum of 5 minutes) of robot in action, or printouts: MP2098

#### Programming 26 to 50 lines (moves) of program maximum
- Minimum documentation must include hard copies of codes and 3 to 6 photographs or video (maximum of 5 minutes) of robot in action, or printouts: MP2099

#### Robot display
- Must include the robot (may or may not be in working condition), engineering notebook from the contest, photos and/or DVD of the robot in action at actual event: MP2100

### Remote Operated Vehicle Display (Underwater Robotic R.O.V.)

<table>
<thead>
<tr>
<th>Entries Per Region</th>
<th>Middle School</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>MP3200</td>
</tr>
</tbody>
</table>

## COMPUTER-NUMERIC-CONTROL (CNC) MODELING/PROGRAMMING

The intent of this area is to demonstrate the programming and design aspects ONLY, not actual production, which can be entered under the other classifications. Do NOT bring produced part.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNC Lathe program - must include drawing and CNC code printout - Single Part</td>
<td>MP2101</td>
<td>MP2102</td>
</tr>
<tr>
<td>CNC Lathe program - must include drawing and CNC code printout - Multiple Parts</td>
<td>MP2103</td>
<td>MP2104</td>
</tr>
<tr>
<td>CNC Mill program - must include drawing and CNC code printout - Single Part</td>
<td>MP2105</td>
<td>MP2106</td>
</tr>
<tr>
<td>CNC Mill program - must include drawing and CNC code printout - Multiple Parts</td>
<td>MP2107</td>
<td>MP2108</td>
</tr>
</tbody>
</table>
UNIQUENESS OF STUDENT WORK
ALL ENTRIES MUST BE 100% STUDENT ORIGINAL WORK. NO DOWNLOADED .STL FILES (STL or OTHERS)/WORK - IN FULL OR PARTIAL.

NO DOWNLOADED .STL FILES
CNC/CAM - 3D Printer/Rapid Prototype - Single Part: Engineering MP2109
CNC/CAM - 3D Printer/Rapid Prototype - 2 to 5 Parts: Engineering MP2110
CNC/CAM - 3D Printer/Rapid Prototype - 6 to 10 Parts: Engineering MP2111
CNC/CAM - 3D Printer/Rapid Prototype - 11 or More Parts: Engineering MP2112

NO DOWNLOADED .STL FILES
CNC/CAM - 3D Printer/Rapid Prototype - Single Part: Architecture MP2113
CNC/CAM - 3D Printer/Rapid Prototype - 2 to 5 Parts: Architecture MP2114
CNC/CAM - 3D Printer/Rapid Prototype - 6 to 10 Parts: Architecture MP2115
CNC/CAM - 3D Printer/Rapid Prototype - 11 or More Parts: Architecture MP2116

NO DOWNLOADED .STL FILES
CNC/CAM - 3D Printer/Rapid Prototype - Single Part: Bio-Medical MP2117
CNC/CAM - 3D Printer/Rapid Prototype - 2 to 5 Parts: Bio-Medical MP2118
CNC/CAM - 3D Printer/Rapid Prototype - 6 to 10 Parts: Bio-Medical MP2119
CNC/CAM - 3D Printer/Rapid Prototype - 11 or More Parts: Bio-Medical MP2120

NO DOWNLOADED .STL FILES
CNC/CAM - 3D Printer/Rapid Prototype - Single Part: Artistic/Other MP2121
CNC/CAM - 3D Printer/Rapid Prototype - 2 to 5 Parts: Artistic/Other MP2122
CNC/CAM - 3D Printer/Rapid Prototype - 6 to 10 Parts: Artistic/Other MP2123
CNC/CAM - 3D Printer/Rapid Prototype - 11 or More Parts: Artistic/Other MP2124

Use of graphics and logos under the Fair Use Laws is permissible, but MUST be documented.
CNC/CAM - Laser Engraver - single piece less than 8" x 10" MP2125
CNC/CAM - Laser Engraver - single piece not exceeding 16" x 20" MP2126
CNC/CAM - Laser Engraver - single piece larger than 24" MP2127
CNC/CAM - Laser Engraver - single piece Rotary MP2128
CNC/CAM - Laser Engraver - 2 to 5 parts MP2129
CNC/CAM - Laser Engraver - 6 to 10 parts MP2130
CNC/CAM - Laser Engraver - 11 or more parts MP2131

INTERFACE
To control lights, motors, switches, or to receive input from switches, sensors, etc. Provide Instructions how to operate in Documentation
Output interface Classification Individual MP2132
Input controlled interface Classification Individual MP2133

ENERGY
Student produced displays or working models that demonstrate extraction or processing of Energy. Provide specific instruction on how to operate for judges.
Mechanical Classification Individual MP2134
Heat Classification Individual MP2135
Electrical Classification Individual MP2136
Nuclear Classification Individual MP2137
Light Classification Individual MP2138
Alternative Energy Classification Individual MP2139
## POWER

Student produced displays or working models that demonstrate the man-made or natural power sources being used. Provide Instructions how to operate in Documentation.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>MP2140</td>
<td></td>
</tr>
<tr>
<td>Heat</td>
<td>MP2141</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>MP2142</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>MP2143</td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>MP2144</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>MP2145</td>
<td></td>
</tr>
<tr>
<td>Hydraulic</td>
<td>MP2146</td>
<td></td>
</tr>
<tr>
<td>Pneumatics</td>
<td>MP2147</td>
<td></td>
</tr>
</tbody>
</table>

## TRANSPORTATION

Student produced displays or working models that demonstrate the man-made or natural power sources being used. Provide Instructions how to operate in Documentation.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>MP2148</td>
<td></td>
</tr>
<tr>
<td>Sea</td>
<td>MP2149</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td>MP2150</td>
<td></td>
</tr>
<tr>
<td>Space</td>
<td>MP2151</td>
<td></td>
</tr>
<tr>
<td>Stationary (Conveyers)</td>
<td>MP2152</td>
<td></td>
</tr>
<tr>
<td>Transportation System / Industries – land/water/air/space. Static display or model.</td>
<td>MP2153</td>
<td></td>
</tr>
</tbody>
</table>

## APPLICATION OF ENERGY, POWER, AND TRANSPORTATION

Maximum display size: 3 ft wide X 18 inches deep X 4 ft high unless otherwise specified in rules.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Systems - Utilization of pneumatic, hydraulic, and/or mechanical power.</td>
<td>MP2154</td>
<td>MP2155</td>
</tr>
<tr>
<td>Static Display or Working Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Energy Devices Non-Kit</td>
<td>MP2156</td>
<td>MP2157</td>
</tr>
<tr>
<td>Electrical Energy Devices Kit</td>
<td>MP2158</td>
<td>MP2159</td>
</tr>
<tr>
<td>Electrical Power Systems - Principles, utilization, and impact.</td>
<td>MP2160</td>
<td>MP2161</td>
</tr>
<tr>
<td>Static Display or Working Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic devices that use semiconductors in its operation (Non-kit)</td>
<td>MP2162</td>
<td>MP2163</td>
</tr>
<tr>
<td>Electronic devices that use semiconductors in its operation (Commercial Kits)</td>
<td>MP2164</td>
<td>MP2165</td>
</tr>
<tr>
<td>Electronic/Audio Communication Systems - (Example laser, fiber optics, radio, etc.)</td>
<td>MP2166</td>
<td>MP2167</td>
</tr>
<tr>
<td>Static Display or Working Model. <strong>Provide Instructions how to operate in Documentation.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal and External Combustion Engines - Research of principles, utilization, and environmental impact.</td>
<td>MP2168</td>
<td>MP2169</td>
</tr>
<tr>
<td>(Static display or working model. Example: engine cut-a-way)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Systems/Industries - Land/water/air/space</td>
<td>MP2170</td>
<td>MP2171</td>
</tr>
<tr>
<td>Static Display or Working Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal and External Combustion Engines - Operation and Maintenance.</td>
<td>MP2172</td>
<td>MP2173</td>
</tr>
<tr>
<td>(Running) 5 h.p. maximum size. Minimum documentation will consist of a work history statement signed by the students instructor verifying the task in the work history was performed and the engine is in proper operating condition. <strong>Student must operate engine.</strong> Engine must be mounted on a suitable frame or engine stand not exceeding 36&quot; x 36&quot; <strong>Note: A fire extinguisher must be supplied and be on hand during live engine testing.</strong> P.T.O. end of crank shaft must be bare - nothing attached.</td>
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<td>Static or working model of a Telecommunication Device or system.</td>
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### WOOD - INDIVIDUAL ENTRY (Individual Student ONLY)

One (1) Board Foot (bf) is defined as a piece of wood 12” X 12” X 1” in size = 144 cubic inches of wood. All Board Feet calculations are “AS DISPLAYED”. Calculate the total volume of wood in the project based upon cubic inches and divide by 144 to get Board Feet in the project.

**CNC code printout must accompany CNC entry**

<table>
<thead>
<tr>
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### WOOD - TEAM ENTRY

**Definition of team product:** Two or more students worked on project.

All Board Feet calculations are “AS DISPLAYED”. Calculate the total volume of wood in the project based upon cubic inches and divide by 144 to get Board Feet in the project.

**CNC code printout must accompany CNC entry**

<table>
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<th>Turning CNC</th>
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## WOOD-TEAM ENTRY (continued)

All Board Feet calculations are "AS DISPLAYED". CNC code printout must accompany CNC entry

<table>
<thead>
<tr>
<th>Turning</th>
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<th>Portable</th>
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<tbody>
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<td>Less than 60 board feet</td>
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## METAL/ACRYLIC – INDIVIDUAL

CNC code printout must accompany CNC entry

Area Calculations are required in documentation

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<tr>
<th>Acrylic</th>
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<td>Metal</td>
<td>Machine</td>
<td>Portable</td>
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| Less than 0.25 square feet | MP2338 | MP2339 | MP2340 | MP2341 | MP2342 | MP2343 | MP2344 |
| Less than 0.5 square feet  | MP2345 | MP2346 | MP2347 | MP2348 | MP2349 | MP2350 | MP2351 |
| Less than 0.75 square feet | MP2352 | MP2353 | MP2354 | MP2355 | MP2356 | MP2357 | MP2358 |
| Less than 1 square foot    | MP2359 | MP2360 | MP2361 | MP2362 | MP2363 | MP2364 | MP2365 |
| Less than 2 square feet    | MP2366 | MP2367 | MP2368 | MP2369 | MP2370 | MP2371 | MP2372 |
| Less than 6 square feet    | MP2373 | MP2374 | MP2375 | MP2376 | MP2377 | MP2378 | MP2379 |
| Less than 10 square feet   | MP2380 | MP2381 | MP2382 | MP2383 | MP2384 | MP2385 | MP2386 |
| Less than 12 square feet   | MP2387 | MP2388 | MP2389 | MP2390 | MP2391 | MP2392 | MP2393 |
| More than 12 square feet   | MP2394 | MP2395 | MP2396 | MP2397 | MP2398 | MP2399 | MP2400 |
| Less than 1 ounce          | MP2401 | MP2402 | MP2403 | MP2404 | MP2405 | MP2406 | MP2407 |
| Less than 2 ounces         | MP2408 | MP2409 | MP2410 | MP2411 | MP2412 | MP2413 | MP2414 |
| Less than 4 ounces         | MP2415 | MP2416 | MP2417 | MP2418 | MP2419 | MP2420 | MP2421 |
| Less than 6 ounces         | MP2422 | MP2423 | MP2424 | MP2425 | MP2426 | MP2427 | MP2428 |
| Less than 8 ounces         | MP2429 | MP2430 | MP2431 | MP2432 | MP2433 | MP2434 | MP2435 |
| Less than 12 ounces        | MP2436 | MP2437 | MP2438 | MP2439 | MP2440 | MP2441 | MP2442 |
| Less than 1 pound          | MP2443 | MP2444 | MP2445 | MP2446 | MP2447 | MP2448 | MP2449 |
| Less than 3 pounds         | MP2450 | MP2451 | MP2452 | MP2453 | MP2454 | MP2455 | MP2456 |
| Less than 5 pounds         | MP2457 | MP2458 | MP2459 | MP2460 | MP2461 | MP2462 | MP2463 |
| Less than 10 pounds        | MP2464 | MP2465 | MP2466 | MP2467 | MP2468 | MP2469 | MP2470 |
| Less than 20 pounds        | MP2471 | MP2472 | MP2473 | MP2474 | MP2475 | MP2476 | MP2477 |
| Less than 30 pounds        | MP2478 | MP2479 | MP2480 | MP2481 | MP2482 | MP2483 | MP2484 |
| Less than 50 pounds        | MP2485 | MP2486 | MP2487 | MP2488 | MP2489 | MP2490 | MP2491 |
| Less than 75 pounds        | MP2492 | MP2493 | MP2494 | MP2495 | MP2496 | MP2497 | MP2498 |
| Less than 100 pounds       | MP2499 | MP2500 | MP2501 | MP2502 | MP2503 | MP2504 | MP2505 |
| More than 100 pounds       | MP2506 | MP2507 | MP2508 | MP2509 | MP2510 | MP2511 | MP2512 |
| Less than 250 pounds       | MP2513 | MP2514 | MP2515 | MP2516 | MP2517 | MP2518 | MP2519 |
| Less than 400 pounds       | MP2520 | MP2521 | MP2522 | MP2523 | MP2524 | MP2525 | MP2526 |
| Less than 600 pounds       | MP2527 | MP2528 | MP2529 | MP2530 | MP2531 | MP2532 | MP2533 |
| Less than 800 pounds       | MP2534 | MP2535 | MP2536 | MP2537 | MP2538 | MP2539 | MP2540 |
| Less than 1000 pounds      | MP2541 | MP2542 | MP2543 | MP2544 | MP2545 | MP2546 | MP2547 |
| Less than 1500 pounds      | MP2548 | MP2549 | MP2550 | MP2551 | MP2552 | MP2553 | MP2554 |
| More than 1500 pounds      | MP2555 | MP2556 | MP2557 | MP2558 | MP2559 | MP2560 | MP2561 |
## METAL/ACRYLIC – TEAM

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MASS PRODUCTION ENTRY - INDIVIDUAL

One (1) Board Foot (bf) is defined as a piece of wood 12" X 12" X 1" in size = 144 cubic inches of wood. All Board Feet calculations are “AS DISPLAYED”. Calculate the total volume of wood in the project based upon cubic inches and divide by 144 to get Board Feet in the project.

**Definition of mass production project:** Board foot calculated on single product only to get correct amount of board foot for correct classification.

**This category requires the entry of 2 samples.**

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<td>MP2833</td>
<td>MP2834</td>
<td>MP2835</td>
<td>MP2836</td>
<td>MP2837</td>
</tr>
<tr>
<td>Less than 8 board feet</td>
<td>MP2838</td>
<td>MP2839</td>
<td>MP2840</td>
<td>MP2841</td>
<td>MP2842</td>
</tr>
<tr>
<td>Less than 10 board feet</td>
<td>MP2843</td>
<td>MP2844</td>
<td>MP2845</td>
<td>MP2846</td>
<td>MP2847</td>
</tr>
<tr>
<td>Less than 15 board feet</td>
<td>MP2848</td>
<td>MP2849</td>
<td>MP2850</td>
<td>MP2851</td>
<td>MP2852</td>
</tr>
<tr>
<td>Less than 20 board feet</td>
<td>MP2853</td>
<td>MP2854</td>
<td>MP2855</td>
<td>MP2856</td>
<td>MP2857</td>
</tr>
</tbody>
</table>

**Plastic**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than .25 sq. feet</td>
<td>MP2858</td>
</tr>
<tr>
<td>Less than .5 sq. feet</td>
<td>MP2859</td>
</tr>
<tr>
<td>Less than .75 sq. feet</td>
<td>MP2860</td>
</tr>
<tr>
<td>Less than 1 sq. feet</td>
<td>MP2861</td>
</tr>
<tr>
<td>Less than 2 sq. feet</td>
<td>MP2862</td>
</tr>
</tbody>
</table>

**Metal**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 oz</td>
<td>MP2863</td>
</tr>
<tr>
<td>Less than 6 oz</td>
<td>MP2864</td>
</tr>
<tr>
<td>Less than 12 oz</td>
<td>MP2865</td>
</tr>
<tr>
<td>Less than 1 lb.</td>
<td>MP2866</td>
</tr>
<tr>
<td>Less than 2 lb.</td>
<td>MP2867</td>
</tr>
<tr>
<td>Less than 3 lb.</td>
<td>MP2868</td>
</tr>
<tr>
<td>Less than 5 lb.</td>
<td>MP2869</td>
</tr>
</tbody>
</table>
## Manufacturing - Turning – Kit - Individual

<table>
<thead>
<tr>
<th>Material</th>
<th>Bone</th>
<th>Acrylic</th>
<th>Wood</th>
<th>Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pen or Pencil-CNC</td>
<td>MP2870</td>
<td>MP2871</td>
<td>MP2872</td>
<td>MP2873</td>
</tr>
<tr>
<td>Pen or Pencil - Manual</td>
<td>MP2875</td>
<td>MP2876</td>
<td>MP2877</td>
<td>MP2878</td>
</tr>
<tr>
<td>Pen/Pencil Set-CNC</td>
<td>MP2880</td>
<td>MP2881</td>
<td>MP2882</td>
<td>MP2883</td>
</tr>
<tr>
<td>Pen/Pencil-Set-Manual</td>
<td>MP2885</td>
<td>MP2886</td>
<td>MP2887</td>
<td>MP2888</td>
</tr>
<tr>
<td>Letter Opener-CNC</td>
<td>MP2890</td>
<td>MP2891</td>
<td>MP2892</td>
<td>MP2893</td>
</tr>
<tr>
<td>Letter Opener-Manual</td>
<td>MP2895</td>
<td>MP2896</td>
<td>MP2897</td>
<td>MP2898</td>
</tr>
<tr>
<td>Magnifier-CNC</td>
<td>MP2900</td>
<td>MP2901</td>
<td>MP2902</td>
<td>MP2903</td>
</tr>
<tr>
<td>Magnifier-Manual</td>
<td>MP2905</td>
<td>MP2906</td>
<td>MP2907</td>
<td>MP2908</td>
</tr>
<tr>
<td>Light or Pull Fan-CNC</td>
<td>MP2910</td>
<td>MP2911</td>
<td>MP2912</td>
<td>MP2913</td>
</tr>
<tr>
<td>Light or Pull Fan-Manual</td>
<td>MP2915</td>
<td>MP2916</td>
<td>MP2917</td>
<td>MP2918</td>
</tr>
<tr>
<td>Key Chain-CNC</td>
<td>MP2920</td>
<td>MP2921</td>
<td>MP2922</td>
<td>MP2923</td>
</tr>
<tr>
<td>Key Chain-Manual</td>
<td>MP2925</td>
<td>MP2926</td>
<td>MP2927</td>
<td>MP2928</td>
</tr>
<tr>
<td>Other-CNC</td>
<td>MP2930</td>
<td>MP2931</td>
<td>MP2932</td>
<td>MP2933</td>
</tr>
<tr>
<td>Other-Manual</td>
<td>MP2935</td>
<td>MP2936</td>
<td>MP2937</td>
<td>MP2938</td>
</tr>
</tbody>
</table>

## Manufacturing - Plastics & Resins

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC fabrication - 10 pounds or less</td>
<td>MP2940</td>
</tr>
<tr>
<td>PVC fabrication - more than 10 pounds</td>
<td>MP2941</td>
</tr>
<tr>
<td>Injection molding (all)</td>
<td>MP2942</td>
</tr>
<tr>
<td>Vacuum forming (all)</td>
<td>MP2943</td>
</tr>
<tr>
<td>Casting (all)</td>
<td>MP2944</td>
</tr>
<tr>
<td>Reinforced resins (all)</td>
<td>MP2945</td>
</tr>
<tr>
<td>Non acrylic</td>
<td>MP2946</td>
</tr>
<tr>
<td>Composite</td>
<td>MP2947</td>
</tr>
</tbody>
</table>

## Manufacturing - Other Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Individual</th>
<th>Team Single Product</th>
<th>Mass Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric</td>
<td>MP2948</td>
<td>MP2949</td>
<td>MP2950</td>
</tr>
<tr>
<td>Paper</td>
<td>MP2951</td>
<td>MP2952</td>
<td>MP2953</td>
</tr>
<tr>
<td>Glass - Flat (Ex: plate)</td>
<td>MP2954</td>
<td>MP2955</td>
<td>MP2956</td>
</tr>
<tr>
<td>Glass - Glassware (Ex: mugs)</td>
<td>MP2957</td>
<td>MP2958</td>
<td>MP2959</td>
</tr>
<tr>
<td>Leather</td>
<td>MP2960</td>
<td>MP2961</td>
<td>MP2962</td>
</tr>
<tr>
<td>Combination of any of the above</td>
<td>MP2963</td>
<td>MP2964</td>
<td>MP2965</td>
</tr>
</tbody>
</table>

## Casting Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Sand Mold Rough</th>
<th>Sand Mold Finished</th>
<th>Commercial Mold Rough</th>
<th>Commercial Mold Finished</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 oz</td>
<td>MP2966</td>
<td>MP2967</td>
<td>MP2968</td>
<td>MP2969</td>
</tr>
<tr>
<td>3 oz</td>
<td>MP2970</td>
<td>MP2971</td>
<td>MP2972</td>
<td>MP2973</td>
</tr>
<tr>
<td>6 oz</td>
<td>MP2974</td>
<td>MP2975</td>
<td>MP2976</td>
<td>MP2977</td>
</tr>
<tr>
<td>8 oz</td>
<td>MP2978</td>
<td>MP2979</td>
<td>MP2980</td>
<td>MP2981</td>
</tr>
<tr>
<td>12 oz</td>
<td>MP2982</td>
<td>MP2983</td>
<td>MP2984</td>
<td>MP2985</td>
</tr>
<tr>
<td>16 oz</td>
<td>MP2986</td>
<td>MP2987</td>
<td>MP2988</td>
<td>MP2989</td>
</tr>
<tr>
<td>16 oz plus</td>
<td>MP2990</td>
<td>MP2991</td>
<td>MP2992</td>
<td>MP2993</td>
</tr>
<tr>
<td>Pattern Match Plate</td>
<td>MP2994</td>
<td>MP2995</td>
<td>MP2996</td>
<td>MP2997</td>
</tr>
<tr>
<td>Disposable</td>
<td>MP2998</td>
<td>MP2999</td>
<td>MP3000</td>
<td>MP3001</td>
</tr>
</tbody>
</table>
PRECIOUS METALS  (Note:  See Rule 9 pg. 14)

| Lost wax casting - Purchased Pattern with stones | MP3002 | MP3003 |
| Lost wax casting - Purchased Pattern without stones | MP3004 | MP3005 |

RECYCLED MATERIALS

These products must be constructed from 50% recycled materials. Products must be classified by the primary construction material.

<table>
<thead>
<tr>
<th>Combination</th>
<th>Other</th>
<th>Glass</th>
<th>Plastic</th>
<th>Metals</th>
<th>Wood</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5 lb.</td>
<td>MP3006</td>
<td>MP3007</td>
<td>MP3008</td>
<td>MP3009</td>
<td>MP3010</td>
</tr>
<tr>
<td>1.0 lb.</td>
<td>MP3012</td>
<td>MP3013</td>
<td>MP3014</td>
<td>MP3015</td>
<td>MP3016</td>
</tr>
<tr>
<td>1.5 lb.</td>
<td>MP3018</td>
<td>MP3019</td>
<td>MP3020</td>
<td>MP3021</td>
<td>MP3022</td>
</tr>
<tr>
<td>2.0 lb.</td>
<td>MP3024</td>
<td>MP3025</td>
<td>MP3026</td>
<td>MP3027</td>
<td>MP3028</td>
</tr>
<tr>
<td>3.0 lb.</td>
<td>MP3030</td>
<td>MP3031</td>
<td>MP3032</td>
<td>MP3033</td>
<td>MP3034</td>
</tr>
<tr>
<td>5.0 lb.</td>
<td>MP3036</td>
<td>MP3037</td>
<td>MP3038</td>
<td>MP3039</td>
<td>MP3040</td>
</tr>
<tr>
<td>7.0 lb.</td>
<td>MP3042</td>
<td>MP3043</td>
<td>MP3044</td>
<td>MP3045</td>
<td>MP3046</td>
</tr>
<tr>
<td>10.0 lb.</td>
<td>MP3048</td>
<td>MP3049</td>
<td>MP3050</td>
<td>MP3051</td>
<td>MP3052</td>
</tr>
<tr>
<td>10.0 lb. Plus</td>
<td>MP3054</td>
<td>MP3055</td>
<td>MP3056</td>
<td>MP3057</td>
<td>MP3058</td>
</tr>
</tbody>
</table>

COMBINATION MATERIALS

Maximum display size: 3 ft. wide X 18 inches deep X 4 ft high.

<table>
<thead>
<tr>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
</tr>
</tbody>
</table>

| A combination of materials, tools and processes to produce a product | MP3060 |
| Static display or working model that demonstrates the use of a combination of energy, power, and/or transportation. Student or representative should be present only if the device or system needs special instructions to be operated. | MP3061 |
| Static display or working model that incorporates the uses of Communication, Energy/Power/Transportation, Manufacturing, Construction and/or Biotech Technology. Evidence documenting the use of the above technologies must accompany the completed product. | MP3062 |
CONSTRUCTION TECHNOLOGY - Individual/Team

Construction is defined as the technique, skills, and standards used in the construction of a shelter, containment, support, or complex. Students will be demonstrating the application of their knowledge of construction when they enter their project in competition.

PAST
All entries must include historical documentation of the feature that the construction represents.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early buildings (houses, churches, theaters, etc.)</td>
<td>MP3063</td>
<td>MP3064</td>
</tr>
<tr>
<td>Early roads, bridges, or waterways</td>
<td>MP3065</td>
<td>MP3066</td>
</tr>
<tr>
<td>A display depicting construction technology or material used in the past</td>
<td>MP3067</td>
<td>MP3068</td>
</tr>
</tbody>
</table>

PRESENT
(NOTE: When entering models, you must have available original drawing or copy of plans used.)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model of a constructed residential shelter</td>
<td>MP3069</td>
<td>MP3070</td>
</tr>
<tr>
<td>A partial model of a constructed residential shelter which shows detail. Max. size 4 feet by 4 feet by 8 ft. high</td>
<td>MP3071</td>
<td>MP3072</td>
</tr>
<tr>
<td>A partial structure to show construction techniques. (Example: wall section, plumbing, electrical application, etc.) Max. size 4 feet by 4 feet by 8 ft. high</td>
<td>MP3073</td>
<td>MP3074</td>
</tr>
</tbody>
</table>

STRUCTURE USING CONSTRUCTION PROCESSES - Without Utilities

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 sq. ft. of floor space</td>
<td>MP3075</td>
<td>MP3076</td>
</tr>
<tr>
<td>More than 5 sq. ft. of floor space</td>
<td>MP3077</td>
<td>MP3078</td>
</tr>
</tbody>
</table>

STRUCTURE USING CONSTRUCTION PROCESSES - Without Utilities (Continued)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>A display depicting the technologies or materials that are currently used in construction</td>
<td>MP3079</td>
<td>MP3080</td>
</tr>
<tr>
<td>Model of a constructed containment</td>
<td>MP3081</td>
<td>MP3082</td>
</tr>
<tr>
<td>Structural engineering research, design, and evaluation of civil construction projects. (Example: highways, bridges, airports, dams, etc.) Static display or model</td>
<td>MP3083</td>
<td>MP3084</td>
</tr>
<tr>
<td>Model of a constructed support</td>
<td>MP3085</td>
<td>MP3086</td>
</tr>
<tr>
<td>Model of an Aerospace structure</td>
<td>MP3087</td>
<td>MP3088</td>
</tr>
</tbody>
</table>

FUTURE

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master plan development (must include residential, commercial, industrial, and civil construction projects). Example: Sim City computer program. Display area not to exceed 36 x 36 inches</td>
<td>MP3089</td>
<td>MP3090</td>
</tr>
<tr>
<td>Model of a mass-transit system</td>
<td>MP3091</td>
<td>MP3092</td>
</tr>
<tr>
<td>Other</td>
<td>MP3093</td>
<td>MP3094</td>
</tr>
</tbody>
</table>
## CONSTRUCTION TECHNOLOGY - Individual/Team (Continued)

### DIMENSIONAL MATERIALS
Dimensional Materials are sold/described based upon "nominal" measurements. After being milled and dried for sales, the lumber described is no longer the nominal measurement. Example: A 2X4 is actually 1.5" X 3.5".

Use traditional/standard nominal measurements when calculating board feet.

The following classifications are set aside for outdoor/recreational products constructed from dimensional materials such as 2x4, 2x6, etc.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 b.f</td>
<td>MP3095</td>
<td>MP3096</td>
</tr>
<tr>
<td>5 to 10 b.f</td>
<td>MP3097</td>
<td>MP3098</td>
</tr>
<tr>
<td>10 to 20 b.f.</td>
<td>MP3099</td>
<td>MP3100</td>
</tr>
<tr>
<td>20 to 30 b.f.</td>
<td>MP3101</td>
<td>MP3102</td>
</tr>
<tr>
<td>30 to 40 b.f.</td>
<td>MP3103</td>
<td>MP3104</td>
</tr>
<tr>
<td>40 to 50 b.f.</td>
<td>MP3105</td>
<td>MP3106</td>
</tr>
<tr>
<td>More than 50 b.f.</td>
<td>MP3107</td>
<td>MP3108</td>
</tr>
</tbody>
</table>

### RESTORATIONS - Team/Individual
Restoration: Projects that have been restored to the original condition. Items were originally commercially manufactured. A work history must accompany the entry stating the condition in which the entry was found, parts not reconditioned by the student and other pertinent information as per Rule 9 of the Texas Competition Rules on Page 14. Engines and motors are not included in this classification.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration - furniture</td>
<td>MP3109</td>
<td>MP3110</td>
</tr>
<tr>
<td>Restoration - mechanical/machine devices</td>
<td>MP3111</td>
<td>MP3112</td>
</tr>
<tr>
<td>Restoration - electrical/appliances</td>
<td>MP3113</td>
<td>MP3114</td>
</tr>
<tr>
<td>Restoration - vehicles</td>
<td>MP3115</td>
<td>MP3116</td>
</tr>
</tbody>
</table>

### COMMERCIAL MODEL KITS
Theory and Processes as related to Technology Education
Must include manufacturer's assembly instructions.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>MP3117</td>
</tr>
<tr>
<td>Energy</td>
<td>MP3118</td>
</tr>
<tr>
<td>Power</td>
<td>MP3119</td>
</tr>
<tr>
<td>Electricity/Electronics</td>
<td>MP3120</td>
</tr>
<tr>
<td>Land Transportation</td>
<td>MP3121</td>
</tr>
<tr>
<td>Air Transportation</td>
<td>MP3122</td>
</tr>
<tr>
<td>Space Transportation</td>
<td>MP3123</td>
</tr>
<tr>
<td>Water Transportation</td>
<td>MP3124</td>
</tr>
</tbody>
</table>

### INTEGRATED TECHNOLOGIES PRODUCT PRODUCTION-INDIVIDUAL
Maximum display size: 3 ft. wide X 18 inches deep X 4 ft high.

Develop and produce a product that incorporates the uses of Communication, Energy/Power/Transportation, Manufacturing, Construction and/or Biotech Technology. Evidence documenting the use of the above technologies must accompany the completed product.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MP3125</td>
</tr>
</tbody>
</table>
BIOTECHNOLOGY

Students must show evidence of the use of the universal system model. Minimum documentation must contain the following: sketches, description of problem, process and outcomes.

Maximum display size: 3 ft. wide X 18 inches deep X 4 ft high.

Design biotechnology tools to meet human, physical, and biological needs. MP3126
Interdisciplinary studies in biotechnology research MP3127

SCHOOL DISPLAY

Entries may be for exhibit only and awards may or may not be earned as determined by contest judges. Student must tell the contest coordinator if the entry is "For Judging" or "For Display Only" prior to judging. A team must have produced a product or solved a technological problem. Individual projects are not entered in these classifications. The contest director may refuse entry of a school display due to safety or space availability. School Displays must be approved by the contest director, two weeks prior to state contest.

Maximum display size: 3 ft. wide X 18 inches deep X 4 ft high.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities in more than two curriculum areas</td>
<td>15 MP3128</td>
</tr>
<tr>
<td>Communication Technology</td>
<td>15 MP3129</td>
</tr>
<tr>
<td>Power/Energy/Transpiration</td>
<td>15 MP3130</td>
</tr>
<tr>
<td>Manufacturing/Construction</td>
<td>15 MP3131</td>
</tr>
<tr>
<td>Bio-Tech</td>
<td>15 MP3132</td>
</tr>
</tbody>
</table>

SAFETY POSTER

Maximum size: 3 ft. wide X 18 inches deep X 4 ft high.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY POSTER: a poster to illustrate safety principles in the classroom environment or in the workplace. Poster Size: 22 x 28 inches only Safety posters may be computer generated / printed.</td>
<td>3 MP3133</td>
</tr>
</tbody>
</table>

CLUB T-SHIRT

<table>
<thead>
<tr>
<th>Classification</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLUB T-SHIRT: A display of one (1) T-shirt designed &amp; produced for club members to wear. No copyrighted materials/designs/partial designs, images, pictures, or photographs allowed.</td>
<td>3 MP3134</td>
</tr>
</tbody>
</table>

Use of TSA & School Logos allowed.