



Steve Price, Georgia TSA Executive Director, 678-551-0840 [sprice@gatsa.org](mailto:sprice@gatsa.org)

The Technology Student Association (TSA) is a national organization for elementary, middle and high school students who are presently enrolled in or have completed technology education classes. Engineering & technology education classes have a twofold mission: to help students gain an understanding of the engineering career field, the development and use of technology and to assist in the development of individual potential. TSA fosters this mission by developing leadership abilities and instilling a sense of pride in one's work. TSA also promotes high standards of technical ability, scholarship and safety. TSA is an organization that values the unique capabilities of students and offers many opportunities for personal growth and success.

Technology Day at the Georgia National Fair provides Georgia TSA (Technology Student Association) members with an opportunity to compete in various competitions to win money for their chapter and participate in a motivational rally to help get you pumped up and excited about the year to come!

Open to all students who are presently or have been enrolled in any technology education class in any middle school or high school in the State of Georgia.



[www.GeorgiaNationalFair.com](http://www.GeorgiaNationalFair.com)

**All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.** PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at [sprice@gatsa.org](mailto:sprice@gatsa.org) or [contests@gnfa.com](mailto:contests@gnfa.com). Please help us prevent entry disqualifications.

Advisors are required to register online at GeorgiaNationalFair.com (<https://www.georgianationalfair.com/p/georgialiving/youth>) for all competitions by **September 7, 2022**. Late entries will not be accepted. **No substitutions allowed.** Required password must be obtained by Sept. 5, 2022.

Exhibitors will be required to turn in a copy of their online registration confirmation to check-in for competitions.

**PLEASE NOTE THAT THE COMPETITIONS AND THE RALLY ARE TWO SEPARATE EVENTS AND REQUIRE SEPARATE REGISTRATION.**

**Rally information is included on the last page of this information. \*\*\*IMPORTANT - SEE FAIR GATE ENTRY PROCEDURE AND FEES.** For rally questions, please contact Georgia TSA at 678-551-0840 or [sprice@gatsa.org](mailto:sprice@gatsa.org).

## NEW FOR 2022

ONLINE REGISTRATION HAS CHANGED. You will still log in as your "club", but all contests will be entered in the Chapter/Club name.

When you add the exhibitor, you will enter the SCHOOL NAME in the first name field and TSA in the last name field. You will add all entries under this one exhibitor name.

All checks \$20 or more will be made out to the Chapter and the advisor/agent will be responsible for distributing funds to participants. Participant names must be entered in the Student Name field for each entry to be able to track premium awards.

# **GEORGIA NATIONAL FAIR TSA SUPERIOR CHAPTER AWARD**

**1<sup>st</sup> Place - Superior Chapter - \$500**

**2<sup>nd</sup> Place - Reserve Superior Chapter - \$250**

Sponsored by the Georgia National Fair

All placings will be put on a point system, example: 1<sup>st</sup> place=10 pts, 2<sup>nd</sup> place=9 pts, etc. These points will be calculated by chapter and the chapter with the highest accumulated points after the last competition will receive a GNF Superior Chapter Award plaque and \$500. The second place chapter will receive a GNF Reserve Superior Chapter Award plaque and \$250.

**Congratulations!**  
**2021 Georgia National Fair**  
**TSA Superior Performance Award Winners**

*Superior Chapter*  
*Parkview High School*

*Reserve Superior Chapter*  
*Pickens County High School*

**TSA RULES**

1. Open to all students who are presently or have been enrolled in any technology education class in any middle school or high school in the State of Georgia.
2. All participating students must report with their teacher/advisor to the East ticket gate for admittance.
3. Top ten entries will be on display in the Miller-Murphy-Howard Building during the remainder of the Fair; other projects may be picked up after 2:30 PM on October 10, 2022.
4. **Winning entries not picked up at the Fairgrounds after the Fair will be available at the GA TSA Locust Grove Office for chapters within driving distance in the Metro/ South Metro Counties. The entries belonging to chapters outside of the Metro/South Metro can retrieve their entries at Fall Leadership Conference '22 – on Jekyll Island. Any entries not picked up at that time will be discarded.**
5. **ONLINE REGISTRATION WITH GEORGIA NATIONAL FAIR IS REQUIRED FOR ALL ENTRIES. DEADLINE IS SEPT. 7, 2022. Late entries will not be accepted. Deadline for securing account password is Sept. 5, 2022.**
6. **Exhibitors will be required to turn in a copy of their online registration confirmation to check-in for competitions. NO SUBSTITUTIONS WILL BE ALLOWED.**
7. **NOTE: Due to increased administrative costs, for chapters/clubs that earn less than \$20 in cumulative premiums, the exhibitors who place will receive ribbons, but will not be issued a check.**

**COMPETITIONS**

**Pre-judged Competitions:** Pre-judged Competitions will be turned in at the CORE Conference or electronically submitted by 11:59 PM **September 7, 2022**. These events will be judged during CORE (Chapter Officer Retreat for Excellence) and not at the Rally. None of those events will be accepted or judged at the Rally.

**On-site Competitions will be judged at the fair with an interview or live testing and must be turned in October 10, 2022 between 9:00 AM and 10:45 AM.**

**TSA Events**

**\*Pre-judged Competitions**

- Architectural Design
- Georgia TSA Pin Design
- Program Promotion High School
- Program Promotion Middle School

**On-site Competitions**

- Alternative Energy Design - Rubber Band Powered Airplane
- Conceptual Design - CO2 Dragster
- Manufacturing Prototype
- Mousetrap Car Challenge
- Robotic Challenge H.S. "Rover Challenge"
- Robotic Challenge M.S. "Rover Challenge"
- Structural Design - Child's Riding Toy

<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th-7th</u>	<u>8th-10th</u>
\$100	\$75	\$50	\$25	\$15	\$10

Sponsored in part by:



# ARCHITECTURAL DESIGN CHALLENGE

**ALL EVENTS MUST BE ENTERED** with the School Name in the “First Name” field and “TSA” in the “Last Name” field. Example: First Name “Best High School” and Last Name “TSA”) and individual names must be listed in the Student Name field.

Enter online at [www.GeorgiaNationalFair.com](http://www.GeorgiaNationalFair.com)  
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by **SEPTEMBER 7, 2022.**

Entries are limited to one per chapter.

**DIVISION 40101 ARCHITECTURAL DESIGN CHALLENGE**

**CLASS**  
**01 Architectural Design Challenge**

**Design Challenge Background:** Career Education has evolved over the last several years. What’s being taught and how it’s taught has driven changes in facilities. Taking a space and designing it to create classrooms and labs which are equipped with state-of-the-art equipment and technology that accommodate the current activities and teaching strategies as well as making them flexible for an assortment of activities is the target these days for middle and high school programs. Elementary School level STEM labs do not exist in many school systems.

## **OBJECTIVE:**

The focus of the 2022 Architectural Design problem is to Design a STEM Lab for an elementary school to accommodate 30 students in a Maximum room size of 2000 sq feet. Your task should include research of what activities would take place in an elementary school STEM lab, necessary securable storage space, moveable work stations.

The design must include:

- a. A defined, safe entry and exit
- b. One or more areas where environmental suits are stored and accessed.
- c. One or more Assembly/Gathering spaces
- d. Activity Areas appropriate to support the team’s interpretation of the Design.
- e. Support spaces as necessary to sustain the use and function of the facility. Some examples of support spaces are: janitorial, storage, mechanical, electrical, food preparation
- f. Bathrooms / Toilets
- g. Other necessary sections as discovered through the research.

**PROCEDURES:** Students must submit their display during check-in at CORE on September 10, 2022. Tech Day entrants who cannot attend CORE may ship their entry to Steve Price, GA TSA c/o Kaplan Mitchell Retreat and Conference Center, 70 Darom Lane - Clayton, GA 30525 to arrive by September 9, 2022, or have the entry brought to CORE by another Chapter. GA TSA is not responsible for entries lost in shipping. No entries for Middle or High School challenge will be accepted at Tech Day.

**A copy of the online registration confirmation will be required to check-in for competition.**

## **CONTEST RULES:**

The design must meet the following criteria:

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2. The participants are to design an architectural floor plan that meets the current year’s problem.
3. The floor plan is to be submitted on maximum drawing sheet cut size B (11” x 17”) with standard scale as found on Architectural triangular scale, (1/8” = 1’ - 0”, 1/4” = 1’ - 0”, etc.). Smaller format is acceptable.
4. A 3-D rendering must be submitted on maximum drawing sheet cut size B (11” x 17”). Smaller format is acceptable.
5. While 3-D modeling may be used to enhance the rendering, the actual habitat must be the original work of the student. **Do not submit a physical 3-D model of your design.**

**ARCHITECTURAL DESIGN CHALLENGE (continued)**

6. A written description of the style and merits of the design concepts must be included and must answer the following questions (1 page).

- a. How does your design meet the main requirements for the intended purpose?
- b. Construction materials and methods shall be clearly defined and should be carefully selected to take into account durability, and overall appropriateness.
- c. What are the advantages of your layout?
- d. Why have you included specific features?
- e. Clearly define Fire and Life Safety measures systems.
- f. Please supply a list of all credits for any third party models used within your rendering.

**EVALUATION:**

**Design (35 pts)**

- Does the design incorporate features needed and required for the intended purpose?
- Is the layout logical and functional?
- Are the sizes of the rooms adequate for their purpose?

**Quality (25 pts)**

- Is the drawing neat and precise?
- Are rooms properly labeled?
- Are dimensions correctly placed?

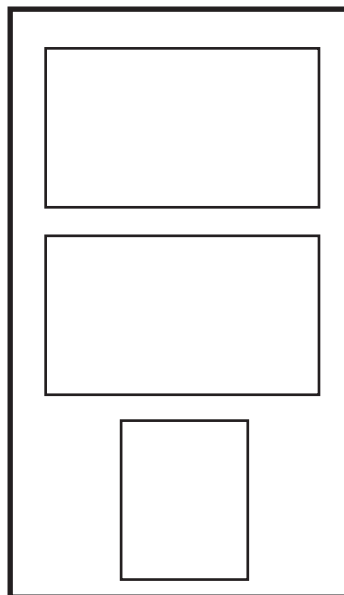
**Written Description (25 pts)**

- How does your design meet the main requirements for the intended purpose?
- What are the advantages of your layout?
- Why have you included specific features?
- List of credits

**Rendering (15 points)**

- 3-D Rendering

**Sample of Mounting**



# GEORGIA TSA PIN DESIGN CHALLENGE

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**DIVISION 40201 GEORGIA TSA PIN DESIGN CHALLENGE**

## **CLASS**

**01 Georgia TSA Pin Design Challenge**

**OBJECTIVE:** Participants design a lapel pin that can be used to promote Georgia TSA at legislative events and that members can trade at the TSA National Conference Mixer.

**Entries are limited to three per chapter.**

**PROCEDURES:** Students must upload their designs via the GA TSA Event Management System Tech Day Registration site no later than midnight September 7, 2022 in a PDF document.

**A copy of the online registration confirmation will be required to check-in for competition.**

## **CONTEST RULES:**

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2. The design must meet the following criteria:

- Any and all use of the TSA emblem must abide by TSA Trademark Policies as outlined in the National TSA webpage at [www.tsaweb.org](http://www.tsaweb.org). You cannot alter the logo or its parts. (ie: using standard font in place of the logo letters in the logo)
- There must be no use of copyrighted materials other than the TSA logo.
- Participants will design a TSA pin that can be worn on blazers, jackets, shirts, sweaters, or blouses.
- The pin must include the letters TSA. It must also include either the state shape or the word Georgia or both in the design. Icons that represent our state have been used in previous designs.
- The design of the lapel pin must avoid using the shape of the state filled with art. Please be creative with the shape and make something unique and creative. The state shape may be used in the art, but must not be the shape of the pin.
- The design must be computer generated and submitted as an 8 ½" x 11" document and must include the design in both actual size and in an enlarged version to show detail.
- The actual pin size will range from ¾" to 2". The size and number of letters in the design must be taken into consideration; a letter on a 10 inch piece of paper will be reduced to 1/10 of an inch on a 1" pin. Therefore, fewer letters and greater size is recommended for a more legible pin.

## **EVALUATION:**

Submissions will be screened for rules infractions by the competition committee prior to being judged by all attending participants at CORE. Each registered Chapter will receive colored tickets to vote for the BEST design. Each entry's votes will be counted and ranked to determine Top 10 Placements for Tech Day.

NOTE: Georgia TSA reserves the right to make any changes to the design which may conflict with its production. All pin designs become the property of GA TSA. When a participant enters a design, he or she relinquishes all rights for the sale and use of the design to GA TSA.

# PROGRAM PROMOTIONAL CHALLENGE

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**DIVISION** 40303 PROGRAM PROMOTION CHALLENGE MIDDLE SCHOOL  
40304 PROGRAM PROMOTION CHALLENGE HIGH SCHOOL

## CLASS

### 01 Program Promotion Challenge

**OBJECTIVE:** Chapter members must work together to create a display that could be used to Promote their school’s STEM/Engineering Program offerings which includes their TSA chapter. The display could be used at PTSA or Open House to explain/advertise all that your STEM/Engineering Program has to offer. Program Promotional Challenge will be judged on both the middle school and high school levels. Places will be awarded for this event on each level.

Entries are limited to one per chapter.

**PROCEDURES:** Students must submit their display during check-in at CORE on September 10, 2022. Tech Day entrants who cannot attend CORE may ship their entry to Steve Price, GA TSA c/o Kaplan Mitchell Retreat and Conference Center, 70 Darom Lane - Clayton, GA 30525 to arrive by September 9, 2022, or have the entry brought to CORE by another Chapter. GA TSA is not responsible for entries lost in shipping. No entries for Middle or High School challenge will be accepted at Tech Day.

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2. The total assembled maximum display size is 46” in width, 36” in height, and 18” in depth. **Although some pieces on the display may be made from plastic or wood, the main board may not be made from solid plastic such as Acrylic or PVC. However, sign making materials like Coroplast and Fome-Cor are acceptable.**

3. The display must be able to fold flat for transporting and storing. Attachments must be able to be removed and the chapter must provide a labeled container to store the loose attachments in, with specific instructions as to where these are to be placed and how to set up the display. Maximum Container Size: 10”x12”x15”

4. **The use of copyrighted artwork or characters is prohibited and will result in disqualification.**

5. The entry must be a display only. Extra printed materials must not be submitted with the display and will not be judged as a part of the project (ie. brochures, flyers, etc.).

6. Theme of the entry must be “Your School’s STEM/Engineering Program”.

7. Electricity will not be provided for the displays.

8. The top entries will be displayed during the Georgia National Fair; therefore, chapters must be prepared to leave their display in its entirety. The use of expensive accessories (such as laptop computers, tape players, etc.) is strongly discouraged unless the team is prepared to leave the item for the duration of the Georgia National Fair. Neither the Georgia National Fair nor Georgia TSA will be responsible for these items.

## EVALUATION:



**Go/No Go (DQ offenses):**

- Fits within 46" width, 36" height, 18" depth when set up, but folds flat

**PROGRAM PROMOTIONAL CHALLENGE (continued)**

- Container for "additional materials" no bigger than 10" x 12" x 15" includes set-up/breakdown instructions.
- Main board must be made from Chloroplast or Foam-Core (no solid plastic, wood, etc)
- Must not include copyrighted artwork or characters

**Content 50%**

- Clearly displays School Name (including school level...MS vs HS)
- Includes Information about STEM/Engineering Courses
- Includes Information about your TSA Chapter
- Includes Information about your School, Community, and/or State involvement
- Other information central to your program not listed here

**Design 30%**

- Effective Layout – Flow of Information
- Readability/Clarity
- Color Scheme
- Proportionality

**Impact 20%**

- Overall impression
- Appeal to broad audience, including those who might be unfamiliar with STEM/Engineering programs

# ALTERNATIVE ENERGY DESIGN

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**DIVISION 40401 Alternative Energy Design**

**CLASS**  
**01 Rubber Band Powered Plane**

**OBJECTIVE:** The objective is to build the lightest plane powered by a rubber band that will fly straight for at least 40 ft..

**Entries are limited to one per chapter.** (One team member will demonstrate on site.)

**PROCEDURES:** One (1) Student per team must submit the completed plane in the storage/travel box during check-in at Reaves Arena at the Georgia National Fair. During turn in, you will sign up for a time to return to complete your three attempts at flying the 40-foot straight course with the least number of rubber band twists.

**A copy of the online registration confirmation will be required to check-in for competition.**

## CONTEST RULES:

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2. Students will sign up for a time slot and test their own devices in front of the judges. Students will have 30 seconds to set up prior to testing.

3. The device must pass a GO-NO-GO inspection including a safety inspection to insure no harm or damage will occur. Any unsafe devices WILL NOT BE TESTED and be counted as a disqualification.

4. The device must meet the following specs:

- Wing span not to exceed 13 inches
- Length of fuselage not to exceed 12 inches.
- Tail fin height not to exceed 4 inches
- Storage/travel box requirements not to exceed 14x14x5 inches (Uline model # S-4621)
- 

## MATERIALS:

- Delta Dart Model Airplane from Pitsco - Part URL is: <https://www.pitsco.com/Delta-Dart-Model-Airplane?SKU=W50187&tp=1>
- The plane should be as light as possible and fly straight for at least 40 feet with the least number of rubber band twists. The time of flight will be recorded to break ties if needed.

## TESTING:

- The plane will be weighed to determine which entry is the lightest.
- The student will get three attempts the plane straight down the 40-foot course.
- The time it takes the plane to fly straight down the course will be recorded along with the number of twists on the rubber band.

## EVALUATION:

- Is the plane the lightest entry?.
- Student will have three opportunities to fly the 40-foot course straight.
- Award places determined by the plane that can travel the straight course for 40 feet the fastest with the fewest number of twists of the rubber band.
- Ties will be broken by the determined flight time of the plane.

# CONCEPTUAL DESIGN CHALLENGE

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 (<https://www.georgianationalfair.com/p/georgialiving/youth>) by **SEPTEMBER 7, 2022.**

**DIVISION 40501 Conceptual Design Challenge**

**CLASS**  
**01 Conceptual Design - CO2 Dragster**

**OBJECTIVE:** The participant will design a CO2 dragster for aerodynamic design and aesthetic appeal while considering regulations and producing a two-view orthographic drawing of the model.

**Entries are limited to two per chapter.**

**PROCEDURES:** Students should submit their Conceptual Design Challenge vehicles during the event check-in at the Georgia National Fair.

**A copy of the online registration confirmation will be required to check-in for competition.**

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2. Each entry must be submitted with a full-size orthographic drawing of the completed vehicle. A two (2)- view (top and side, 1:1 scale drawing with the metric dimensions is made on paper no larger than 11” x 17” drawing paper. Drawings are developed using standard engineering practices and procedures. The drawing may be produced using traditional drafting methods or CAD. The title block includes only the participant’s entry number that is assigned at registration time and is placed on the entry and drawing during check in.

**Dragster body**

1. One (1)-piece, construction of wood or plastics, including urethane modeling foam
  - a. Two (2) or more like or unlike pieces of material glued together are not considered one (1)-piece
  - b. Any type of lamination will result in disqualification.
  - c. No add-ons, such as body strengtheners, fenders, plastic canopy, exhausts, or air foils may be attached to or enclosed within the vehicle. Hydro dipping technique is permitted.
  - d. Fiberglass, vinyl wrap, and shrink wrap are considered body strengtheners and cannot be used on the car body for any reason.
  - e. Decals may be used for decoration only; they may not be used to gain an aerodynamic advantage, i.e., decals cannot cover the exterior axle holes or be used to cover open areas of the body

	Minimum.....	Maximum
Body length.....(2023) .....	295mm.....	305mm
Body height with wheels.....		75mm
Body Mass (completed car – no CO2 cartridge).....(2023).....	102g.....	N/A
Body width at the point the axles pass through the body, front and back...35mm.....		42mm
Vehicle total width (including wheels).....		90mm

**CONCEPTUAL DESIGN CHALLENGE (continued)**

**Axles/axle holes/wheelbase**

Dragsters must have two (2) axles per car, no more.

	Minimum.....	Maximum
Bottom of axle hole or bearing above bottom of car body. (Note: This will be measured at the sides of the wood car body, from the bottom of the car directly beneath the axle to the bottom of the axle hole or bearing hole.).....	5mm.....	10mm
Front axle hole from front of car.....	9mm.....	100mm
Rear axle hole from rear of car.....	9mm.....	100mm
Wheelbase (axle distance apart at farthest points).....	105mm.....	270mm

**Wheels**

A dragster must have four (4) wheels, no more. All four (4) wheels must touch a flat surface at the same time. All wheels must roll.

**Evaluation:**

<b>Dragster Specifications</b> .....(subtract 10pts for each item out of spec up to max) .....	<b>(40 pts)</b>
<b>Paint and Graphic elements esthetic quality</b> .....	<b>(20 pts)</b>
<b>Aerodynamic Design / Body Symmetry</b> .....	<b>(10 pts)</b>
<b>1:1 scale orthographic metric drawing (top and side)</b> .....	<b>(20 pts)</b>
<b>Drawing Accuracy/Complete</b> .....	<b>(10 pts)</b>
<b>Total</b> .....	<b>(100pts)</b>

# MANUFACTURING PROTOTYPE

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**DIVISION 40601 Manufacturing Prototype**

**CLASS**  
**01 Manufacturing Prototype**

**OBJECTIVE:** Participants will use additive and/or subtractive manufacturing of any traditional, Computer Numerical Control (CNC), 3D printing, or laser technology available to create a product that fits the year’s theme. This year’s theme is an item for a desk that includes a clock.

**Entries are limited to one per chapter.** (There can be up to 4 members on the team)

**PROCEDURES:** Students should submit the completed product and the display board during check-in at Georgia National Fair at Reaves Arena. Rubric scores will be based on a review of the product and the display.

**A copy of the online registration confirmation will be required to check-in for competition.**

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2. Students will comprise a team of up to 4 individuals an award for the Georgia TSA Member of the Year. The name of the recipient of the award is Timothy Parker. The award date is May 1, 2022..

**Product:** One sample of the manufactured product must be submitted

- The product may use additive and/or subtractive manufacturing of any traditional, Computer Numerical Control (CNC), 3D printing, or laser technology available.
- The prototype must be constructed using two (2) CNC or CIM processes, including, but not limited to:
  - CNC Machining
  - Laser Engraving
  - 3D Printing
  - CNC Vinyl Cutting
- Traditional manufacturing methods may be used in addition to the two (2) required CNC/CIM processes.
- The finished product may not exceed 8”x8”x8”.
- The product may be made of wood, plastic, or metal.
- The design may use a battery operated clock movement kit, including hands or a clock insert Stock fasteners may be used. These include (but are not limited to) nuts, washers, screws, etc.
- Adhesives may be used in the product
- Parts may be finished (sanded, painted, stained) if necessary.
- A cell phone or tablet SHOULD NOT be submitted with the product (Pictures on the display should show the product being used with a phone or tablet)
- The Georgia TSA logo MUST be incorporated into the product design.

**Display:** A 20”x30” foam core, two-dimensional display must be submitted, containing the following items:

- The name of the event (ManufacturingPrototype)
- The name and description of the product created, including the purpose of the product.
- A CAD drawing of the product. This may be a 3D model, a working drawing, or an isometric assembly drawing.
- At least four pictures (actual photographs, not renderings) that show the process of manufacturing the item. Captions must accompany each picture
- A Bill of Materials

EVALUATION:

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Product: Theme	The effort is basic, with only a loose association to the product theme.	The effort adequately addresses the product theme.	The effort to address the product theme exceeds expectations.
Product: Additive or subtractive manufacturing piece (x2)	One or no CNC or CIM processes were used; finished product is poorly constructed and/ or doesn't match the CAD drawing on the display.	Two CNC or CIM processes were used; however, the product quality could be improved or the product doesn't match the CAD drawing.	Product is attractive and neat and matches the CAD drawing indicated on the display. The product uses at least two CNC or CIM processes including, but not limited to CNC machining, 3D printing, laser engraving, CNC Vinyl Cutting.
Display: Components	Four or more components are missing from the display.	Two or three of the required components are missing from the display.	The display contains the name of the event, name of the product, a description of the product, a CAD drawing, at least four photographs and a Bill of Materials
Display: Drawing	The CAD drawing is poorly executed with key elements of the product design missing.	A CAD drawing is included, but components are missing from the drawing.	An accurate CAD drawing is included in the display. This may be a 3D model, a working drawing or an isometric assembly drawing.
Display: Manufacturing Process X2	Photographs are missing or are not labeled or do not show the process of manufacturing the product.	Some photographs are missing or are not clearly labeled. The manufacturing process is not clearly explained.	Four or more photographs of the manufacturing process are provided. All photographs are clearly labeled and thoroughly explain the manufacturing process
Display: Bill of Materials	Bill of Materials is included, but more than three or materials are missing.	A Bill of Materials is included, with one or two materials missing; Bill of Materials is generally organized.	All components are included on the Bill of Materials and it is well organized

# MOUSETRAP CAR CHALLENGE

**ALL EVENTS MUST BE ENTERED** with the School Name in the “First Name” field and “TSA” in the “Last Name” field. Example: First Name “Best High School” and Last Name “TSA”) and individual names must be listed in the Student Name field.

Enter online at [www.GeorgiaNationalFair.com](http://www.GeorgiaNationalFair.com)  
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by **SEPTEMBER 7, 2022.**

**DIVISION 40701 MOUSETRAP CAR CHALLENGE**

**CLASS**  
**01 Mousetrap Car Challenge**

**OBJECTIVE:** The objective is to build a vehicle that is powered solely by a standard-sized mouse trap that will travel and stop closest to a finish line located 15 feet from the start line in the shortest amount of time.

**Entries are limited to one per chapter.** (There can be up to 4 members on the team.)

**PROCEDURES:** Students must submit the completed car during check-in at Reaves Arena at the Georgia National Fair. During turn in, you will sign up for a time to return and run your car.

**A copy of the online registration confirmation will be required to check-in for competition.**

## **CONTEST RULES:**

- All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations. PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at [sprice@gatsa.org](mailto:sprice@gatsa.org) or [contests@gnfa.com](mailto:contests@gnfa.com). Please help us prevent entry disqualifications.**
- Students will comprise a team of up to 4 individuals to create a Mousetrap Car/Vehicle.
- The vehicle **MUST** be powered by a single VICTOR brand mouse trap measuring: 3 7/8" L x 1 3/4" W. The mouse trap spring **CANNOT BE ALTERED** to add power in any way.
- The vehicle may not start with additional potential and/or kinetic energy other than what is stored in the mouse trap spring. Vehicles **MUST** be self-starting. Rubber bands or any other elastic materials may not be used in the launch mechanism.
- The vehicle must steer itself and may not receive a push in any direction in order to avoid a collision.
- The vehicle must have 3 or 4 wheels that make contact with the race surface.
- The timing of the vehicle will begin when any part of the vehicle passes over the start line and will end when the vehicle comes to rest.
- The distance from the target will be measured from the point of the vehicle that first passed the start line to the finish line or target.
- The overall dimensions of the Mousetrap Car cannot exceed 20" L x 10" W x 12" H. The measurement will be taken while car is in resting position.

## **TESTING:**

The course will be smooth level floor and non-carpeted. The winner will be the vehicle that has obtained the lowest score in either of the two attempts. Any ties will be decided by a single runoff between the tied vehicles.

## **EVALUATION:**

The scoring will be the total of the time in seconds added to the distance from the finish line in centimeters.

Score=time(s) + distance from finish line (cm). The lowest number is the best car.

# ROBOTIC ROVER CHALLENGE

**ALL EVENTS MUST BE ENTERED** with the School Name in the “First Name” field and “TSA” in the “Last Name” field. Example: First Name “Best High School” and Last Name “TSA”) and individual names must be listed in the Student Name field.

Enter online at [www.GeorgiaNationalFair.com](http://www.GeorgiaNationalFair.com)  
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by **SEPTEMBER 7, 2022.**

**DIVISION** 40803 ROBOTIC ROVER CHALLENGE MIDDLE SCHOOL  
40804 ROBOTIC ROVER CHALLENGE HIGH SCHOOL

## CLASS

### 01 Robotic Rover Challenge

**OBJECTIVE:** Design and build a robotic rover that will navigate an obstacle course, deliver a payload, and return to the starting point in the shortest time. Robots must meet the criteria and constraints set forth.

**Entries are limited to one per chapter with up to three members on each team.**

**PROCEDURES:** Students must submit the completed robot for inspection during check-in at the Georgia National Fair at Reaves Arena. Go/No Go criteria will be used to determine eligibility.

**A copy of the online registration confirmation will be required to check-in for competition.**

## CONTEST RULES:

1. **All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations. PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at [sprice@gatsa.org](mailto:sprice@gatsa.org) or [contests@gnfa.com](mailto:contests@gnfa.com). Please help us prevent entry disqualifications.**

2. Robots must pass a GO-NO-GO inspection including a safety inspection to insure no harm or damage will occur. Any robot not passing full Go-No-Go inspection will be disqualified. Challenges to a “No-Go” decision must be made before removing the robot from the holding site. Any robot handled or moved after the initial submission will not be re-evaluated by the judges.

3. Criteria and Constraints:

- Robot can use no more than 6 motors: VEX, FLL, or any DC Motor.
- Acceptable robot construction materials include VEX, FLL, or other robotic platform parts or custom created parts (3D printed, Laser, CNC, etc)
- Robots must fit within a 14” cube (WxDxH). They may expand beyond their starting size constraints. A box jig will be used to test compliance. The robot must fit in a box that reflects max dimensions.
- Robots may not be modified during the event. They can be repaired with referee approval. No significant changes can be made during the repair. The robot must be re-inspected before it will be allowed to compete. Teams may be requested to submit to random inspections by event personnel. Refusal to submit to the inspection will result in disqualification. Referees or inspectors may decide that a robot is in violation of the rules. This will result in a disqualification.
- The robot must be student constructed and NOT from a preassembled kit. For example, RC devices from a box may not be used.
- Any weight added to the robot must be securely attached to the robot.



**ROBOTICS CHALLENGE (continued)**

**The Track:**

The track is 24" wide. It will be constructed of a wooden base with the various obstacles diagrammed below. Device (Go or No-Go)

- Does the robot meet the maximum motor specifications (no more than 6)?
- Is the robot made from VEX, FLL, or a metal chassis?
- Is the robot within the size specifications?
- Is the robot a custom built robot?

Robots will be placed at the starting line and the payload (tennis ball) will be loaded. Time will be started when the team is instructed to begin.

The course will be considered completed when the payload is successfully deposited into the specified receptacle (8" x 8" x 5" box) and the robot fully returns to the starting area. Time will be recorded at this point.

During the run, the driver must remain at their station until released by the referee.

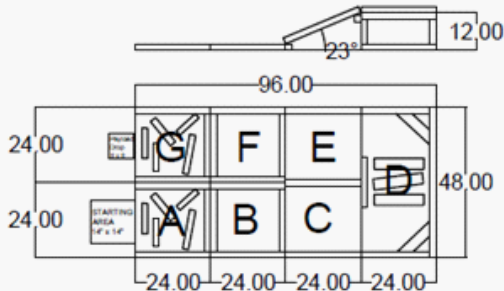
There may be only one driver per run.

If a robot leaves the course, the run is over and the time will be recorded as a DNF.

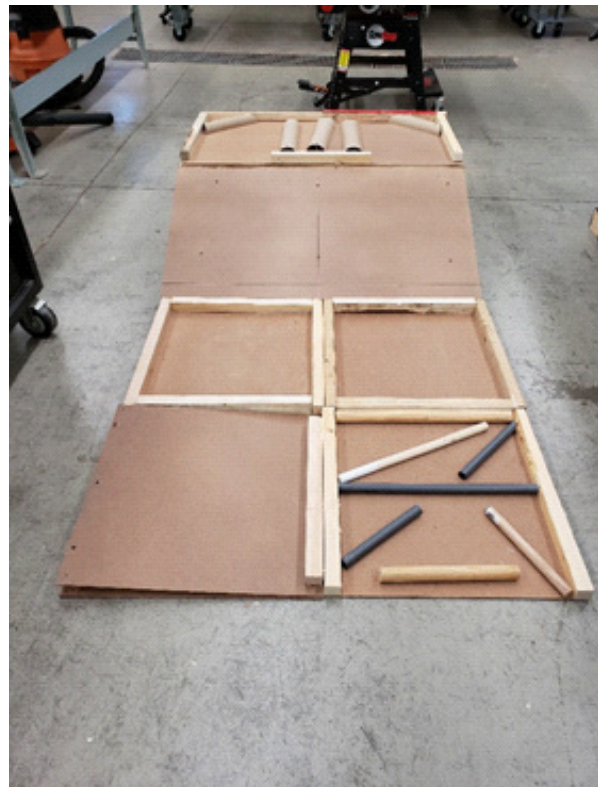
Once a team begins a run, no interventions may be made.

If at any time the robot operation is deemed unsafe or has damaged the playing track surface or sled, the referees will stop the pull and the offending team will not be allowed to finish their pull.

**The top 10 robots will be left for display at the Georgia National Fair. However, the battery, remote control, and microcontroller, in example VEX Cortex Microcontroller, will be allowed to be removed from the robot. The chassis and drivetrain (wheels and motors) will not be allowed to be removed. Robots will be returned to schools after the Georgia National Fair.**



- A - 2' x 2' x 2" Fixed, randomly placed dowel rods up to 1.25" Diameter
- B - 2' x 2' x 2" Sand Pit
- C - 23 Degree Up Ramp
- D - 3.5" w x 1.25" h Speed Bumps
- E - 23 Degree Down Ramp
- F - 2' x 2' x 2" Golf Ball Pit
- G - 2' x 2' x 2" Fixed, randomly placed dowel rods up to 1.25" Diameter



# STRUCTURAL DESIGN CHALLENGE

**ALL EVENTS MUST BE ENTERED** with the School Name in the “First Name” field and "TSA" in the “Last Name” field. Example: First Name “Best High School” and Last Name “TSA”) and individual names must be listed in the Student Name field.

Enter online at [www.GeorgiaNationalFair.com](http://www.GeorgiaNationalFair.com)  
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## **DIVISION 40901 STRUCTURAL DESIGN CHALLENGE**

### **CLASS**

#### **01 Friction Fit Night Stand**

**OBJECTIVE:** Design and build a cardboard children's rideable toy that supports 50lbs. You will use the engineering design process and keep track of brainstorming, iterations, sketches, and prototyping process. Your rideable toy and an engineering portfolio will all be submitted as part of this competition.

**Entries are limited to one per chapter (there can be up to 4 members on the team).**

**PROCEDURES:** Students must submit the completed rideable toy and engineering book during check-in at the Georgia National Fair at Reaves Arena. Go/No Go criteria will be used to determine eligibility. A timesheet will be provided for sign-up at check-in for interview times after the top twelve are established. Rubric scores will be based on a review of the engineering portfolio and interviews.

**A copy of the online registration confirmation will be required to check-in for competition.**

#### **CONTEST RULES:**

**All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.**

**PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at [sprice@gatsa.org](mailto:sprice@gatsa.org) or [contests@gnfa.com](mailto:contests@gnfa.com). Please help us prevent entry disqualifications.**

Criteria and Constraints (Nightstands not meeting these criteria will result in a disqualification.):

1. The Rideable Toy must be made entirely out of cardboard and be friction fit (no glue, tape, etc). The only exception is the axle for the wheels, which may be constructed from wood or plastic.
2. The rideable toy must have a seat for a child to sit no larger than 15" x 10".
3. The rideable toy must have 4 wheels that roll when the toy is propelled.
4. The maximum height of the toy is 15" from the floor.
5. The maximum width of the toy is 15".
6. 4. The maximum length of the toy is 30".
7. The toy must be friction fit with a mass of no more than 4 lbs.
8. The toy must support a mass of 50 lbs without showing major signs of stress.
9. The toy must be TSA themed.
10. The entry must include an engineering portfolio contained in a Clear-Front Report Cover. No other formats will be accepted.

#### **EVALUATION:**

The toy must pass a GO-NO-GO inspection:

- Is the toy made entirely out of cardboard and friction fit(no glue, tape, or non-cardboard parts)?
- Does the toy have a seat for a child that is no larger than 15" x 10"?
- Does the toy have 4 wheels that roll?
- Is the height of the toy 15" or less from the floor?
- Is the width of the toy no more than 15"?

- Is the length of the toy no more than 30”?

**STRUCTURAL DESIGN CHALLENGE (continued)**

- Does the toy have a mass of no more than 4 lbs.?
- Does the toy support a mass of 50 lbs. without showing major signs of stress?
- Does the entry include a clear cover engineering project portfolio?

Any device receiving a “No” answer to any of the above requirements will result in the device NOT BEING FURTHER EVALUATED.

**Engineering Rubric:**

<b>CRITERIA</b>	<b>Minimal performance 1-4 points</b>	<b>Adequate performance 5-8 points</b>	<b>Exemplary performance 9-10 points</b>
Concept	The product does not meet the design criteria and there is little to no evidence to support the choice.	The product is somewhat meets the design criteria and is supported with some evidence of brainstorming and selection.	The product clearly meets the design criteria and is supported with evidence of brainstorming and selection.
Daily Logs	No daily log is provided or the included log contains minimum details.	Daily logs have been included that contain at least 3 days of work.	Daily logs have been included that contain at least 5 days of work.
Engineering Drawings	No drawings are included or drawings are of poor quality with little to no detail or annotation.	Drawings are included in the portfolio but do not include all 3 views. Details are missing and not all annotation is listed.	Detailed engineering drawings are included in the portfolio. Views include top, front and side with full annotations.
Testing and Iteration	Little to no evidence of testing and iteration is present.	Some evidence is present of testing and iteration of the design through logs or other means.	Evidence is present of testing and iteration of the design through logs, photos, and sketches.
Prototype	The build quality is substandard. Joints are loose fitting and the assembly is of poor quality.	The build quality is acceptable. The assembly is of average quality.	The build quality is exceptional. Care is taken to ensure a neat and precise assembly of the final product.

**STRUCTURAL DESIGN CHALLENGE (continued)**

**Interview Rubric:**

<b>CRITERIA</b>	<b>Minimal performance 1-4 points</b>	<b>Adequate performance 5-8 points</b>	<b>Exemplary performance 9-10 points</b>
Organization	Participant(s) seem(s) unorganized and unprepared for the presentation/interview.	Participant(s) is/are generally prepared/organized in the overall presentation/interview.	The presentation/interview is logical, well organized, and easy to follow.
Knowledge	Participant(s) seem(s) to have little understanding of the concepts of the design challenge; vague answers to interview questions are provided.	An understanding of the concepts of the design challenge, and answers to questions, are adequate.	There is clear evidence of a thorough understanding of the design challenge; questions are answered well.
Articulation	The presentation and interview provide an unclear, unorganized, and or illogical description of the project.	The presentation and interview offer a somewhat logical and easy-to-understand project description.	The presentation/interview provides a clear, concise, and easy-to-follow description of the project.
Delivery	The team/individual is verbose and/or uncertain in the presentation/ interview; participant posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the presentation/ interview; participant posture, gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the presentation/ interview; participant posture, gestures, and eye contact result in a polished, natural, and effective delivery.



Steve Price, Georgia TSA Executive Director, 678-551-0840 [sprice@gatsa.org](mailto:sprice@gatsa.org)

**Technology Day Rally October 10, 2022**  
**Reaves Arena, Georgia National Fairgrounds**  
**Deadline for registration for all events is Sept. 7, 2022**

For additional rally information, contact Steve Price, Georgia TSA Executive Director  
 (678-551-0840 [sprice@gatsa.org](mailto:sprice@gatsa.org))

Contest Registration - Deadline: Sept. 7, 2022 on Georgia National Fair Website

Rally Registration – (GA TSA Rally Registration and Wristband Orders Deadline: Sept. 7, 2022 via the GA TSA EMS Registration System via [www.gatsa.org](http://www.gatsa.org))

Rally Registration Fee: \$25.00                      GNF Rides Armbands: \$25.00

All Buses must Park in the East Gate parking lot. All students must report with their teacher/advisor to the EAST TICKET GATE for admittance. Each chapter attending the TSA Tech Day Rally must pre-register with Georgia TSA and pay the \$25 Tech Day registration fee for Advisors, Chaperones, and Students. Bus drivers get in free. Anyone attending that has not pre-registered will not be on the list from EMS and will have to wait until the fair opens to the public and pay the \$14 fair entry fee at the East Gate prior to entering the Fair. Fair personnel will verify the group's entrants outside the East Gate for admittance.

Fair midway armbands must be pre-purchased for \$25 with pre-registration and will be available for pick up during CHECK-IN at Reaves Arena. One advisor from each chapter is required to check in at the designated table upon arrival at Reaves Arena. (Please do not have your chapter members in line for checking in inside Reaves Arena.) Those that do not check in will cause their chapters to be listed as no-shows in the official records. Those chapter advisors that still owe the registration payment will be directed to a separate line to settle the account with the Georgia TSA bookkeeper.

**Schedule for October 10th**

9:00 - 10:45 AM	Registration/Event Check-in and Time Slot sign up
11:00 - 12:00 PM	TSA Rally
12:00 PM	Interviews, Live Events and Judging continue
<u>Approximately 2:00 PM</u>	Ribbons placed on top ten; other entries may be removed at <u>approximately 2:30 PM</u>

There will be no second session. At approximately 2:00PM – ribbons will be placed on Top 10 entries. Winning entries will be put on display in the Miller-Murphy-Howard Building for the remainder of the fair. All other entries must be picked up by the owner. **Please do not remove entries until all ribbons have been placed.** Any exhibit/entry left behind (that does not place) will be discarded. Event and Superior Chapter Winners will be announced and receive their Plaques during Leadercon'22 (Fall Leadership Conference).

Winning exhibits and their ribbons must be picked up at FLC on Saturday afternoon after the Technical Sessions, with the following exceptions - Due to limited space for transportation, only South Georgia Chapter winning entries will be transported to FLC for pick up. North GA and Metro Atlanta Area Chapters may retrieve their winning entries from the Stockbridge, GA office of GA TSA. Please contact Mr. Price for arrangements.