

Technology Student Association and Events - Division 6

Advisors: Tom Cummings

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Entry Form Registration Deadline - January 24, 2012

Arrival Date - March 1, 2012 from 4:00 pm to 8:00 pm, in Arnold Hall.

March 3, 2012 from 10:00 am to 4:00 pm, in Arnold Hall.

Release Date - April 5, 2012 from 4:00 pm to 8:00 pm, in Arnold Hall.

Group Entries - Not Accepted

This division was developed for students enrolled in Technology Education classes in the middle and high school level. Although open to all students, it is advisable that exhibitors check with a Technology Education teacher for an explanation of criteria.

The Technology Student Association Division will award an outstanding trophy for each level (middle, senior, middle exceptional and senior exceptional) based upon the following criteria:

1. Each entry in this division receiving a blue ribbon will be awarded five points.
2. Each entry in this division receiving a red ribbon will be awarded three points.
3. Each Metric 500 car that qualifies for the double elimination race competition (based upon speed) will receive three additional points.
4. Each entry in this division receiving a purple ribbon will be awarded an additional five points.

There are four levels for students to enter in the Technology Student Association Division. There will be separate awards for each level.

Level I – Middle School

Level II – High School

Level III– Exceptional Education middle school (same rules as middle school)

Level IV – Exceptional Education high school (same rules as high school)

Dragster Design Challenge (Levels I & III) Dragster Design (Levels II & IV) - Metric 500

The design and construction of a CO₂ powered model dragster. All qualifying exhibit cars take part in The Metric 500 Races which will take place during The Fair™ on the fairgrounds on the racing dates listed on this page.

Racing Procedures:

1. Each car will be run once to determine its “qualifying time.” The “qualifying time” will be obtained during check-in and judging.
2. Only cars deemed safe by judges will be run.
3. The sixteen fastest cars that meet the required specifications will advance to the double elimination race competition for the appropriate level. These races will take place on the dates listed below.
4. The race results will be determined using the TSA “double elimination” sheet which can be obtained upon request.

Racing Dates:

Levels I, II, III and IV – TIME TRIALS (DURING PROJECT CHECK-IN)

Rules:

1. Each entry must be accompanied by a complete entry form and computer tag.
2. Only one car may be entered per student.
3. Individual entries only. No class/club entries will be accepted.
4. CO2 cartridges will be provided by The Fair.

Regulations:

1. Dragsters that do not meet the following specifications/tolerances are disqualified from the race.

2. **Dragster Body:**

DB1 One piece, all wood construction. Any type of lamination will result in disqualification. No add-ons such as body strengtheners, fenders, plastic canopies, exhausts, or air foils may be attached to, or enclosed, within the vehicle. Fiberglass and shrink wrap are considered body strengtheners and cannot be used on car body or wheels for any reason. Decals may be used for decoration only. They may not be used to gain aerodynamic advantage, (i.e., decals cannot cover the exterior axle holes or to be used to cover open area of the body). Two or more like or unlike pieces of wood glued together are not considered one-piece, all wood construction.

	MINIMUM	MAXIMUM
DB2 - Body length	200mm	305mm
DB3 - Body height with wheels	75mm	
DB4 - Body mass (completed car without CO ₂)		
Middle School	35g	None
Senior High School	70g	None
DB5 - Body width at axles, front and back	35mm	42mm
DB6 - Body total width (including wheels)		90mm

3. **Axles/Axle Holes/Wheelbase:**

- A1 Dragsters must have two axles per car, no more.
- | | | |
|---|--------|--------|
| A2 Bottom of axle hole or bearing above bottom of car body..... | 5 mm | 10 mm |
| (measured at side) | | |
| A3 Rear axle hole from rear of car | 9 mm | 100 mm |
| A4 Wheelbase (axle distance apart at farthest point) | 105 mm | 270 mm |
- A5 Bearings, bushings and lubricants may be used.
- A6 Glue may be used to secure bearing to body.

4. **Spacer Washer/Clips:**

	MINIMUM	MAXIMUM
S1 Spacer washer (middle school)		10
S2 Axle clips (middle school)		4
S1 Spacer washer (high school)		8
S2 Axle clips (high school)		8
S3 Silicone or any other type of glue/adhesive may <u>not</u> be used in place of wheel clips to hold wheels or axles in place.		

5. **Power Plant (CO2 Cartridge Hole):**

- P1 The power plant hole must be at the farthest point at the rear of the car and must be drilled parallel to the race surface to assure proper puncture of the CO₂ cartridge. A minimum of 3mm thickness around the entire power plant hole must be maintained on the dragster for safety. The inside of the power plant hole must not be painted.
- | | | |
|-------------------------------------|-------|-------|
| P2 Hole depth (middle school) | 48 mm | 54 mm |
| P3 Hole depth (high school) | 48 mm | 54 mm |

P4	Safety zones thickness	3 mmNone
P5	Chamber diameter	19 mm20 mm
P6	Lowest point of chamber diameter to race surface (with wheels)	26 mm40 mm

6. **Eye Screws:**

ES1 Dragsters must have no more than two eye screws per car that meet tolerances. They must not make contact with the racing surface. The track string must pass through both screw eyelets, which are located on the center line of the bottom of the car. Glue may be used to reinforce the eye screws. It is the responsibility of the car designer/engineer to see the eye screw holes are tightly closed to prevent the track line from slipping out as with all adjustments, this must be done prior to event check-in.

ES2	Inside diameter	3 mm5 mm
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ES3	Distance apart (at farthest points)	150 mm270 mm
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7A. **Wheels, High School ONLY:**

W1 A dragster must have no more than four wheels. Two must meet rules W2 and W3. The other two must meet rules W4 and W5. All four wheels must touch the racing surface at the same time. All wheels must roll. Wheels must be made entirely from plastic. Dimensions must be consistent for full circumference of the wheel.

W2	Front diameter	30 mm37 mm
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W3	Front width (at surface contact point)	1.5 mm5 mm
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W4	Rear diameter.....	30 mm40 mm
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W5	Rear width (at surface contact point)	12 mm18 mm
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7B. **Wheels, Middle School ONLY:**

W1 A dragster must have no more than four wheels. Each wheel must meet regulations W2 and W3. All four wheels must touch the racing surface at the same time. All wheels must roll. Wheels must be made entirely from plastic. Dimensions must be consistent for full circumference of the wheel. ALERT: 2011 is a "Flashback" year for high school. Dragster bodies may NOT have internal wheels (i.e., no shell cars). No other designs will be accepted.

W2	Wheel Diameter	30 mm40 mm
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W3	Wheel width (at surface contact point).....	2 mm18 mm
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8. All contest entries will be judged according to the Research and Design Judging Sheet for the appropriate level (see judging criteria below).

9. All entries in this division will receive awards as listed below.

10. The decision of the judges will be final.

11. For further information or a sample judging sheet, refer to the TSA Curricular Resource Guide or contact the Instructional Supervisor for Technology Education at (305) 693-3018.

***These rules are for The Fair™ only, and may not meet the TSA Competitive Event guidelines.**

No repair or maintenance is allowed after entries have been registered. Any entry damaged during the race is evaluated by the event superintendent to determine whether or not the vehicle is allowed to race again. In the event that the vehicle is damaged by event personnel, the superintendent rules as to whether the vehicle may be repaired. Undamaged wheels that come off during the event may be replaced as determined by the superintendent. Damaged wheels may not be replaced.

Judging Criteria:

For ribbons: design, construction, and finish of the car.

For Trophies, the following:

All entries maximum points awarded are:

Dragster body production quality, body paint/finish, and vehicle assembly	30 Points
Race Results	
1st Place	50 Points
2nd Place	45 Points
3rd Place	40 Points
4th Place	35 Points
5th and 6th Place	30 Points
7th and 8th Place	25 Points
9th - 12th Place	20 Points
13th – 16th Place	10 Points

RACE TROPHIES

There will be three trophies awarded to students at each level, a first place, second place, and third place trophy based on the judging criteria listed above.

Promotional Design (Middle School):

Middle School participants will design a color lapel pin that can be used to promote the state TSA association for pin trading at the national TSA conference.

Rules:

1. All work must be done by the individual during the current school year.
2. One promotional design may be entered per student.
3. Designs must be individual entries; no class/club entries will be accepted.
4. Use of copyrighted or registered trademark artwork in the design is prohibited without verified permission from the original artist/publisher.
5. The design must be a color computer-generated design that is submitted on 8.5" x 11" paper and should include the design in both actual size and in an enlarged version to show detail.
6. The actual pin size may range from 3/4" to 2" (length and width). The size and number of letters in the design should be taken into consideration; a letter on a 10" piece of paper will be reduced to 1/10" on a 1" pin. Therefore, fewer letters and greater size is recommended for a more decipherable pin.
7. The design may be presented either in portrait or landscape layout.
8. The design must be printed in color on photo or card stock paper and mounted on a 8.5" x 11" mat or poster board.
9. The pin must include (at least) the official TSA logo letters. It also must represent a state association (include the shape and/or name of the state association).

10. The TSA emblem can be used only in accordance with trademark policies that appear on the national TSA website (www.tsaweb.org). From the homepage, click on About TSA and then Trademark Policies. The TSA logo may be used with or without the registered trademark symbol (the circle R).
11. Promotional designs which do not adhere to rules may be disqualified from judging. Only designs receiving blue and red ribbons will be displayed.

Judging Criteria:

Designs will be evaluated for creativity and effectiveness to communicate a message, neatness, and technical quality using the following rubric:

1-30 points – Inspiration for graphic design, design process, and relevance

1-70 points – First impression of graphic, graphic appropriateness, dominance, balance and proportion, and incorporation of graphic design principals.

For further information or a sample judging sheet, refer to the 2012 & 2013 Middle School Technology Activities from the National TSA Competitive Events Guide or contact Tom Cummings, Instructional Supervisor for Technology Education at (305) 693-3018.

Promotional Graphics (High School):

An original graphic design that can be used to promote participation in TSA Competitive Events, using a minimum of three colors, which reflects, interprets, or in some other way communicates the essence of one of the following TSA competitions: Biotechnology Design; On Demand Video; and Prepared Presentation.

Rules:

The following information must be included in the design:

1. Technology Student Association
2. TSA official logo
3. The words "Technology Student Association" are part of the logo design. Use of the emblem, therefore, meets #1 above, but entries also may include "Technology Student Association" separately.
4. The design must incorporate at least one (1) full color version of the official TSA emblem. The TSA emblem can be used only in accordance with trademark policies that appear on the national TSA website (www.tsaweb.org). From the homepage, click on "About TSA" and then on "Trademark Policies".
5. The design size may not exceed 20cm (8") X 25cm (10") dimension in portrait or landscape layout.
6. The design must be produced using desktop publishing system. The system can be either a Windows or Macintosh operating system. The chosen software must be able to generate color separations. Examples of software include Photoshop, Corel Draw, PageMaker, Quark-Xpress, and Harvard Graphics, etc.
7. The design must include a minimum of three colors. The typeface(s) must be original or traditional in design. The required alpha-numeric characters may be incorporated as an integral part of the illustration.
8. A color printout of the design must be submitted. The printout must be prepared on a piece of a white mat board. Computer generated type and public domain computer clipart may be used in the design.
9. Use of copyrighted or registered artwork in the design is prohibited without verified permission from the original artist/publisher.

10. A design for this event is intended for use as a promotional poster or t-shirt or publications. It may be presented in portrait or landscape layout on an eight and a half inch by eleven inch white mat board within an eight inch by ten inch space

Judging Criteria:

Graphic Designs will be judged using the following rubric:

35 points - Impact: effective depiction, eye appeal

25 points - Graphic: appropriateness, readable/dimensions/placement of fonts, final product presentation

20 points - Design Elements: balance, dominance, proportion, unity

20 points - Technical Explanation: one page, programs used, inspiration, graphics relates to competition, grammar/spelling, cited work in MLA format.

For further information or a sample judging sheet, refer to the 2011-2012 TSA Senior High School Official Competitive Events Guide or contact Tom Cummings, Instructional Supervisor for Technology Education at (305) 693-3018

TSA Desktop Publishing (High School):

Participants develop a portfolio of materials during the current school year. The portfolio includes a tri-fold pamphlet, a three-column newsletter and a poster. The Desktop Publishing event gives TSA students the opportunity to demonstrate their understanding of desktop publishing software and the technology used to prepare three common publication formats. The theme for 2012 is Beyond Tradition.

Rules:

1. This contest is for individuals. No group entries will be accepted.
2. All entries are to be completed on an eight and half inch by eleven inch paper.
3. The portfolio items must incorporate the selected theme. The content of the notebook items must be appropriate for viewing at the National TSA Conference. Any notebook that includes images depicting sex, drugs, tobacco, gangs, cults etc. will be disqualified.
4. The use of color is optional.
5. All entries are to be mounted on illustration board or similar for display.
6. Clip art may be used for the notebook.

Judging Criteria:

Designs will be evaluated for creativity and effectiveness to communicate a message, neatness, and technical quality using the following rubric: 1-50 points – Portfolio: Tri-fold pamphlet, Three column newsletter, poster, theme, proper layout and graphic design.

For further information or a sample judging sheet, refer to the 2011-2012 TSA Senior High School Official Competitive Events Guide or contact Tom Cummings, Instructional Supervisor for Technology Education at (305) 693-3018.

Transportation Modeling (High School):

Using materials allowed by the rules and following required specifications, participants design and produce a CO2 powered scale model of a vehicle that fits the annual design problem and that takes appearance and performance into consideration. Theme for 2012 is a pre 1960 Antique Vehicle cart.

Rules:

1. Only one entry per student will be permitted.
2. Entries must include a scale model and a notebook.
3. The distance between start line and finish line on the test track is determined by the event coordinator on site.
4. Model and Notebook must meet the following specifications:

5. **Model:**

M1 The model must reflect the annual design problem (see above)

M2 The body itself must be made from wood.*

**Additional parts such as body strengtheners, fenders, plastic canopies, exhausts, air foils, mirrors, and antennae may be attached to or enclosed within the vehicle and may be constructed from materials other than wood excluding glass or liquids. These parts must be fastened securely unless they are to be removed prior to the timed run. Any removable parts must be identified as removable on the drawings.*

		MINIMUM	MAXIMUM
M3	Body total width (including wheels).....	none	4"
M4	Body height with wheels	none	5"
M5	Body mass (completed without CO ₂)	none	2 pounds.

6. **Cartridge Hole:**

C1 The power plant hole must be at the farthest point at the rear of the car and must be drilled parallel to the race surface to assure proper puncture of the CO₂ cartridge. Additions to the rear of the car that obstruct the launch mechanism must be removed from the timed run or the vehicle is considered not raceable and receives no time points. A mechanism of 1/8" thickness around the entire power plant hole must be maintained on the vehicle for safety.

C2	Hole depth	2"	2.125"
C3	Safety zone thickness	0.125"	NONE
C4	Chamber diameter	0.75"	0.8125"
C5	Lowest point of chamber diameter to race surface	1.125"	1.625"

(with wheels)

7. **Eye Screws:**

ES1 Vehicles must have no more than 2 eye screws per car that meet tolerances. They must not make contact with the racing surface. The track string must pass through both screw eyelets, which are to be located on the center line of the bottom of the car. **Glue may be used to reinforce the eye screws.** It is the responsibility of the car designer/engineer to see that the eye screw holes are tightly closed to prevent the track string from slipping out. As with all adjustments, this must be done prior to event check-in.

ES2	Inside diameter	0.125"	0.25"
ES3	Distance apart (at farthest point)	5"	none

8. **Wheels:**

W1 Dimension should be consistent with the scale of the body.

9. **Notebook:** The submitted notebook must be bound and may not exceed 12" x 18". Documentation for this event must not include the name of the chapter or state. All ideas, text or images from sources other than the designer must be cited. Cited works should be in MLA format. Also, pages that are 11" x 17" in size should be folded to fit in the notebook:

NB1. A standard three (3)-ring binder, with a clear front sleeve for a cover page, is required. The cover page must include the event title, the conference city and state, and the year. A picture of the vehicle may be included as well. In addition to the 11" x 17" pages noted, the inside of the binder must include the following single-sided, 8.5" x 11" pages in the order below:

	MAX. PAGES	MAX. Size
NB2. Title page with the event title, the conference city and state, and the year. Don't forget! Your documentation must not include the name of your chapter or state	1 page	8.5" x 11"
NB3. Table of contents	1 page	8.5" x 11"
NB4. Description of designer's vehicle, noting inspiration for the choice and design of the vehicle, history and evolution of the original vehicle as well as design elements that set the vehicle apart from others	1 page	8.5" x 11"
NB5. Photo examples of current or past vehicles that are similar to this year's theme or that were used as inspiration for the entry	1 page	8.5" x 11"
NB6. Concept drawings/detailed sketches or 3D CAD modeling	2 pages	11" x 17"
NB7. Photos of the clay, foam, or wax mock up	1 page	8.5" x 11"
NB8. Final technical illustrations (orthographic)	2 pages	11" x 17"
NB9. Photos of the production of the model	1 page	8.5" x 11"

10. **Display:** The model may be presented for evaluation on a display not to exceed 12" tall by 12" deep by 24" long (including the model). The notebook is considered part of the display but is placed with it.
11. No repair or maintenance on entries is allowed after the entries have been registered. Accessories that are to be removed prior to the race must be designated in writing by the participants at registration. Undamaged wheels that come off during the event may be replaced as determined by the Superintendent. Damaged wheels may not be replaced.

Judging Criteria:

Notebook	40 Points
Model	55 Points
Time Trial	5 Points

Inventions and Innovations (Middle School):

Challenge: Investigate and determine the need for the invention or innovation of a device, system or process and brainstorm possible solutions to determine the best idea for the invention or innovation. The participant will: 1. create a prototype or model 2. develop a stand-alone presentation and 3. document work completed as they prepared to promote and demonstrate their idea for the invention or innovation.

The theme for 2012 is Alternative Energy: Solar, wind, nuclear, water, thermal, chemical, etc.

Rules:

1. Each entry must be registered and an entry tag or copy must be adhered to each part.
2. Only one entry per individual.

Regulations:

1. All entries should be based on the annual theme.
2. Determine a format or method for documenting information in a stand-alone presentation.
3. A model of the device/system is required.
4. The device/system is to be mounted on a base not to exceed 18"x18". The stand alone presentation should be no larger than a standard science board.

5. Identify a need that potential for the invention of a device, system or process.
6. Brainstorm ideas for possible inventions/innovations relative to the identified need; choose a final idea and work on the design and details.
7. Design and construct a model/prototype and visual aid(s) that can be used to enhance the presentation. The model can be scaled and may be more of a conceptual model, versus a working model, of a device, system or process.

Judging will be based on the following criteria:

Documentation	10 Points
Description of need and Invention/Innovation	10 Points
Model/Photographs	10 Points
Static Presentation.....	10 Points
Identification of need	10 Points
Description of Invention/ Innovation.....	10 Points
Brainstorming process	10 Points
Creativity of presentation	10 Points
Overall effectiveness of Presentation	10 Points
Invention is realistic	10 Points

For further information or a sample judging sheet, refer to the 2012 & 2013 Middle School Technology Activities from the National TSA Competitive Events Guide or contact Tom Cummings, Instructional Supervisor for Technology Education at (305) 693-3018

Class Descriptions:

- Class 601 - Level I - Middle School Dragster Design Challenge
- Class 602 - Level II – High School School Dragster Design Challenge
- Class 603 - Level III– Exceptional Education Middle School Dragster Design Challenge
- Class 604 - Level IV – Exceptional Education High School Dragster Design Challenge
- Class 605 - Level I – Promotional Design Challenge Middle School
- Class 606 - Level III– Promotional Design Challenge Exceptional Education Middle School
- Class 607 - Level II – High School Promotional Graphics
- Class 608 - Level IV – Exceptional Education High School Promotional Graphics
- Class 609 - Level II – High School Desktop Publishing
- Class 610 - Level IV – Exceptional Education High School Desktop Publishing
- Class 611 - Level II – High School Transportation Modeling
- Class 612 - Level IV – Exceptional Education High School
- Class 613- Level I Middle School Inventions and Innovations
- Class 614 - Level II - High School Inventions and Innovations
- Class 615 - Level III- Middle School Exceptional Student Class
- Class 616 - Level IV - High School Exceptional Student

Premiums, Plaques and Trophies:

Overall First Place	Trophy
Overall Second Place	Trophy
Overall Third Place	Trophy
Purple Ribbon	\$5.00 and Rosette
Blue Ribbon	4.00
Red Ribbon	3.00
White Ribbon	2.00
Yellow Ribbon	Ribbon Only

If there are no entries meeting the quality standards for any special awards, no award will be given.