



**SECME<sup>INC.</sup>**

# **Competition Booklet**

**“SECME: Plan It.  
Build It. Live It!”**

*2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*“SECME: Plan It. Build It. Live It!”*

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**Annual District SECME Festival & Olympiad Competition  
January 21, 2012**

at

**Miami Dade College, North Campus**

**11380 N. W. 27 Avenue**

**Miami Florida 33167**

**Check-in January 20 (3:00 p.m. – 7:00 p.m.)**

**Introduction**

The Miami-Dade County Public Schools (M-DCPS) Division of Mathematics, Science, and Advanced Academics Education is pleased to present the District SECME Festival and Olympiad Competition for elementary and secondary schools. We are excited to have you join us. Check-in of specific pre-constructed projects (bridge, mousetrap-car, egg-drop, water-bottle rocket) will occur on January 20. Competition will begin on January 21 at 9:00 a.m. and all activities should conclude at approximately 5:00 p.m. We have planned a full day of activities, designed to give students an opportunity to demonstrate skills learned through the Next Generation Sunshine State Standards and District Curriculum in mathematics, science, computer technology, and language arts courses. **Students should come prepared to purchase lunch or bring their own lunch.**

To the degree possible, this year's theme, "**SECME: Plan It. Build It. Live It!**" should be incorporated into each phase of the contest.

Individuals and teams are asked to model the spirit of good sportsmanship. **The decisions of the judges will be final.**

Students are asked to study this handbook and put forth maximum effort in preparing for the competition. As with all competitions, advance preparations will yield a high degree of comfort and confidence. Students should not underestimate their abilities as individuals nor the collective strength of the school's team. Encourage students to represent their school and to demonstrate pride and courage. **In anticipation of increased participation and in order to finish the competition in a timely manner, the number of entries per school has to be limited. Schools are encouraged to hold school wide challenges for competition events in order to select representative school teams to enter the District Olympiad.**

Remember, "We all have the potential for greatness!" Tell students to find a niche on the team, remind them that they represent their school's SECME program, and encourage them to have fun!

**Good Luck,**

**The M-DCPS District SECME Team**

Ms. Beatriz Zarraluqui, Administrative Director

Ms. Maria Teresa Diaz-Gonzalez, District Supervisor

Dr. Lisette Rodriguez, District Supervisor

Dr. Ava D. Rosales, Instructional Supervisor

Ms. Mary Tweedy, Curriculum Support Specialist

Ms. Marysel Urbanik, Curriculum Support Specialist SECME Stars

**LOGO:**



**2011 – 2012 SECME THEME:**

***"SECME: Plan It. Build It. Live It!"***

The 2011 - 2012 theme reflects SECME's global mission and purpose - to increase the pool of historically under-represented, under-served, and differently-abled students who will be prepared to enter and complete post-secondary studies in science, technology, engineering, and mathematics, thus creating a diverse and globally competitive workforce. The measure of that accomplishment is a student's academic and career success.

## School Summary of Registered Events Invoice

School: \_\_\_\_\_

SECME Teacher/Coordinator: \_\_\_\_\_

Principal's Signature: \_\_\_\_\_

Each school must enter the following competitions: Banner and at least one team event. Please indicate below the categories in which your school will participate. All schools must register online by Monday, December 12, 2011 at <http://science.dadeschools.net/secme/default.html> and submit \$50 registration fee payable to MECA indicate SECME in the notes/memo section by December 12, 2011, along with this form and all other required competition reports, as indicated by the event, to:

M-DCPS Division of Mathematics and Science Education  
Attention Ms. Avis Raines  
School Mail: location 9628  
U.S. Mail – 1501 N.E. 2<sup>nd</sup> Ave., Suite 327 Miami, FL 33132

### EVENTS

\_\_\_\_\_ **BANNER:** Each school **must enter one** banner which will be displayed in the Parade of Schools (team contest)

\_\_\_\_\_ **ESSAY:** Each school **may enter one** essay. Due: **Monday, December 12, 2011 (Individual contest)** email ([arosales@dadeschools.net](mailto:arosales@dadeschools.net)) **AND** hardcopy with registration fee.

\_\_\_\_\_ **MOUSETRAP CAR:** This is a 3-member student team event. **Only one team per school.**

\_\_\_\_\_ **BRIDGE-BUILDING:** This is a 3-member student team event. **Only one team per school. Note: Only 1 member of winning high school team will be allowed to enter International Bridge Competition.**

\_\_\_\_\_ **EGG-DROP CONTAINER:** This is a 3-member student team event. **Only one team per school (Middle and Senior High School only).**

\_\_\_\_\_ **BRAIN BOWL:** This is a 4-member student team event. **Only one team per school.**

\_\_\_\_\_ **MATHEMATICS CHALLENGE:** This is a 4-member student team event. **Only one team per school.**

\_\_\_\_\_ **COMPUTER INTERNATIONAL SCIENCE AND TECHNOLOGY FAIR (ISTF):** This is a 3-member student team event **Submission Due: February 24, 2012** Rules and submission information found at: <http://istf.ucf.edu/>

\_\_\_\_\_ **WATER-BOTTLE ROCKET COMPETITION:** This is a 3-member student team event. **Technical Paper and Patch, Due Monday, December 12, 2011. Only one team per school.**

\_\_\_\_\_ **BIONIC/ROBOTIC HAND KIT EXPOSITION:** This is a 2 - 4 member student team event (Middle and Senior High School only).

\_\_\_\_\_ **VEX ROBOTICS:** This is a 3-member team event. (Senior High schools only)



## General Instructions

1. All schools must register online by **Monday, December 12, 2011** at <http://science.dadeschools.net/secme/default.html>
2. Schools participating in SECME must register their school information with the National SECME office at the Registration and Reporting Forms link [www.secme.org](http://www.secme.org)
3. **Check-in** of pre-designed projects (Bridge, Egg-Drop Container, Water-Bottle Rocket, and Mousetrap Car) begins at 12:00 p.m. on **Friday, January 21, 2012** and concludes at 7:00 p.m. at Miami Dade College, North Campus. Participating schools must be registered with the Curriculum and Instruction SECME District office and the national SECME office. Each school must have on file at the National SECME office its complete list of SECME students (Olympiad and non-Olympiad participants).
4. **Each pre-designed project** (Bridge, Egg-Drop Container, Water-Bottle Rocket, and Mousetrap Car) must be delivered to the appropriate check-in rooms at the Miami Dade College, North Campus. The packaging must be sufficient to protect the project during normal handling. Each package must be labeled with the following information: school (elementary, middle or senior high) and names of team members.
5. Two students must be in line outside the Building 5 with the school's banner at **8:30 a.m.** for the opening ceremony on **Saturday, January 21, 2012 (any changes will be sent to schools registered for competition).**
6. Most events will run concurrently. To avoid conflicts, schools should plan to have different students participating in each event.
7. The bridge, egg-drop container, water-bottle rocket, and mousetrap car will have a higher scoring factor than other events because of the design, construction, and testing phases that are required.
8. All entries in the competitions are expected to be neat, original, and completed by the students participating in this year's Olympiad.
9. Each school must enter the following contests: banner, and at least one team event (Mousetrap Car, Brain Bowl, Bridge-Building, Egg-Drop Container, Math Challenge, Bionic/Robotic Hand, Water-Bottle Rocket, Vex Robotics).
10. Elementary school students will compete against elementary school students only. Similarly for middle and senior high school students
11. First-, second-, and third-place trophies will be awarded. All participants will receive certificates.

## √ Check-In Procedures on the Day of the Festival and Olympiad

Upon arrival, the SECME Coordinator/Designee should check-in at the general registration area. Be prepared to submit the following:

- School's Summary of Registered Events Form
  - Student Registration Forms  
(All information completed, see page 5.)
- 

**Check the program for room locations; then proceed to the Science Complex with all students:**



## Description of Events

**Note: Elementary, middle and high school students compete separately, i.e grades 3 – 5 compete in elementary school events, grades 6 -8 students compete in middle school events, and grades 9 - 12 compete in high school events.**

### BANNER

Students create banners based on the Olympiad's theme. Banners must contain the school mascot and SECME logo. Each school must have one (1) entry. Schools will parade with their banners at the opening session of the Olympiad.

### BRAIN-BOWL

Students compete against the clock and each other in a contest filled with science questions. Each school may enter one (1) team consisting of four (4) students in the Brain- Bowl competition.

### BRIDGE-BUILDING

Students build bass wood bridges to pre-determined specifications. Bridges are then tested at the Olympiad. The winner is determined by the most efficient bridge within the specifications. Two individual members from the winning high school team(s) will represent SECME at the International Bridge Contest. Each school may submit one pre-constructed bridge in this team event.

### EGG-DROP CONTAINER

Students build containers that meet pre-determined specifications. At the Olympiad, an uncooked egg is placed in the container and dropped from an initial height of 15 meters. The smallest volume container that protects the egg after being dropped at the final height is deemed the winner. Each middle and senior high school may submit one egg-drop container. The eggs will be supplied at the competition.

### ESSAY

Students write essays at their schools based on the Olympiad's theme and the best is selected and entered in the District Olympiad. Each elementary school may submit one (1) essay. **Essays are due Monday, December 12, 2011, by email ([arosales@dadeschools.net](mailto:arosales@dadeschools.net)) AND hardcopy sent with registration fee. Entries received after that date are not eligible for inclusion in the competition (individual event).**

### MOUSETRAP CAR

Students build cars that are propelled by the spring of a mousetrap. All teams must have

- Mousetrap Car -Construction and Run (elementary, middle and senior high)
- Written Report on Mousetrap Car (elementary)
- Design drawing of Mousetrap Car (middle and senior high ONLY)
- Technical report on Mousetrap Car (middle and senior high ONLY)

A combination of the scores from the race, the report, and the drawing is used to determine the winner. Each school may enter one Mousetrap Car.

## Description of Events, continued

### TECHNOLOGY CHALLENGE: INTERNATIONAL SCIENCE AND TECHNOLOGY FAIR (ISTF)

Students participate in a national technology literacy program competition comprised of a 3-member student team (**middle and senior high school only**). Students research the application of critical technologies to real world problems and submit to the University of Central Florida competition site. **Submission deadline is February 24, 2012.** Rules and submission information can be found at: <http://istf.ucf.edu> . **Preregistration with ISTF is required.**

### MATHEMATICS

Student teams use a variety of strategies to solve mathematics problems using tools such as graphing calculators, calculators, rulers, and manipulatives. The winner is determined by the first team to submit the most correct answers within an hour. Each school may enter one (1) team consisting of four (4) students in the mathematics competition.

### WATER BOTTLE ROCKET

Students build a rocket that must meet predetermined specifications. At the Olympiad, rockets will be "fueled" with 355 milliliters of water. The rocket with the greatest combined "hang time" and patch design score will be declared the winner. Each school may enter one (1) rocket built by a team consisting of three (3) students. All teams **must have**:

- Water-Bottle Vehicle (constructed and launch-ready)
- Team Patch (Due: Monday, December 12, 2011)
- Technical Report (middle and senior high, Monday, December 12, 2011)
- Technical Drawing (middle and senior high)

### BIONIC/ROBOTIC HAND KIT EXPOSITION EVENT

Students bring a pre-constructed robotic/bionic hand designed from a kit. Presentations will be judged based on innovative engineering, effective presentation, most realistic prosthesis, and product demonstration. Teams present orally and visually with the aid of multimedia. Each school may submit only **one** (1) entry (middle and senior high school only).

### VEX ROBOTICS

Students follow specific instructions to complete an engineering design task in three-member teams (Senior High schools only).

## BANNER COMPETITION

BANNER COMPETITION REQUIREMENTS: (Any entries not meeting these requirements will be automatically disqualified).

### I. DESIGN AND CONTEST RULES:

1. Banners cannot exceed a maximum of 72 inches wide and 36 inches high.



2. All entries must include the
  - School name and colors,
  - City and state,
  - Current year
  - SECME logo
  - Creative depiction of the competition theme (SECME: PLAN IT. BUILD IT. LIVE IT!)
  - The word "SECME" must appear on the banner
4. Banners must be hand-made original work for the year it is submitted.

Additionally, 1<sup>st</sup> place winning District Engineering Design (Mousetrap Car) and Vex Robotic Teams are encouraged to design a school banner for competing in the Banner Competition at the National Student Competition Finals.

### II. SCORING:

1. The maximum points for a banner are 16.
2. The banners will be scored in the following categories:
  - a. Content (0 - 4 pts) – Quality and organization of the information on the banner.
  - b. Originality (0 - 4 pts) – Innovativeness of the design and how well it presents the ideas on the entry.
  - c. Creativity (0 - 4 pts) – The uniqueness of the information depicted.
  - d. Appearance (0 - 4 pts) – The attractiveness and neatness, scale and balance of the presentation.

**The maximum number of points is 16.**

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**2012 SECME BANNER COMPETITION**  
**(Evaluation Sheet)**

Please Circle:            Elementary            Middle School/Junior High            High School

Design Team Name \_\_\_\_\_

School Name \_\_\_\_\_

District \_\_\_\_\_ City/State \_\_\_\_\_

Judge's Name \_\_\_\_\_ Date \_\_\_\_\_

The banner is disqualified if any of the following requirements are not met:

**Requirements Check:** 72”wide by 36” high \_\_\_\_\_ School Name and colors \_\_\_\_\_  
 City and State \_\_\_\_\_ Current Year \_\_\_\_\_ The word “SECME” on the banner \_\_\_\_\_  
 Creative depiction of the theme “SECME: PLAN IT. BUILD IT. LIVE IT!” \_\_\_\_\_

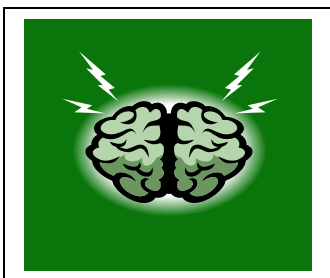
The maximum number of points for a poster is 16.

EVALUATION CATEGORIES	<u>POINTS</u>
I. <b>CONTENT</b> Measure the quality and organization of the information on the banner (0-4 points)	_____
II. <b>ORIGINALITY</b> Evaluate the innovativeness of the design, how well it presents the ideas on the entry (0-4 points)	_____
III. <b>CREATIVITY</b> Judge the uniqueness of the information depicted (0-4 points)	_____
IV. <b>APPEARANCE</b> Examine the entry for attractiveness and neatness, scale and balance of the presentation (0-4 points)	_____
<b>TOTAL</b> (Highest possible score is 16)	_____

**2012 SECME Banner Rubric**

CATEGORY	4	3	2	1
Points	4	3	2	1
Content	The poster shows a high quality of organizing the information.	The poster shows some quality of organizing the information.	The poster shows little quality of organizing the information.	The poster shows no quality of organizing the information.
Originality	The poster shows a large amount of original thought. Ideas are creative and inventive.	The poster shows some original thought. Work shows new ideas and insights.	The poster shows little evidence of original thinking.	The poster does not show evidence of original thinking.
Creativity	The poster makes excellent use of font, color, graphics, effects, etc. to enhance the presentation.	The poster makes good use of font, color, graphics, effects, etc. to enhance the presentation.	The poster makes little use of font, color, graphics, effects, etc. but occasionally these detract from the presentation content.	The poster makes no use of font, color, graphics, effects.
Appearance	The poster's is exceptionally done in terms of design, layout, and neatness.	The poster's is good in terms of design, layout and neatness.	The poster is acceptable in terms of design, layout and neatness, though it may be a bit messy.	The poster is distractingly messy or very poorly designed.

## BRAIN-BOWL COMPETITION



### **General Rules:**

1. Each school will be represented by only one (1) team.
2. Teams will consist of four (4) students.
3. A pencil and paper test will be administered to teams to determine the semi-finalist teams that will compete orally head-to-head with buzzers, to determine first – third place.
4. A team will compete with one or two other team in a head-to-head competition. All questions will be taken from **earth/space, life, chemical, and physical science clusters**.
5. Elementary school teams will compete only against other elementary school teams and similarly for middle and senior high school against other high school teams.
6. Scheduling of competing teams will be done by a draw before the end of the opening ceremonies. Preliminary rounds will be by single elimination.
7. A question will be stated only once.
8. Before beginning the match, the judge will ask each contestant to test his or her buzzer. Each team will also designate a captain.
9. The match starts with the toss-up round and is followed by the bonus round. In the tossup round, the judge will ask the question and an answer must be given without conferring. In the bonus round, the judge will ask a specified number of questions. The team may confer, but only the captain may give the answer.
10. In the toss-up round, any contestant, at any time (interruption of a question is allowed), may buzz in to answer the question. A correct answer will give that contestant's team ten-(10) points. An incorrect answer will result in a five-(5) point deduction from the team's total, and the question will be reread for the opposing team.
11. At the end of the toss-up round, the bonus round will begin. The team with the lower point total will begin. The number of correctly answered questions from the toss-up round will be the number of bonus questions each team will be asked. When the question is read, the contestants may confer and the team captain may then deliver an answer. A correct answer will receive ten (10) points. There is no penalty for an incorrect answer in this round.

### **Procedures:**

1. The toss-up round is three-(3) minutes. The competition coordinator will call "last question" at the end of the round to signal the round's conclusion. Bonus questions will then follow.
2. Once a toss-up question is read, the contestants will be allowed only five (5) seconds to buzz in. The contestant who signaled is then allowed only five (5) seconds to answer the question. The timekeeper will mark the time from the moment the contestant is recognized at the time of the answer. Exceeding this time limit will be considered an incorrect answer. If a contestant answers the question without being recognized, that will be considered an incorrect answer as well.

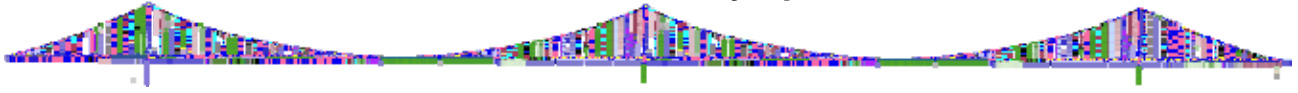
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3. If a contestant responds during a toss-up question, the moderator will stop asking the question immediately. The person who signaled first must answer the question within five (5) seconds.
  - a. If the response is correct, the team will be duly credited with an opportunity to answer a bonus question at the end of the heat.
  - b. If the response is incorrect, the moderator will repeat the question for the contestants of the other team. The team that presupposed the question may not respond again to this question.
4. If a question is completed and a team's response is incorrect, the other team will have a chance to answer. If the other team's answer is incorrect, the moderator will then ask a new toss-up question.
5. Only the captain may voice a dispute regarding a question, answer, or a procedure. This dispute must be made immediately following the incident. **The judges' ruling is final.**
6. The bonus round is conducted without buzzers. Once the judge finishes reading the question, the team captain has ten seconds to give an answer. If there is a tie at the end of the bonus round, one final sudden-death, toss-up question will be given in order to determine the winner.
7. If at any time during the toss-up round, one team is ahead by more than 80 points over the other, the match will be stopped and the leading team will be declared the winner.
8. If, at the end of the toss-up round, it is clear that one team cannot score enough points to tie the game or to win the game, then there is no need to proceed into the bonus round. The leading team will be declared the winner.
9. The scorekeeper will record the running total of points for each team on a board visible to all contestants and spectators. At the end of each heat, the scorekeeper will record the scores on the competition score sheets. The scorekeeper will then submit the score sheet for each heat to the competition coordinator.

***Judging:***

1. The value of a toss-up question is ten-(10) points for a correct response and minus five-(5) points for an incorrect response. Therefore, it is possible for a team to have a negative score.
2. Points will not be deducted for an incorrect response to a bonus question.
3. The first team to reach an 80 point advantage (raw score) within a heat or the team with the most points at the end of the round will be declared winner of the round.
4. The question will be stated only once.

## 2012 International Bridge Building Contest Rules as used in the SECME Olympiad



These rules have been developed by the International Bridge Building Committee for the **Thirty Fifth International Bridge Building Contest** to be held in Las Vegas, Nevada, USA, date **TBA**.

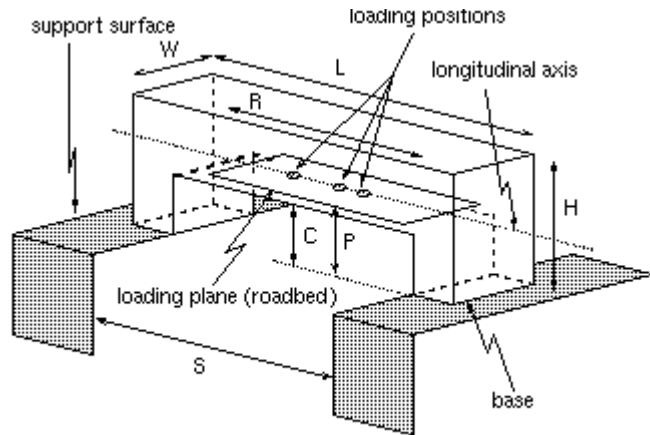
The object of this contest is to see who can design, construct and test the **most efficient** bridge within the specifications. Model bridges are intended to be simplified versions of real-world bridges, which are designed to accept a load in any position and permit the load to travel across the entire bridge.

### 1. Materials

- The bridge must be constructed only from the **official** 3/32-inch square cross-section basswood **included in the kit** and any commonly available adhesive.
- The official basswood may be notched, cut, sanded or laminated in any manner but must still be identifiable as the original official basswood.
- No other materials may be used. The bridge may not be stained, painted or coated in any fashion with any foreign substance.

### 2. Construction

- The bridge mass shall be no greater than 25.00 grams.
- The bridge (see Figure 1) must span a gap (**S**) of 300. mm, have a minimum clearance (**C**) of 50 mm above the support surface at mid-span, be no longer (**L**) than 400 mm, be no taller (**H**) than 200 mm above the support surfaces, no wider (**W**) than 80 mm and no narrower than 25 mm at the



**Figure 1. Schematic of Bridge (not to scale)**

- The bridge must be constructed to provide a horizontal support for the loading plate and at the three loading locations described in **2d**. Any portion of the structure above the loading surface must provide clearance for the loading plate to be lowered into position from above.
- The load will be applied with the center of the plate at one of the three (3) loading locations on the longitudinal axis of the bridge: 1) the center, 2) 25 mm to the right of center, and 3) 45 mm to the left of center (see Figure 1). The three loading locations must lie in the same horizontal plane. The loading plane must be located on the roadbed and lie no more than a distance (**P**) of 100 mm above the base of the bridge (support surface).
- The bridge must be constructed to allow a standard Ping-Pong ball, 38.1 mm diameter to be rolled along the roadbed, from end to end without falling off or through the bridge. To test this requirement, the bridge will be placed at a 20 degree angle (from horizontal) and the ball will be placed on one end of the roadbed then released. The ball must roll freely

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from one end to the other. The roadbed must be continuous, horizontal, and at least 250 mm (R) in length.

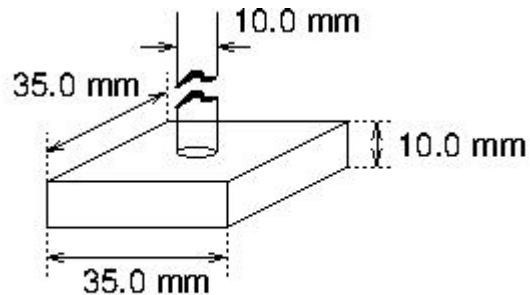
- f. The bridge structure may not project below the support surfaces (see Figure 1).

**3. Loading**

- a. The load will be applied by means of a 35. mm square plate that is between 10. mm in thickness. The plate will have a 10. mm diameter loading rod threaded into its center (see Figure 2). The plate will be horizontal; it will not pivot on the loading rod, and during testing the sides of the plate will be placed parallel to the longitudinal axis of the bridge.
- b. The load will be applied with the loading plate centered at one of the three positions described in section **2d**.

**4. Testing**

- a. On the day of the competition, the judges will decide which one of the three loading locations will be used for the competition; it will be the same for all bridges.
- b. The loading plate will be located on the bridge at the specified loading location. The load will be applied from above, as described in section [3a](#) above.
- c. Competition loading will stop at 50. kg (approx. 110 lbs). However, loading will continue until the bridge experiences failure. Bridges failing above 50. kg will be considered to have held 50. kg for efficiency calculation.
- d. Bridge failure is defined as the inability of the bridge to carry additional load, or a load deflection of 25. mm under the loading location, whichever occurs first.
- e. The bridge with the highest structural efficiency,  $E$ , will be declared the winner.



**Figure 2. Loading Plate Detail**

$$E = \text{Load supported in grams (50,000g maximum)} / \text{Mass of bridge in grams}$$

**5. Qualification**

- a. All construction and material requirements will be checked prior to testing. Bridges failing to meet these requirements will be disqualified. If physically possible, disqualified bridges may be tested as exhibition bridges at the discretion of the builder and the contest directors.
- b. If, during testing, a condition becomes apparent (i.e., use of ineligible materials, inability to support the loading plate, bridge optimized for a single loading point, etc.) which is a violation of the rules or prevents testing as described above in Section [4](#), that bridge shall be disqualified. If the disqualified bridge can accommodate loading, it may still be tested as an exhibition bridge as stated above.
- c. Decisions of the judges are final; these rules may be revised as experience shows the need. Please check our web site, <http://bridgecontest.phys.iit.edu> after March 1, 2012, to learn whether any changes have been made.

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*Last update: October 31, 2011*



## BRIDGE-BUILDING COMPETITION

### (Registration and Evaluation Worksheet)

ID# \_\_\_\_\_ Check one: \_\_\_ Middle School (grade 6-8) \_\_\_ High School (grade 9-12)  
 Students should complete only the School and Team section below. All other sections  
 will be filled out by the judges and competition administrators.

School Name \_\_\_\_\_ Team Name: \_\_\_\_\_

*In the event that you place 1st, 2nd, or 3rd, please **CIRCLE** the name of the Team Member who will build the bridge for the International Bridge Competition in April.*

Team Member #1 \_\_\_\_\_

Team Member #2 \_\_\_\_\_

Team Member #3 \_\_\_\_\_

School Coordinator \_\_\_\_\_

**EVALUATION CATEGORIES:**

Detail of Bridge Configuration (not to scale). The dimensions marked in the figure are as follows:  
 S = 300. mm; L = 400. mm MAXIMUM; H = 200. mm MAXIMUM; W = 80. mm MAXIMUM;  
 C = 50. MINIMUM; P = 100. mm MAXIMUM; R = 250. mm MINIMUM.

**1. CONSTRUCTION REQUIREMENTS**

SCALE	MEASUREMENT	COMMENTS
Height (H): 200 mm MAX	_____	_____
Bridge Length (L): 400 mm MAX	_____	_____
Span (S): 300 mm	_____	_____
Width (W): 80 mm MAX	_____	_____
Clearance (C): 50 mm MIN	_____	_____
Loading Plane (P): 100 mm MAX	_____	_____
Roadbed (R): 250 mm MAX	_____	_____

**II. SCORING\*\***

Structural Efficiency Score (E) = Load Supported in grams (50,000 g maximum)/Mass of bridge in grams

The load will increase until bridge failure occurs\*

\*Failure-includes deflection of 25 mm under the loading point occurs.

Load Capacity (g) \_\_\_\_\_ Final Ranking \_\_\_\_\_

Structural Efficiency \_\_\_\_\_

Note: The decisions of the judges are final



## EGG-DROP COMPETITION

### **General Rules:**

The contestants shall design and build a shipping container that will prevent an uncooked chicken egg (Grade A Large) from cracking when dropped from an initial height of 15 meters. At the discretion of the judges, surviving eggs from the initial drop will then be taken higher and dropped a second time. The container must be less than 800 cm<sup>3</sup> in volume, with no single dimension longer than 25 cm. The maximum weight, including the egg, cannot exceed 1,000 grams. Contestants must be able to remove the egg without damage. A maximum of 30 seconds will be allowed to open the container, place the egg in the container and re-seal it. After the drop, 30 seconds to unseal, show the undamaged egg, replace it and re-seal the container.

### **Materials:**

Any material may be used in the design, as long as the structure meets the design requirements and contest rules.

### **Requirements:**

1. No kits or pre-made designs may be used. The structure must be the team's invention.
2. The structure must be completely released (no strings or other attachments). **No parachutes.**
3. The structure must land in a designated target area.
4. No propulsion systems will be allowed.
5. No gases (e.g., helium) other than air can be present in the structure when it is weighed.
6. Inside air space will not be subtracted out. Volume will be calculated based on the shape of the containers as measurable by standard measuring devices, i.e., ruler or tape measure.

### **Judging:**

1. Grade A large eggs will be supplied at the contest. You cannot bring your own egg.
2. All containers will be inspected by judges before they are dropped.
3. Once an egg is weighed-in with the structure, that egg cannot be exchanged with another.

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4. The egg must be placed into the container on-site. A maximum of 30 seconds will be allowed to place the egg into the container and remove it. Exceeding this time limit will lead to disqualification from the contest.
5. If the egg is damaged during placement in the container, the team will be disqualified.
6. The egg must be undamaged after the drop in order for the value to be recorded. In the event that all eggs do not survive the second drop, the values from the previous drop will be recorded.
7. The score will be based on the equation:

$$S2 = \frac{75S}{(W + L^2 + V)}$$

Where S is the success factor with values:

S = 100 if egg does not break  
S = 1 if egg breaks

W = Weight (grams)  
L = Longest dimension  
V = Volume (cm<sup>3</sup>)

S2 = Total points value

8. The eggs will be dropped from an initial height of 15 meters; the second and final drop will be from a height greater than 15 meters.
9. The winner will be determined by the team with the highest score (S2).

**NOTE: Containers must meet volume requirements to qualify for competition.**

### Egg-Drop Competition (Evaluation Worksheet)

Check one: \_\_\_ Middle School (grade 6-8) \_\_\_ High School (grade 9-12)

School Name: \_\_\_\_\_

Team Name: \_\_\_\_\_

Students' Names:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**This section to be completed only by the judges.**

L= \_\_\_\_\_ Longest Dimension (centimeters)

V= \_\_\_\_\_ Volume (cm<sup>3</sup>)

W= \_\_\_\_\_ Weight (grams)

S= \_\_\_\_\_ 100 points if the egg does not break; 1 point if egg does break

$$S_2 = \frac{75S}{(W + L^2 + V)}$$

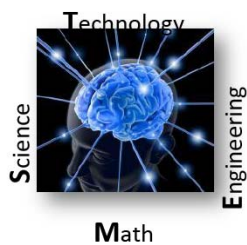
S<sub>2</sub>= \_\_\_\_\_ S<sub>2</sub> (winner)= \_\_\_\_\_

FINAL Overall Score:

$$\frac{S_2}{S_2 \text{ (winner)}} \times 100 = \text{_____ points}$$

DROP #1 Survived: \_\_\_\_\_ Yes \_\_\_\_\_ No

DROP #2 Survived: \_\_\_\_\_ Yes \_\_\_\_\_ No



# ESSAY COMPETITION RULES

SECME Student WebQuest and 2012 Essay Competition Guidelines

**Due: Monday, December 12, 2011**

**Email: [arosales@dadeschools.net](mailto:arosales@dadeschools.net) AND hardcopy with registration**

## **INTRODUCTION: Plan It. Build It. Live It!**

What makes you smile, gets you excited, makes you want to “do” something? What SECME activities that involve science, technology, engineering, or math do find to be fun? Why are they fun for you? How can you make a living doing what you enjoy? What kinds of jobs use science, technology, engineering, and math? What kind of education do you need to prepare you for these jobs? This SECME competition will give you the opportunity to explore this year’s SECME National Student Competition theme – **SECME: Plan It. Build It. Live It!...**

## **COMPETITION TASK: Plan It!**

All exploration requires going to where you have never gone before. This competition asks you to embark on a personal exploration and use your SECME experiences to guide you as you carefully research, plan, and deliver a well-written essay that reflects you have searched and discovered your own answers as to what STEMulates you in the areas of science, technology, engineering, and math. Be prepared to have fortitude while you gather your information, resolve as you structure your essay, and diligence as you make your essay the best it can be.

## **PROCESS: Build It!**

Be prepared to use technology to travel to places far away.

Be prepared to broaden your world of possibilities.

Be prepared to think about your future in different ways.

Be prepared to explain how your personal journey of discovery has helped you plan and build in order to live your dreams.

Your exploration will be divided into five phases. Your essay will be proof that your journey was successful.

Phase 1: Interest Inventory

Phase 2: Career Search

Phase 3: Education Search

Phase 4: Persuasion

Phase 5: Essay Checklist, Form Completion, and Submission

Be prepared to be vigilant in following all instructions. Only those entries that have been attentive to the SECME Essay Competition Guidelines will be considered for awards.

Each essay entry is to be prepared and submitted by an individual student (not a team).

**WHAT DO YOU NEED?** A willingness to discover, access to the Internet, a *Planning and Building* Journal to write down all the information you find, and your imagination! Are you ready?

**2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**“SECME: Plan It. Build It. Live It!”**

**SECME WebQuest and 2012 Student Essay Phase 1: Interest Inventory**

**It’s all about YOU!**  
**(and science, technology, engineering, and math...)**

What STEMulates your imagination? What SECME experiences are fun?

Do you enjoy working with a team to build mousetrap cars? Basswood bridges? Water bottle rockets?

Do you enjoy creating the engineering drawing that shows the design that was used?

Do you like the challenge of figuring out ways to build a “better” car or bridge or water bottle rocket?

Do you like to do research on interesting science, technology, engineering, and math topics? Do you like to plan big projects?

Do love the roar of engines? Do you think you’d like the quiet of outer space?

1. Get out your *Planning and Building Journal* and answer these questions for yourself. Take some time! Don’t worry about going fast. Really search your memories and write down your thoughts...

2. Now, talk to your friends, your teachers, your relatives – ask them what they think you enjoy and write down their answers in your Journal (you might be surprised by what they say!).

3. Then do some Internet research. Below are some interesting links, but you are not limited to just these! Ask your teacher for help finding other sites to visit. Don’t have the Internet at home? No problem! Go to your local public library – and be sure to tell the librarian that you are doing research and ask for help!

Take your time and have fun! Don’t forget to use your Journal to write down information – use as many pages as you want. You never know what you might need for the next phases of your exploration...

<http://www.ioscar.org/tx/ip/ipinstruct.asp>

<http://www.engineeringsights.org/>

<http://www.greatachievements.org/>

<http://www.eht.k12.nj.us/~jonesj/Differentiated%20Instruction/interest%20survey%20mid%20stdnts.htm>

<http://www.eht.k12.nj.us/~jonesj/Differentiated%20Instruction/interest%20survey%20older%20stdnts%202.htm>

**2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**“SECME: Plan It. Build It. Live It!”**

**SECME WebQuest and 2012 Student Essay Phase 2: Career Search**

**It’s all about YOU!**  
**(and science, technology, engineering, and math...)**

On this next leg of your exploration, it’s time to find out what career just might be STEMulating for you! Let yourself be surprised by what you might find that you never even knew was a “job.”

The links below are just a beginning. Ask for help to find other good Internet sites. And don’t forget to use your *Journal* to log all the places you go! You never know when you might want to check your *Journal* as you move through the next phases of your personal journey.

1. First visit the SECME Website ([www.secme.org](http://www.secme.org)). On the SECME homepage, find the “Who is SECME? The People” link on the left and click on it. Now scroll down to “Industry Partners” and then over to the “Our Government & Industry Partners.” When you click on this link, you will see the five corporations that are major SECME sponsors. Click on each one and visit their Websites – have fun looking at all the cool things they do!

2. Plan to take a few days for this next step in your exploration: Go back to the “Our Government & Industry Partners” page and click on the “Meet the other SECME Alliance Partners and In-kind Supporters” link. There are many industries and government agencies that help to support your SECME program in many different ways. Find one that is familiar, click on its link, and explore its Website. Then find one that you have never heard of before and explore it, too. Take a few days to explore all the links...you will be STEMulated by all the opportunities and information out there just waiting to be discovered!

3. Now that you have new information about many different industries and government agencies that are STEMulating, visit some Websites that tell you about different careers in **science, technology, engineering, and math**. There are several listed below you can go to, but don’t stop there! Get some help to find other information.

And, of course, don’t forget to use your Journal to keep a record of all the interesting information you discover!

[http://www.engineeringk12.org/students/Engineer\\_Spotlight/Civil\\_Engineer\\_Oksana\\_Wall/default.php](http://www.engineeringk12.org/students/Engineer_Spotlight/Civil_Engineer_Oksana_Wall/default.php)

[http://www.engineeringk12.org/students/Engineer\\_Spotlight/Enviro\\_Engineer\\_Alexandria\\_Boehm/default.php](http://www.engineeringk12.org/students/Engineer_Spotlight/Enviro_Engineer_Alexandria_Boehm/default.php)

[http://www.engineeringk12.org/students/Engineer\\_Spotlight/Chemical\\_Engineer\\_Richard\\_Helmer/default.php](http://www.engineeringk12.org/students/Engineer_Spotlight/Chemical_Engineer_Richard_Helmer/default.php)

[http://www.engineeringk12.org/students/What\\_Is\\_Engineering/default.php](http://www.engineeringk12.org/students/What_Is_Engineering/default.php)

<http://www.coolmath.com/careers.htm>

<http://www.ams.org/ams/what-mathdegree.pdf>

<http://www.maa.org/careers/>

[http://www.pbs.org/safarchive/5\\_cool/53\\_career.html](http://www.pbs.org/safarchive/5_cool/53_career.html)

<http://library.thinkquest.org/J0113274/index.htm>

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**SECME WebQuest and 2012 Student Essay Phase 3: Education Search**

**It's all about YOU!**  
**(and science, technology, engineering, and math...)**

Your *Journal* should be pretty full of information now...

Look back at your notes from Phase 1 and Phase 2 of your exploration. Do you have some ideas about what you like to do and about some careers that just might be fun for you to pursue?

SO, NOW WHAT? Time to explore how to get prepared for a STEMulating career!

HOW? You need to think about what kind of education you are going to need.

In this phase of your journey, you are going to visit universities across the country... prepare to be surprised about how different they are! Take careful notes in your Journal.

1. It's back to the SECME Website ([www.secme.org](http://www.secme.org)) homepage's link "Who is SECME? The People." This time scroll down to "Universities" and over to the "University Council" link. You will see a message from the SECME University Council Chair, Mr. Greg Singleton, and see two links. If you click on the "Founding Universities" link, you find the names of the six Deans and their universities that first met in **1975** to create SECME to encourage students like you to go to college and get degrees that would lead to STEMulating careers. That was **35 years ago!** Can you imagine how many SECME students have been STEMulated over the past 35 years because these Founders of SECME wanted kids to explore STEMulating lives?

2. Now click on the "SECME University Council Member Institutions" link. You will find **41 universities** that have engineering programs that support SECME! That's A LOT of university engineering programs that are just waiting for you to get to know them!

- ✓  Get a map of the United States. Take time and click on the different university links. Find their locations on the map. What university is closest to you? What university is the farthest away?
- ✓  Most of the university engineering programs have interesting information and really fun summer programs. Explore the sites and see what you can find!
- ✓  What university engineering schools look like a place you could see yourself in the future?

There's tons of information at your finger tips – Enjoy! Don't forget to take good notes! You're almost ready to start your essay! \_\_\_\_\_



**2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**“SECME: Plan It. Build It. Live It!”**

**SECME WebQuest and 2012 Student Essay Phase 4: Persuasion**

**It’s all about YOU!**  
**(and science, technology, engineering, and math...)**

You’ve done a lot of work. Time to put it all together and use your new knowledge to persuade the SECME Essay Competition Judges that you know what STEMulating direction is right for you! In Phase 4, you will need to be diligent. You’ve gathered a good bit of research, and now you need to decide how you can use it. The competition judges want you to help them understand:

- what STEMulates your mind in science, technology, engineering, and math
- what your research has shown you might be a career you want to pursue
- and what your research has shown you might just be the right university to make that happen!

Don’t make the mistake of thinking that this phase of your journey will be easy. You will want to take your time and write several drafts before you submit your essay to the judges.

It’s ok to ask for help after you write your drafts. However, YOU need to make sure that your essay is in YOUR words! The judges want to feel like YOU are talking to them, not a parent or a teacher or a friend...YOU! Others can make sure that your final copy is corrected so that it doesn’t have errors, but they should NOT express your feelings for you – they are YOUR ideas and reactions to what you have discovered during your exploration. And don’t forget to let the judges know if you were surprised by any information you found in your research – they will be interested to learn that your journey was a success. *A successful personal exploration will be one in which you learned something about yourself, about planning for a future career, about what you will need to do to build for that career, and why you think this is the career you want to live.* You should NOT have known all of that before you started!!

So, it’s time to think, write, re-write, edit and then move on to Phase 5! Go ahead!

**Plan It • Build It • Live It! = Just Do It!**

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*2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*“SECME: Plan It. Build It. Live It!”*

**SECME WebQuest and 2012 Student Essay Phase 5: Essay Checklist, Form Completion,  
and Submission**

**It’s all about YOU!**  
**(and science, technology, engineering, and math...)**

Congratulations! You have reached the end of your WebQuest and have finished the hard work of composing an essay that will persuade the judges that you have learned a great deal from your mission.

Before you submit your essay, be sure you carefully follow the instructions:

1. Go through the Essay Checklist and look over the copy of Judges’ Evaluation Rubric. Make sure your essay is the best it can be in all of the areas the judges will be assessing and that you’ve followed all the guidelines – **YOUR ESSAY SHOULD REFLECT THE PRIDE YOU HAVE IN WHAT YOU HAVE LEARNED AND WRITTEN!**
2. Make sure all the information is correct on the **required cover page that is to be included** when your essay is submitted.
3. Have your teacher submit your essay!

Good Luck with the judges – but you are already winner because you’ve successfully completed a journey of personal exploration that you will remember for a lifetime!

**2012 SECME Student Essay Competition: Required Information Cover Page**

**Title: SECME: Plan It. Build It. Live It!**

**Student Name:**

**Grade:**

**School Name:**

**District:**

**Teacher’s Name:**

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**Checklist**

- Required cover page is completed and attached
- Essay is 12 pt/New Times Roman Font
- Essay is double spaced and has 1 inch borders on each side
- Essay is 3-5 pages in length

*2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*"SECME: Plan It. Build It. Live It!"*

**2012 SECME Student Essay Competition: Checklist and Judges' Evaluation Rubric (copy  
for review)  
Checklist**

- Required cover page is completed and attached
- Essay is 12 pt/New Times Roman Font
- Essay is double spaced and has 1 inch borders on each side
- Essay is 3-5 pages in length

**Copy of Judges' Evaluation Rubric Criteria**

**Essay Organization (40 Possible Points)**

Points Earned/Out of Points Possible

\_\_\_\_\_/15 Writing demonstrates age-appropriate, thoughtful progression of writer's interest in science, technology, engineering, and/or math to career interest and educational preparation needed to fulfill personal goals

\_\_\_\_\_/5 Writing includes an original, age-appropriate introduction

\_\_\_\_\_/8 Writing includes ideas that are fully developed and fully supported

\_\_\_\_\_/8 Writing is logical and coherent as a whole

\_\_\_\_\_/4 Writing includes an original, age-appropriate close

**Research (25 Possible Points)**

\_\_\_\_\_/25 Writing demonstrates attention to, and incorporation of, research required for this competition

**Writing Style (20 Possible Points)**

\_\_\_\_\_/10 The writer's voice is strong, demonstrating the writer's creativity

\_\_\_\_\_/10 The writer's voice is strong, demonstrating the writer's reflection on his/her research for this competition

**Punctuation, Mechanics, and Mechanics (15 Possible Points)**

\_\_\_\_\_/15 Essay reflects writer's pride by being submitted as error-free as possible

- Writing is free of (age-appropriate) punctuation errors
- Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.)
- Writing is free of (age-appropriate) spelling errors

\_\_\_\_\_ **Total Points Earned / Out of 100 Possible SECME**

2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
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2012 SECME STUDENT ESSAY COMPETITION  
(Evaluation Sheet)

Please Check: Elementary School \_\_\_ Middle School \_\_\_ High School \_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

School Name \_\_\_\_\_

District \_\_\_\_\_ City/State \_\_\_\_\_

Judge's Name \_\_\_\_\_ Date \_\_\_\_\_

The essay is disqualified if any of the following requirements are not met:

**Requirements Check:** Cover page with required information \_\_\_\_\_  
12 pt / New Times Roman Font \_\_\_\_\_ Double spaced \_\_\_\_\_  
1" Borders on each side \_\_\_\_\_ Proper number of pages (3 – 5) \_\_\_\_\_

**If requirement checks are NOT met:** Five (5) points from each of the 5 areas above will be deducted from the total score in this category.  
Maximum number of points is 100. Score each item in a given category as indicated.

**Essay Organization** (40 Possible Points)

Points Earned/Out of Points Possible

- \_\_\_\_\_/15 Writing demonstrates age-appropriate, thoughtful progression of writer's interest in science, technology, engineering, and/or math to career interest and educational preparation needed to fulfill personal goals.
- \_\_\_\_\_/5 Writing includes an original, age-appropriate introduction.
- \_\_\_\_\_/8 Writing includes ideas that are fully developed and fully supported
- \_\_\_\_\_/8 Writing is logical and coherent as a whole
- \_\_\_\_\_/4 Writing includes an original, age-appropriate close.

**Research** (25 Possible Points)

\_\_\_\_\_/25 Writing demonstrates attention to, and incorporation of, research required for this competition.

**Writing Style** (20 Possible Points)

- \_\_\_\_\_/10 The writer's voice is strong, demonstrating the writer's creativity.
- \_\_\_\_\_/10 The writer's voice is strong, demonstrating the writer's reflection on his/her research for this competition.

**Punctuation, and Mechanics** (15 Possible Points)

- \_\_\_\_\_/15 Essay reflects writer's pride by being submitted as error-free as possible.
- Writing is free of (age-appropriate) punctuation errors.
  - Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.)
  - Writing is free of (age-appropriate) spelling errors.

\_\_\_\_ Total Points Earned / Out of 100 Possible

\_\_\_\_ Requirement check points deducted

\_\_\_\_ **GRAND TOTAL ESSAY POINTS**

## MOUSETRAP CAR COMPETITION

### GUIDELINES FOR 2011 – 2012 SECME ENGINEERING DESIGN COMPETITION (MOUSETRAP CAR: CONSTRUCTION AND OPERATION)

#### ENGINEERING DESIGN COMPETITION REQUIREMENTS:

(Any entry not meeting the following requirements will be disqualified.)

1. The Engineering Design Competition **requires participation in each of these three areas:**
  - a. Mousetrap Car Construction and Run
  - b. Design Drawing of Mousetrap Car (***not required for elementary***)
  - c. Technical Report on Mousetrap Car
2. This is a **team competition** and should reflect the coordinated efforts of all members. **Three (3) students must be on each team.**
3. Each team member is expected to be able to serve as a spokesperson and be fully involved with all aspects of the entry.
4. **A standard mousetrap**--usually about 4.5 X 10 centimeters and weighing about 25 grams--**must be used to build the car.**
5. Components of the mousetrap are: base (on which other components are mounted), spring, bail, locking lever, and bait hook (see component sketch on next page).
6. The mousetrap spring must be the sole source of power. (**You may NOT use rubber bands, CO<sub>2</sub> boosters, or any other agent or element for extra power.**)
7. **In design and construction of the car, the original mousetrap spring and wood base MUST remain intact.** These two components may **NOT** be cut or altered in any way—physically, chemically, or thermally. Only the locking lever and bait holder may be removed from the base, if desired. **The bail may be straightened but NOT cut (shortened), added on to, or reinforced. It must remain as a component of the completed car.**
8. The spring must be visible and/or accessible to the judges for inspection.
9. The car must have a minimum of three wheels and can be made as long or short as desired as long as requirement #7 above is met.
10. Cars will be tested on a smooth flat surface. **Distance is measured from the starting line to the farthest point of travel, utilizing a straight line to connect the two points.**
11. **There will be two runs for each car; the better run will be used for final scoring of the mousetrap car's performance.**
12. **Elementary Performance Score**

The Performance score for the car run is:

$$F = \frac{D}{D_L} \times 100$$

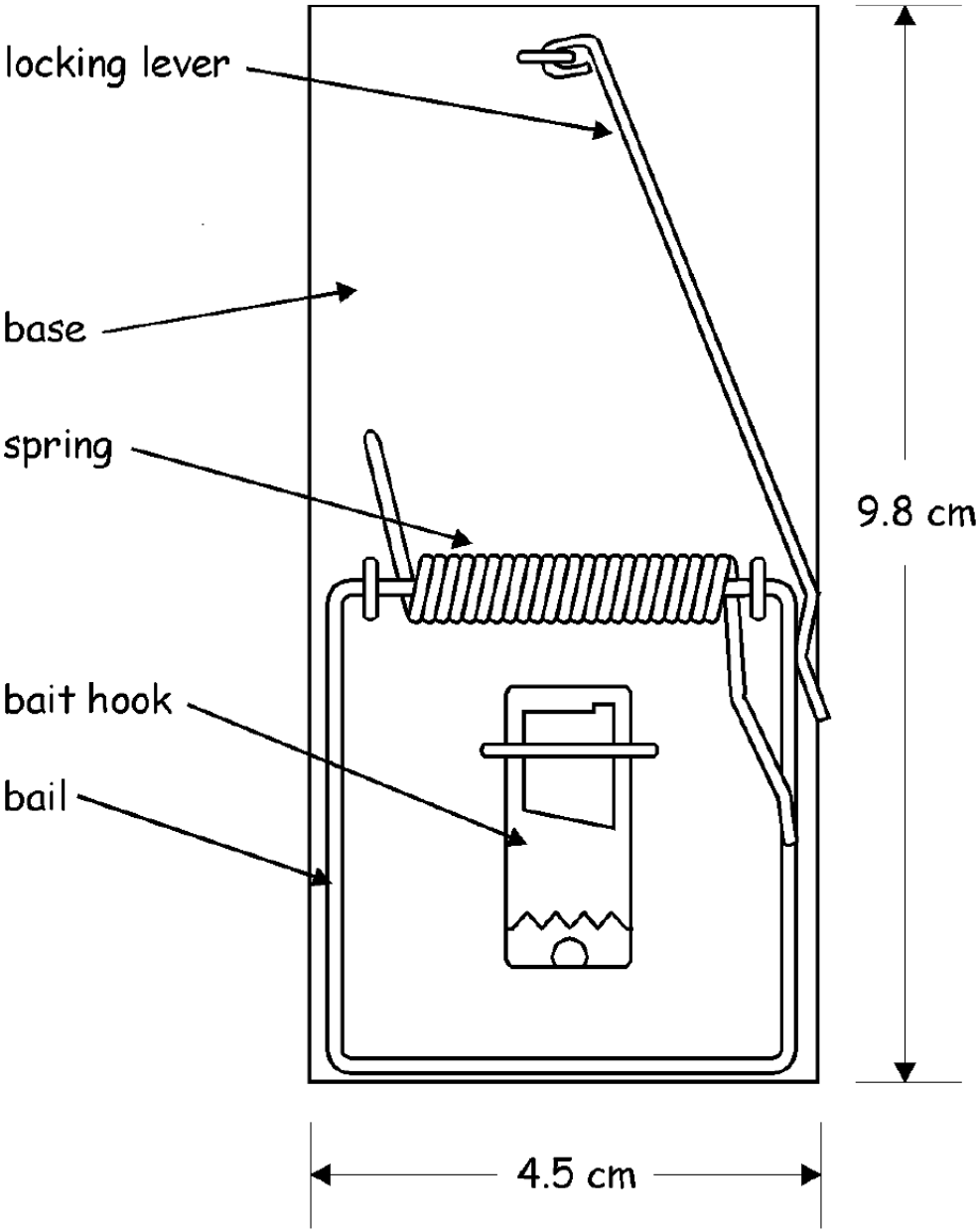
where:

D.. Distance is measured from the starting point to the stopping point of travel, utilizing a straight line to connect the two points (measure in centimeters)

D<sub>L</sub>...is the highest Performance score at the competition site.

F....is the final Performance score (to be combined with score from the Written Report).

**Reference Sketch of Original Mousetrap with  
Component Identifications**



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Middle and Senior High School Performance Score:

13. Two formulas are used to calculate the Performance score for the car run:

$$N = \left( \frac{w}{W} \right) * \left( \frac{D}{L} \right) + \frac{D}{T} \quad \text{and} \quad F = \frac{N}{N_L} * 100$$

where:

N...is the score.

To ensure that cars actually perform and not just be small and light,

N=0 if D is LESS than 300 centimeters (for elementary and middle school teams)

N=0 if D is LESS than 600 centimeters (for high school teams)

w...is the mass of the original mousetrap (always taken as 25 grams). NOTE: At all competitions, this standard value will be used in calculating the Performance score.

W...is the total mass of the completed car in grams.

T...is the total time in seconds that the car travels from the starting point to the stopping point.

D...is distance measured in a straight line from the starting point to the stopping point in centimeters. D=2,500 if the car travels 2,500 centimeters or more.

L...is the car's longest measurement along one of the three basic dimensions—length, width, or height—in centimeters, measured with the bail extended or retracted, whichever is greater.\* **Please refer to MOUSETRAP CAR DRAWING EXAMPLE for more information on how to measure L.**

N<sub>L</sub>...is the highest Performance score at the competition site.

F...is the final Performance score (to be combined with scores for the Design Drawing, and Technical Report).

*\*Judges will measure "L" (see illustration on following page) and "W" prior to the mousetrap car Performance runs. These measurements, together with "D" and "T" (determined by the car's run), are used to calculate "N" in the formula above.*

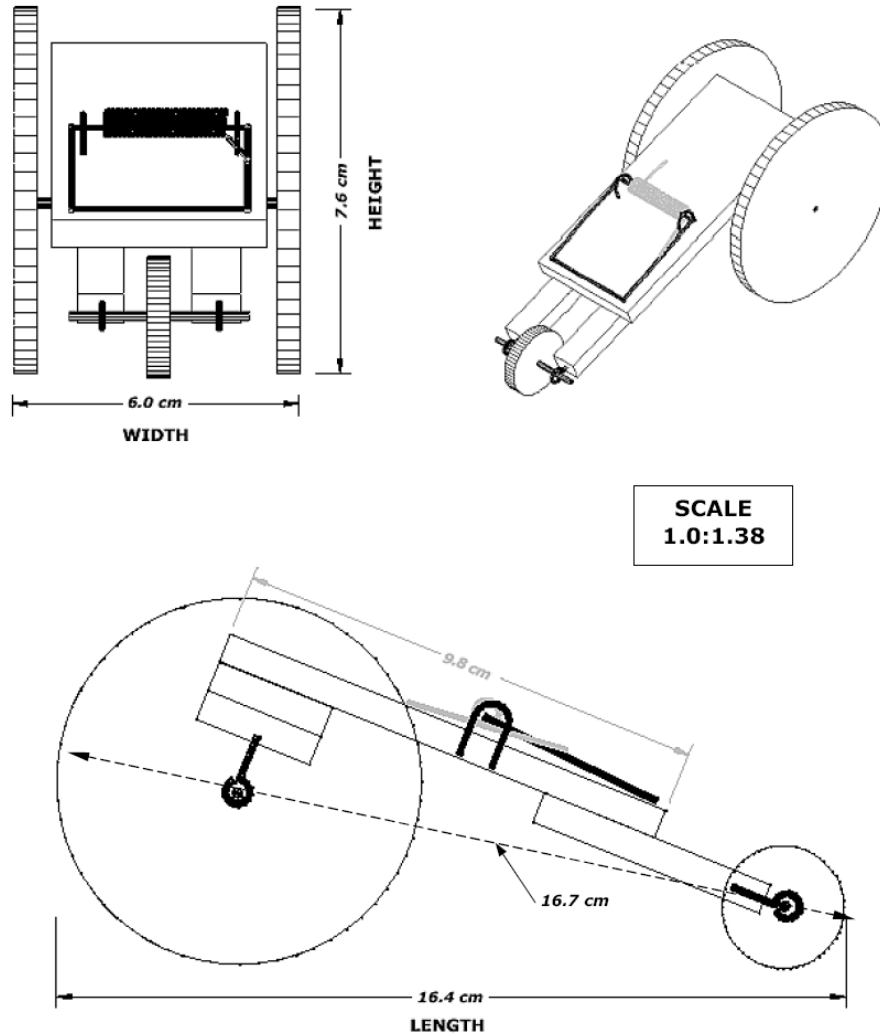
14. Overall Team Score in competition is sum of: 1) Performance (car run) as calculated above (max. 100 points); 2) Design Drawing (max. 50 points); and 3) Technical Report (max. 50 points). **Thus the maximum total is 200 points.**

15. See pages that follow for guidelines and evaluation sheets on each component of the Engineering Design (Mousetrap Car) Competition.

**\*NOTE:**

**Measurement of "L," the Mousetrap Car's Longest Dimension  
In Any Direction—Length, Width, or Height**

**Measurement of "L," the Mousetrap Car's Longest Dimension  
In Any Direction—Length, Width, or Height**



"L" is the car's longest measurement along one of the three basic dimensions—length, width, or height—in centimeters, measured with the bail extended or retracted, whichever is greater. The length of the car is defined as the distance from the farthest point at the rear of the car to the farthest point at the front. Likewise, the width of the car is defined as the distance from the farthest point on one side to the furthest point on the other. The height of the car is defined as the distance from the travel surface to the highest point of the car.

**L (for this example) = 16.4 cm**



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Please Check: Elementary School (ONLY) \_\_\_\_

Team Name: \_\_\_\_\_ School Name: \_\_\_\_\_

District: Miami-Dade City/State \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Distance:

First Run \_\_\_\_\_ Second Run \_\_\_\_\_

Longest Distance \_\_\_\_\_

$$F = \frac{D}{D_L} \times 100$$

Mousetrap Car Performance Point Score: F= \_\_\_\_\_

(Note: F...is the final Performance score (to be combined with score from the Written Report).

Overall Team Score in competition is sum of:

- 1) Performance (car run) as calculated above (max. 100 points);
- 2) Written Report (max. 50 points)

Performance (F) score \_\_\_\_\_

Report Score: \_\_\_\_\_

Overall Team Score: \_\_\_\_\_

Thus the maximum total is 150 points

2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
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**2012 SECME ENGINEERING DESIGN COMPETITION:  
MOUSETRAP CAR CONSTRUCTION AND OPERATION  
MIDDLE and SENIOR High School ONLY  
(Evaluation Sheet)**

Please Check: Middle School \_\_\_ High School \_\_\_

Team Name: \_\_\_\_\_ School Name: \_\_\_\_\_

District: Miami-Dade City/State \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Distance:

First Run \_\_\_\_\_ Second Run \_\_\_\_\_

$$N = \left(\frac{w}{W}\right) * \left(\frac{D}{L}\right) + \frac{D}{T} \quad \text{and} \quad F = \frac{N}{N_L} * 100$$

w = 25 Grams

W = \_\_\_\_\_ [Measured weight, in grams]

T = \_\_\_\_\_ [Measured time in seconds]

L = \_\_\_\_\_ [Longest dimension—length, width, or height—in centimeters]

D = \_\_\_\_\_ [Maximum D=2,500 if measured distance is more than 2,500 cm]

N = \_\_\_\_\_ [N=0, if D is LESS than 300 centimeters for elementary and middle school teams if  
D is LESS than 600 centimeters for high school teams]

N<sub>L</sub> = \_\_\_\_\_ [Highest Performance score at competition site]

**Mousetrap Car Performance Point Score: F=\_\_\_\_\_**

**(Note: F is combined with scores for Design Drawing, and Technical Report to arrive at Overall Team Score in competition.)**

# 2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES: MOUSETRAP CAR DRAWING

*<not required for elementary>*

As a part of the Engineering Design Competition, each team is required to prepare a scaled drawing depicting the car that they have designed and built

**MOUSETRAP CAR DRAWING REQUIREMENTS AND GUIDELINES: (Any entry not meeting the following requirements will be automatically disqualified.)**

1. The Mousetrap Car Drawing entry is required to illustrate the actual mousetrap car built by the team (photographs and computer generated drawings will NOT be allowed).
2. The size of the engineering paper is required to be the standard 18" X 24" (plain, non-grid, (17-pound vellum) sheet. (Allowing for the required 1" border on all sides, the actual drawing is to cover an exposed area of 16" X 22" of the paper.)  
**NO MOUNTING, NO FRAMES ALLOWED. BUT DRAWING MAY BE LAMINATED FOR PROTECTION IF DESIRED.**
3. All dimensions are required to be illustrated on the drawing.
4. The scale and the units are required to be indicated on the drawing.
5. The team's Mousetrap Car Drawing is required to show front, side, and top views.
6. All parts of the car are required to be labeled.
7. Ink pens, pencils or markers may be used.
8. A title **legend** is to be drawn in the bottom left corner of the drawing inside the 1" border with the following information is required:

**Team name**

**School Name**

**School District: Miami-Dade County Public Schools**

**Team Members' Names and Grade Levels**

**School Coordinator's Name**

**Date of Competition: January 21, 2012**

**AT ALL COMPETITIONS, THE MOUSETRAP CAR DRAWING WILL BE JUDGED ON:**

RESEMBLANCE (Between the actual mousetrap car and drawing)

SCALE

NAMING/LABELING (Of all of the parts used)

APPEARANCE/NEATNESS

2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
 "SECME: Plan It. Build It. Live It!"

**2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES:  
 MOUSETRAP CAR DRAWING  
 <Not Required For Elementary>  
 (Evaluation Sheet)**

Please Check: Middle School \_\_\_\_ High School \_\_\_\_

Team Name: \_\_\_\_\_ School Name \_\_\_\_\_

City/State: \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_ Age \_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_ Age \_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_ Age \_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Requirements Check: 18" x 24" Engineering Paper \_\_\_\_ 1" Border (All Sides) \_\_\_\_

17lb Vellum Paper \_\_\_\_ Title legend with required information \_\_\_\_

**If requirement checks are NOT met:** Five (5) points from each of the 4 areas above will be deducted from the total score in this category. Maximum number of points for the Engineering Design Competition Mousetrap Car Drawing is 50.

The maximum number of points for the Engineering Design Competition Mousetrap Car Drawing is 50. Please score each of the following four categories:

EVALUATION CATEGORIES	<u>POINTS</u>
I. RESEMBLANCE _____ The accuracy to which the Mousetrap Car Drawing illustrates the actual Mousetrap Car designed and built by the team. (1-15 points)	_____
II. SCALE The proportions in the Drawing correctly relate to and represent the team's actual Mousetrap Car. (1-15 points)	_____
III. NAMING/LABELING _____ The correctness of the names/labels of all of the parts in the Drawing of the Mousetrap Car. (1-10 points)	_____
IV. APPEARANCE/NEATNESS _____ The quality of the visual presentation of the Mousetrap Car Drawing entry (1-10 points)	_____
<i>Requirement check points deducted</i>	_____
TOTAL (The highest possible score is 50)	_____

# 2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES: MOUSETRAP CAR WRITTEN TECHNICAL REPORT

## (ELEMENTARY SCHOOL DIVISION)

As a part of the Design Competition, the team is required to write a Written Report describing the design, construction, and operation of the Mousetrap Car. The main body of the report should be a maximum of 1-2 pages

### REQUIREMENTS:

1. Cover page
  - a. Title of the Written Report (SECME: Mousetrap Car Technical Report)
  - b. Team Name
  - c. Each team member's name, grade and complete address
  - d. Team's school name and complete address
  - e. School System/District name: Miami-Dade County Public Schools
  - f. School Coordinator's name
  - g. Date (date of competition): January 21, 2012
2. Double-spaced Text
3. One-inch borders at the top, bottom, and on each side / 8½" X 11" white paper
4. 12 pt. /Standard Font / Computer printed/typed document
5. Report is neat and thorough and pages are numbered and in order

### Essay Organization (35 possible points)

- a. Writing includes an original, age-appropriate introduction
- b. Writing includes ideas that are fully developed and fully supported and describe the design, construction and operation of the car
- c. Writing is logical and coherent as a whole
- d. Writing includes an original, age-appropriate close

### Punctuation, Mechanics, Spelling and Grammar (15 possible points)

Written Report reflects the team's pride by being submitted as error-free as possible

- a) Writing is free of (age-appropriate) punctuation errors
- b) Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.)
- c) Writing is free of (age-appropriate) spelling errors

# 2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES: MOUSETRAP CAR WRITTEN TECHNICAL REPORT

## Middle and Senior High School

As a part of the Design Competition, the team is required to write a Technical Report describing the design, construction, and operation of the Mousetrap Car. The Technical Report should be a computer printed/typed document, **double-spaced**, on 8½" X 11" white paper with one-inch borders at the top, bottom, and on each side.

Use 12 pt. type in a standard legible text font. **The main body of the report -- 4. Introduction, 5. Design Construction, 6. Construction Procedure, and 7. Operation of the Mousetrap Car—should be a maximum of 5 pages total.** Drawings, sketches, and tables may be included in an Appendix if desired but this is optional and not required. (Entries not meeting these requirements will automatically be disqualified).

**TECHNICAL REPORT REQUIREMENTS AND GUIDELINES: (Any entry submitted without a cover page containing all of the required information will automatically be disqualified).**

1. COVER PAGE (Required to contain):
  - a. Title (SECME: Mousetrap Car Technical Report)
  - b. Name, grade, email and complete home addresses of team members
  - c. Team's school name and address
  - d. School System name: Miami-Dade County Public Schools
  - e. School Coordinator's name
  - f. Date of Competition: January 21, 2012
2. ABSTRACT One-half to one-page summary of Technical Report.
3. CONTENTS One page
4. INTRODUCTION
5. DESIGN
6. CONSTRUCTION PROCEDURE
7. OPERATION OF THE MOUSETRAP CAR
8. CONCLUSION/RECOMMENDATIONS
9. ACKNOWLEDGMENTS (Optional)
10. APPENDIX (The Appendix may contain sketches, tables, and charts.)

**AT ALL COMPETITIONS, THE MOUSETRAP CAR TECHNICAL REPORT WILL BE JUDGED ON:**

Content  
Mechanics  
Requirements

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## MOUSETRAP CAR ENGINEERING DESIGN TECHNICAL REPORT BREAKDOWN

### Content (1 – 36 pts)

#### **Cover Page:**

- a) Title (SECME: Mousetrap Car Technical Report)
- b) Names, addresses, and grades of team members
- c) School Name & Address
- d) School System/District
- e) School Coordinator's Name
- f) Date (date of competition)

#### **Abstract:**

- a) Includes the essential points of the purpose, methods, scope, results, conclusions, and recommendations
- b) Short—1 paragraph to 1 about 1 page in length (should be 10% or less of the total report)
- c) This is your chance to convince the readers that they should continue reading in a clear and concise way

#### **Page of Contents:**

Indicate on which pages the parts of the report can be located in a professional manner

#### **Introduction:**

Introduce the problem to be solved, your hypothesis, and how you planned to resolve the problem through design while dealing with any restrictions.

#### **Design:**

- a) Discuss the experimental process by which you altered your car.
- b) Reference the data tables from the appendix to defend the conclusions which cause you to change your design.

#### **Construction Procedure:**

- a) List Materials
- b) Clearly describe the procedures that someone with little knowledge of your car would follow to recreate it.

#### **Operation:**

Explain the process by which the car is prepared in order for it to run. Be explicit about the steps taken.

#### **Conclusion:**

- a) State whether your hypothesis was defended or rejected and why.
- b) Discuss the results of your final design and why it is superior to prior designs.
- c) Explain how future cars can further be improved and possibly a future hypothesis.

#### **Acknowledgements:** Optional

#### **Appendix:**

- a) Must include all data tables from experimentation
- b) Must include sketches of the car (top view, profile, and undercarriage view)
- c) May include a chart comparing the various trials

### Mechanics (1 – 14 pts)

- 1) Correct punctuation, capitalization, and spelling
- 2) Use of past tense and passive voice
- 3) Sentences are complete with appropriate coordination and subordination
- 4) Report flows logically from one idea to the next with minimal fragmentation

### Requirements

- 1) Required Components
  - a. Cover Page
  - b. Abstract
  - c. Contents
  - d. Introduction
  - e. Design
  - f. Construction Procedures
  - g. Operation
  - h. Conclusion
  - i. Appendix
- 2) Double-spaced Text
- 3) 1" borders on 8 ½ x 11 white paper
- 4) 12 pt. in Standard Font / Computer Typed
- 5) Report is neat and thorough and pages are numbered and in order

2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
 "SECME: Plan It. Build It. Live It!"

**2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES:  
 MOUSETRAP CAR WRITTEN TECHNICAL REPORT  
 Middle and Senior High School  
 (Evaluation Sheet)**

Please Check:      Middle School \_\_\_\_                      High School \_\_\_\_

Team Name: \_\_\_\_\_ School Name: \_\_\_\_\_

City/State \_\_\_\_\_

Each: Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

        Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

        Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**If requirement checks are NOT met: Zero points for the Technical Report**

Requirements Check:

\_\_\_\_ Required components                      \_\_\_\_ 12 pt. Type/Standard Font/Computer Typed  
 \_\_\_\_ 1" Borders on 8 ½ x 11 white paper      \_\_\_\_ Double-spaced Text

EVALUATION CATEGORIES	<u>POINTS</u>
<b><u>CONTENT (0 – 36 points)</u></b>	
i.      Abstract (0 – 5 points)	_____
ii.     Page of Contents (0 – 2 pts)	_____
iii.    Introduction (0 – 5 pts)	_____
iv.     Design (0 – 9 pts)	_____
v.      Construction Procedures (0 – 4 pts)	_____
vi.     Operation (0 – 3 pts)	_____
vii.    Conclusion (0 – 5 pts)	_____
viii.   Appendix (0 – 3 pts)	_____
<b><u>MECHANICS (0 – 14 points)</u></b>	
i.      Correct punctuation, capitalization, and spelling are evident throughout report	_____
ii.     Correct use of past tense and passive voice	_____
iii.    Sentences are complete with appropriate coordination and subordination	_____
iv.     Report flows logically from one idea to the next with minimal fragmentation	_____
TOTAL (The highest possible score is 50 points)	_____

\*\*NOTE: DECISION OF THE JUDGES IS FINAL



2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
 "SECME: Plan It. Build It. Live It!"

**2012 SECME ENGINEERING DESIGN COMPETITION GUIDELINES:  
 MOUSETRAP CAR WRITTEN TECHNICAL REPORT  
ELEMENTARY SCHOOLS ONLY  
 (Evaluation Sheet)**

Please Check: Elementary School (ONLY)\_\_\_

Team Name: \_\_\_\_\_ School Name: \_\_\_\_\_

City/State \_\_\_\_\_

Each: Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Student Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**If requirement checks are NOT met: Zero points for the Technical Report**

Requirements Check:

\_\_\_ Required components \_\_\_\_\_ 12 pt. Type/Standard Font/Computer Typed

\_\_\_ 1" Borders on 8 ½ x 11 white paper \_\_\_\_\_ Double-spaced Text

\_\_\_ Report is neat and thorough and pages are numbered and in order

EVALUATION CATEGORIES

POINTS

**Essay Organization (35 possible points)**

Writing includes an original, age-appropriate introduction (0-9 pts) i. \_\_\_\_\_

Writing includes ideas that are fully developed and fully supported and describe the design, construction and operation of the car (0-8 pts) \_\_\_\_\_

Writing is logical and coherent as a whole (0-9 pts) \_\_\_\_\_

Writing includes an original, age-appropriate close (0-9 pts) \_\_\_\_\_

**Punctuation, Mechanics, Spelling and Grammar (15 possible points)**

Writing is free of (age-appropriate) punctuation errors \_\_\_\_\_

Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.) \_\_\_\_\_

Writing is free of (age-appropriate) spelling errors \_\_\_\_\_

TOTAL (The highest possible score is 50 points) \_\_\_\_\_

\*\*NOTE: DECISION OF THE JUDGES IS FINAL



## TECHNOLOGY CHALLENGE RULES SECME/INTERNET SCIENCE AND TECHNOLOGY FAIR (ISTF)

<http://istf.ucf.edu>

The [University of Central Florida](http://www.ucf.edu) (UCF) has teamed with the SECME Program to bring their Internet Science and Technology Fair (ISTF) to all SECME students.

- The **Internet Science and Technology Fair** (ISTF) competition is a national technology literacy program that enables student teams--from the elementary to high school level--to research the application of critical technologies to real world problems. Students work as teams, adhere to guidelines based on national science content standards and locate/work with on-line scientists and engineers as team technical advisors. They present their four-month research projects in a website format for preliminary and national rounds of judging. ISTF national winning teams receive certificate awards from the National Medal of Technology and Innovation at the US Department of Commerce.
- SECME and ISTF are working together to challenge SECME student teams to participate in the ISTF competition. SECME/ISTF student teams that make it to the ISTF Finals and/or that advance from the preliminary round of judging to the final round of judging will be entered into in to SECME/ISTF National Competition Finals. SECME/ISTF winners **will not** attend the National Student Competition Finals. They will receive awards and be recognized as **NATIONAL** SECME/ISTF Winners.

Please visit the ISTF website for all official ISTF competition details and schedules.  
<http://istf.ucf.edu>

### Important Dates

**Sep.- Dec. 2010** Teacher and team enrollment

**Jan. 27, 2012** [Progress Reports](#) will be online by January 8th, 2010.

**Feb. 24, 2012** Deadline for submission of final projects' website URLs.

**March 09, 2012**

The [final process evaluation](#) will be available online.

**March 30, 2012**

Start date of Preliminary Round of Judging

**April 9, 2012**

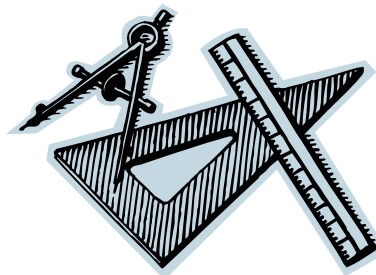
End date of Preliminary Round of Judging

**April 23, 2012**

Start date of Final Round of Judging

# MATHEMATICS CHALLENGE RULES

(Middle and Senior High School)



Time: 1 hour

Each school may enter one (1) team consisting of four (4) students in the Mathematics Challenge. **There will be separate competitions for middle and high school students.**

This is a team competition that will require students to work cooperatively to complete a comprehensive task.

## CONTEST RULES:

1. Each student will be asked to read, comprehend, and analyze scenarios to solve problems. They will then discuss their findings among the team members.
2. The following skills may be involved: following directions, management of information, using different units, comparing and combining information, determining or eliminating data, constructing graphs, data tables, and charts, calculating essential data, and creating model representations.
3. Teams should be prepared to respond to scenarios using knowledge and procedures from various mathematics courses (**Middle School**: Algebra, Geometry; **High School**: Algebra, Geometry, and Pre-calculus).
4. Teams will be asked to make connections across the disciplines and identify real-world connections.
5. Teams will also be asked to provide justifications or explanations at various points.

**MATHEMATICS CHALLENGE**  
**(Evaluation Worksheet)**

Check one: \_\_\_ Middle School (grade 6-8) \_\_\_ High School (grade 9-12)

School Name: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

**EVALUATION CATEGORIES:**

**Points**

Correct Calculations \_\_\_\_\_

Logical Explanations \_\_\_\_\_

Graphs, Data Tables, Charts \_\_\_\_\_

Real World and Curriculum Connections \_\_\_\_\_

Model Drawing/Construction \_\_\_\_\_

**TOTAL POINTS: (maximum score will be 100):** \_\_\_\_\_

**NOTE: Decisions of the judges are final.**

# MATHEMATICS CHALLENGE

## Elementary School

### General Rules

1. There will be one team per school. Each team will have four (4) students, including one captain per team.
2. The team will solve one problem at a time.
3. If any manipulatives or calculators are to be used, they will be provided. The problem may be solved using a variety of strategies such as: make a table or chart, use objects, work backwards, create a diagram, use arithmetic, etc.
4. Team members will work together to solve the problem.
5. Each time the team has solved its problem, members will write the solution and the school's name on the answer sheet provided. The team captain will hold up the answer sheet for the judges to collect.
6. The judges will score the solution, and points will be given for correct responses.
7. First, second, and third place will be determined according to the total number of points each team has accumulated.
8. In case of a tie, first, second, and third place will be selected according to the earliest completion time.

# WATER-ROCKET VEHICLE COMPETITION RULES

## The Mission:

The mission is to design a Water-Rocket Vehicle capable of reaching the highest altitude, possible given specific launch criteria.

While promoting Space Propulsion Awareness, the Water Bottle Rocket Competition serves to familiarize students with the basic principles of rocketry, design engineering, and manufacturing engineering. Students will design and manufacture a water rocket using a 2-Liter bottle as the pressure vessel. The rocket must be capable of launching from the SECME Water Rocket Launcher given specific launch criteria. Additionally, each team will develop a patch design, technical report, and technical drawing. The team's complete success will not solely be judged on rocket performance, but the combined effort of the team. **MISSION SUCCESS and Safe Flying !!**

\*\*\* Remember you will never be a winner unless you try and if you try your best, you have already made it to the bullseye :-) \*\*\*

## Design and Contest Rules:

1. Each design team must consist of three (3) students.
2. **Patch Design, Technical Paper (Middle and High School ONLY), and Completed Entry Form must be submitted to the District Office no later than Monday, December 12, 2011**
3. At check-in the day prior to the competition the following must be submitted:
  - ✓ **Pre -registered completed entry form**
  - ✓ **Technical Drawing**
  - ✓ **Operating Rocket (meeting specifications)**

**Note:** At the competition, each entry must pass a visual inspection and height requirement in order to be eligible to compete. Entries that fail inspection will be given ONE opportunity to make modifications to pass inspection prior to the beginning of the water rocket launching competition.

4. An overall winner will be judged, upon the following criteria (based on 100%):
  - **Hang Time of Rocket**                      **45% (Elementary 70%)**
  - **Patch Design**                                      **15% (Elementary 30%)**
  - **Technical Paper**                                      **25% (Elementary N/A)**
  - **Technical Drawing**                                      **15% (Elementary N/A)**
5. The rocket will be launched at an angle of approximately a **90 degree** using **355 ml (milliliters)** of water and 70 psi of air pressure. The "hang time" of the rocket will be measured using a stopwatch. Launch angle will be kept the same for all rockets launched at the competition.
6. The "hang time" is defined as the time from the point when the **rocket leaves the launch pad until the time it reaches the ground or strikes an object.** This measurement will be recorded by at least three qualified judges, with the average "hang time" used to determine the final "hang time" score.
7. The final score for hang time will be calculated based on the maximum hang time recorded during the competition, using the following formula:

$$\frac{\text{average hang time (sec)}}{\text{MAX hang time}} \times 100$$

*2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*“SECME: Plan It. Build It. Live It!”*

**Construction and Operation Requirements continued:**

1. The pressure vessel must be ONE (1) clear plastic, 2-liter bottle (i.e., no colored/tinted bottles allowed for the pressure vessel), see Diagram 1.
2. Water and air pressure will be the sole source of propellant. At competition, the water volume ( **355ml**) will be measured and placed in the rocket fuel chamber.
3. **Metal, glass, hard plastic, rocks, Styrofoam, or spikes cannot be used to construct the rocket. Use of these materials will automatically disqualify the team from the competition.**
4. On the bottom of the rocket, 7.5 cm from the throat of the exit plane must be clear of any coverage (paint, markings, drawings, etc.). See Diagram 1.
5. The maximum allowed total height of the rocket is 76.0 cm. See Diagram 1.
6. The nose-cone tip must have a minimum radius of 1.5 cm. See Diagram 2.
7. The fins may extend to the throat exit plane. See Diagram 1.  
**Note: No forward-swept type of fins are allowed to be used on the rocket.**
8. The maximum fin-width distance from the bottle is 10.0 cm (or 16.5 cm from the center of the bottle axis), see Diagram 3.
9. The use of parachutes is NOT allowed.

**PATCH DESIGN CRITERIA:**

**What is a Patch?**

A symbolic picture that is a creative display that reflects dedication and the mission of the team

1. Patch designs must be submitted on a 13" x 13" poster board.
2. All entries must contain the team name, crew members' names, and follow the theme of this year's SECME competition: **SECME: PLAN IT. BUILD IT. LIVE IT!**
3. Patches must be hand-made original work prepared and submitted by the SECME School Team who will be participating in the Water-Rocket Design Competition.
4. Ink pencils, markers, or paint may be used.
5. A short (less than one-page) explanation of the symbols of the patch should be included on the back of the patch.
6. Participating teams must be prepared to display their patches prior to the launch of their rockets.
7. Each entry is to be submitted to the District office by **Monday, December 12, 2011**

**Prior to the competition, the patch will be judged on:**

Originality  
Creativity  
Appearance  
Content

Resources: <http://science.dadeschools.net/secme/resources.html>

*How to Build a Water Rocket*

*Bottle Rocket Calculations*

*"Here is an Example..."*

# Patch Design



### Explanation of Patch

The propelled rocket represents the school system, supported by the educators and students, following a path towards excellence. The radiant five 4-point stars symbolize the enrichment of Science, Engineering, Communication, and Mathematics. Where as, the seven 8-point stars represent for the seven Universities that founded SECME. The three distinct contrails steaming behind the rocket, symbolize the support offered through SECME, Universities, and Industry partners. The ring before the rocket depicts the student's path through the SECME program, returning full circle to support the efforts of the program. As we have entered the new millennium, the sun over the horizon symbolizes of the induction of the new Water Rocket Design Competition into the SECME Programs. Accuracy, the focus of the contest, is represented by the target created by the outer ring, deep space, and the earth. The border is supported on the left and right by symbols, respectively, for water and compressed air, which are the fluids used to propel the rockets.



# WATER-ROCKET VEHICLE TECHNICAL REPORT

(Middle and Senior Only)

As a part of the Water Rocket Competition, the team is required to write a Technical Report describing the design, construction and operation of the Water Rocket. Numbers **1, 2, 3, 4, 5, 7, and 8** are required to be presented together within a maximum of 8 pages. Add pages as appropriate for numbers **6, 9, and 10**. Drawings, sketches, and tables may be included in appendix.

## 1. COVER PAGE:

- Title of Technical Report (SECME: Water Rocket Technical Report)
- Name and grade of team members
- The team's school name and address
- School System Name: Miami-Dade County Public Schools
- School Coordinator's Name
- Date

## 2. ABSTRACT: (10 POINTS)

- One half to one page summary of Technical Report

## 3. TABLE OF CONTENTS

## 4. INTRODUCTION

## 5. DESIGN BACKGROUND (15 POINTS)

## 6. CALCULATIONS: (40 POINTS)

- Table of equations and constants
- High Time Assumptions
- Mass flow rate calculations
- Drag calculations
- Final time aloft in seconds
- (Calculations will be scored on units, assumptions, accuracy, etc..)

## 7. CONCLUSIONS / RECOMMENDATIONS (20 POINTS)

## 8. ACKNOWLEDGMENT / REFERENCES

## 9. APPENDIX

Paper Structure (5 Points)

Grammar (10 Points)

**THE MAXIMUM NUMBER OF POINTS IS 100.**

Diagram 1

## Rocket Identification

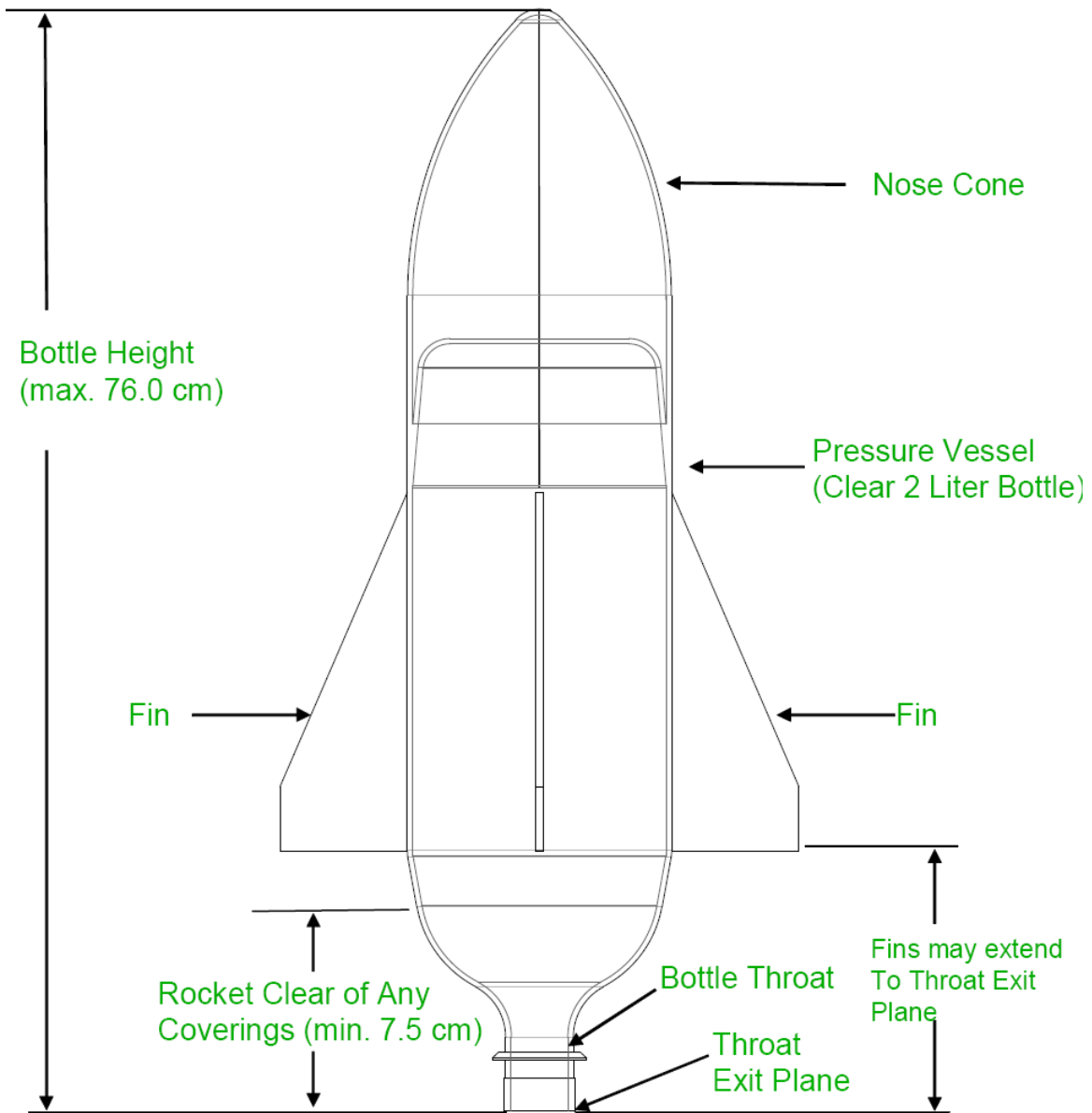


Diagram 2

## Nose Cone Diagram

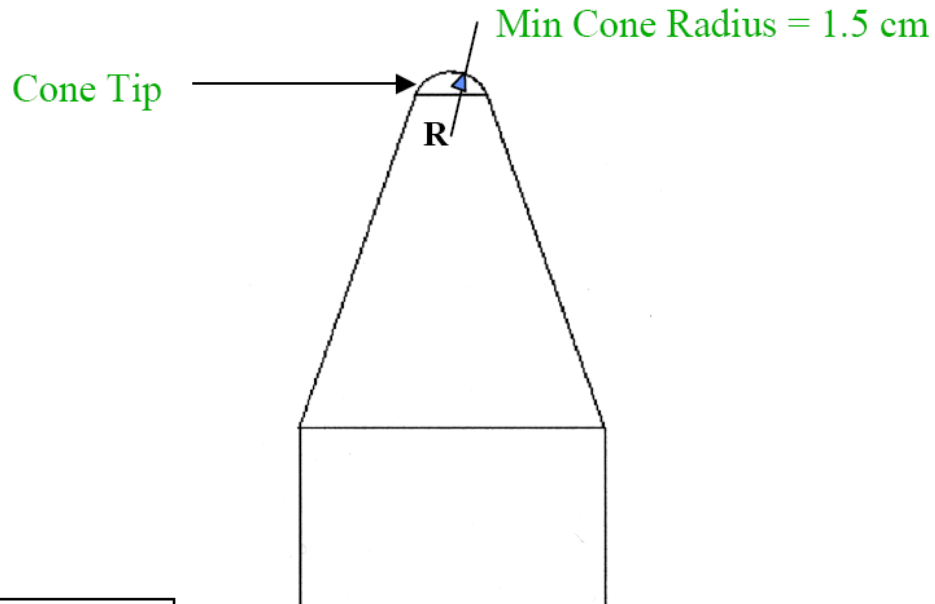
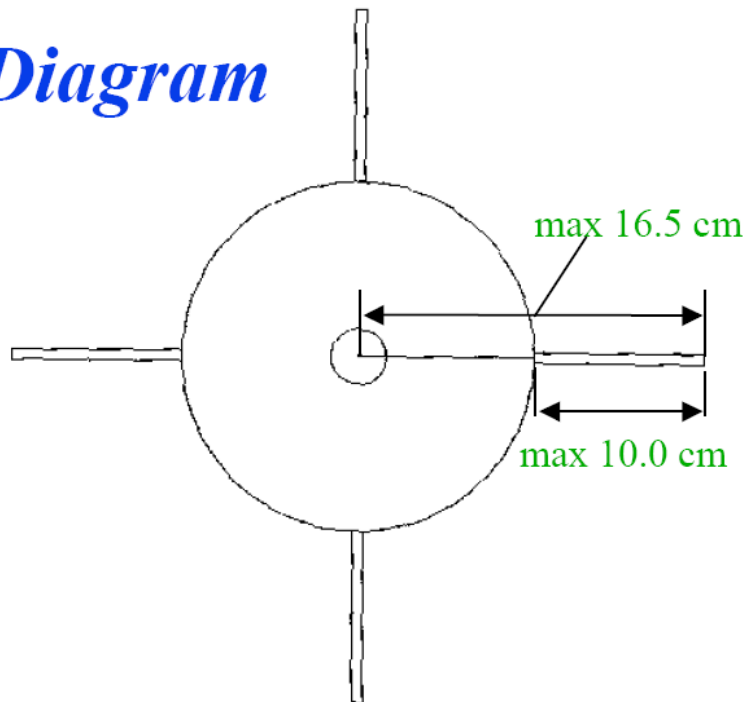


Diagram 3

## Fin Diagram



# 2012 SECME WATER ROCKET TECHNICAL REPORT

## Evaluation Sheet (Middle and Senior High School Only)

**Please check:**     \_\_ Middle (grades 6-8)     \_\_\_ Senior High (grades 9-12)  
School name: \_\_\_\_\_  
District name: \_\_\_\_\_  
Team name: \_\_\_\_\_  
Coordinator's name: \_\_\_\_\_

**Requirements Check: Zero points for the Technical Report if the requirements are not met.**

- Cover page with required information      12 pt. Type/Standard Font  
 Double-spaced Text      1" Borders      White paper

**EVALUATION CATEGORIES:**

**POINTS:**

**Abstract** (1-10 points) \_\_\_\_\_

**Design Background** (1-15 points) \_\_\_\_\_

**Paper Structure** (1-5 points) \_\_\_\_\_

**Calculations** (1-40 points) \_\_\_\_\_

**Conclusion/Recommandations** (1-20 points) \_\_\_\_\_

**Grammar, Punctuation, Reference Citations** (1-10 points) \_\_\_\_\_

***All middle and high schools should use a standard MLA or APA style for all references*** \_\_\_\_\_

**SUB-TOTAL** (The highest possible score is 100) \_\_\_\_\_

**Zero points for the Technical Report if the requirements are not met.** \_\_\_\_\_

**TOTAL** \_\_\_\_\_

**(Note to Judge: ATTACH TECHNICAL REPORT TO EVALUATION SHEET)**

**2012 SECME WATER ROCKET TECHNICAL DRAWING  
Evaluation Sheet**

**Please check:**      \_\_\_ Elementary School    \_\_\_ Middle School    \_\_\_ High School

School name: \_\_\_\_\_

Team name: \_\_\_\_\_

Coordinator's name: \_\_\_\_\_

**NOTE: Drawing requirements are 22" x 34" or 34" x 36" size paper.**

**The maximum points for the Water Rocket Technical Drawing are 100.**

<b>EVALUATION CATEGORIES:</b>	<b>POINTS:</b>
<b>Paper size</b> (1-5 points)	_____
<b>Resemblance</b> (1-45 points) (between the actual drawing and rocket)	_____
<b>Scale</b> (1-20 points)	_____
<b>Naming/labeling of all parts used</b> (1-10 points) (all parts should be clearly labeled)	_____
<b>Appearance/Neatness</b> (1-20 points)	_____
<b>TOTAL</b>	_____

**(ATTACH TECHNICAL DRAWING TO EVALUATION SHEET)**

## WATER-ROCKET VEHICLE COMPETITION (Vehicle Patch Design Evaluation Worksheet)

Check one: \_\_\_ Elementary (grades 3 - 5) \_\_\_ Middle (grades 6-8) \_\_\_ Senior High (grades 9-12)

School Name: \_\_\_\_\_

District Name: \_\_\_\_\_

Team Name: \_\_\_\_\_

Coordinator's Name: \_\_\_\_\_

Student Name (Mission Captain): \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

The maximum points for the Water-Rocket Vehicle Patch Design is 100. Please score each of the following five categories as indicated.

**EVALUATION CATEGORIES:**

**Points**

- |      |  |       |
|------|--|-------|
| I.   | Originality (1 to 30 points)<br>The innovation of the patch design   | _____ |
| II.  | Creativity (1 to 30 points)<br>The uniqueness of the information depicted  | _____ |
| III. | Appearance (1 to 20 points)<br>The attractiveness and neatness<br>of the presentation.                                     | _____ |
| IV.  | Content (1 to 20 points)<br>Representation of the team's name,<br>and SECME theme.<br>"SECME: PLAN IT. BUILD IT. LIVE IT!" | _____ |

**TOTAL POINTS** (Highest possible score is 100): \_\_\_\_\_

**NOTE: ATTACH PATCH DESIGN TO EVALUATION SHEET**  
*Decisions of the judges are final.*

## Water Rocket Vehicle Competition Construction and Operation Evaluation Worksheet

Check one: \_\_\_Elementary (grades 3 - 5) \_\_\_Middle (grades 6-8) \_\_\_ Senior High (grades 9-12)

Team Name: \_\_\_\_\_ School Name: \_\_\_\_\_

District Name: \_\_\_\_\_

Student Name (Mission Captain): \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name (Crew Member): \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Student Name (Crew Member): \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

Judge's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**EVALUATION CATEGORIES:**

**Measurement**

Overall Height: 76.0 cm or less \_\_\_\_\_

Fin-Width Distance: 10.0 cm \_\_\_\_\_

Fin-Base Distance from Throat Exit: min. 10 cm \_\_\_\_\_

Nose-Cone Tip Radius: 1.5 cm or greater \_\_\_\_\_

Throat-Exit Clearance: 7.5 cm or greater \_\_\_\_\_

**SCORING:**

**HANG TIME (Seconds)**

JUDGE 1 \_\_\_\_\_

JUDGE 2 \_\_\_\_\_

JUDGE 3 \_\_\_\_\_

**AVERAGE HANG TIME (Seconds)** \_\_\_\_\_

$$\frac{\text{average hang time (sec)}}{\text{MAX hang time}} \times 100$$

# 2012 SECME WATER ROCKET COMPETITION

## Overall Evaluation Sheet

**Please check:** \_\_\_\_\_ Elementary School \_\_\_\_\_ Middle School \_\_\_\_\_ High  
School \_\_\_\_\_  
School name: \_\_\_\_\_  
Team name: \_\_\_\_\_  
Coordinator's name: \_\_\_\_\_  
Student name: \_\_\_\_\_  
Student name: \_\_\_\_\_  
Student name: \_\_\_\_\_

**EVALUATION CATEGORIES:**

**Middle and Senior High**

Hang Time of Rocket (45%) \_\_\_\_\_  
Patch Design (15%) \_\_\_\_\_  
Technical Report (25%) \_\_\_\_\_  
Technical Drawing (15%) \_\_\_\_\_  
**Total Score** \_\_\_\_\_

**Elementary**

Hang Time of Rocket (70%) \_\_\_\_\_  
Patch Design (30%) \_\_\_\_\_  
**Total Score** \_\_\_\_\_

**Rank** \_\_\_\_\_

**Rank** \_\_\_\_\_



The Yaeger Foundation, Inc.

## **Bionic / Robotic Hand Kit Competition** (An exposition event at the Miami-Dade District SECME Olympiad)

**Middle and High School only (grades 6-12)**

Please visit the District SECME website for additional competition details:

<http://science.dadeschools.net/secme/default.html> click on Robotic Hand Expo

**THE CHALLENGE** - Your team will act as founders of a new biomedical company that is pursuing a large U. S. Government prosthetics contract. To win the contract, your company must redesign the Mark I, an existing electric bionic hand. You will be provided with the parts and instructions to build the Mark I. Your team must find ways of improving the function and appearance of this "Hand" without exceeding a fixed budget. The team must complete a functioning prototype and presentation.

**THE COMPETITION** - Your team will compete against other teams by demonstrating re-engineered hands to a panel of judges for final evaluation. Prizes will be awarded in categories such as Product Demonstration and Innovative Engineering.

- ✓ **Innovative Engineering** -- This category recognizes the most creative application of engineering and design. Teams that modify and/or add features and functions to the basic hand kit will be eligible for this award.
- ✓ **Effective Presentation** -- Teams that create and deliver the most professional-style presentation will be eligible for this award. This includes use of PowerPoint, visual aids, creative product demonstrations/simulations and video taped/live commercials.
- ✓ **Most Realistic Prosthesis** – This award recognizes the team that applied special attention to cosmetics and motion to produce the most aesthetically refined prosthetic hand prototype.
- ✓ **Product Demonstration** – The functionality of each design is assessed through a series of timed and untimed tests. The student using the prosthesis must be able to hold it with their hand and grasp, manipulate and release a variety of objects.

Teams should prepare a presentation that may involve multimedia. They will also be required to complete a task with their robotic hand.

**ELIGIBILITY** - Teams of 2 to 4 students, middle and high school (grades 6-12) only.

Schools wishing to participate in this competition should contact The Yaeger Foundation, Inc. at:

telephone: 305-751-4208

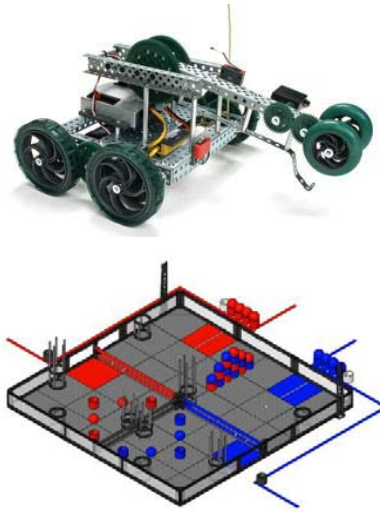
by e-mail: IG500@aol.com

Street address: 1177 M. L. King Boulevard, Miami, FL 33150

## VEX ROBOTICS COMPETITION

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

The VEX Robotics Design System offers students an exciting platform for learning about areas rich with career opportunities spanning science, technology, engineering and math (STEM). These are just a few of the many fields students can explore by creating with VEX Robotics technology. Beyond science and engineering principles, a VEX Robotics project encourages teamwork, leadership and problem solving among groups. It also allows educators to easily customize projects to meet the level of students' abilities. The affordable VEX platform is expanding rapidly and is now found in middle schools, high schools and university labs around the globe. Robotics hobbyists also appreciate the advanced capabilities of the VEX System.



Since 2008, VEX Robotics is a SECME National Student Competition. Please follow the instructions below to participate in the SECME/VEX Competition.

1. You are encouraged to register your team with VEXRobotics [www.RobotEvents.com](http://www.RobotEvents.com)
  - a. \$75 for the first team, \$25 for each additional team at a school.
  - b. You **DO NOT** Have to register to participate in SECME only events.
  - c. Registration gets you access to the official VRC Competitions and gets you a welcome kit that includes:
    - I. Sample Game Pieces
    - II. Robot License Tags
    - III. Robot Flags
    - IV. Some other promotional items
- 6.
2. Robot Hardware - If you already have a robot kit - reuse it, you don't need to spend money buying another one! If you need VEX parts, we recommend getting a quote from your local reseller - costs you nothing extra, but gets you their local support. Contact [rick\\_folea@roboticseducation.org](mailto:rick_folea@roboticseducation.org) if you need contact info.
3. **2011-2012 Game:** This year's game is [VEX Gateway](#). Students, with guidance from their teachers and mentors will aim to build the most innovative robots possible and work together to obtain the most points possible. In addition to just having a great time and building amazing robots, through their participation in the VEX Robotics Competition and their work within their team, students will learn many academic and life skills. Click [HERE](#) to see Gateway Animation video
4. Member Universities and Competition Host Sponsors. Vex Robotics Competition is held at the National Student Competition Finals. We encourage incorporating Vex Robotics as part of your State/Regional Competition.

Your Regional VEX Robotics Support person is:  
Rick Folea • [rick\\_folea@roboticseducation.org](mailto:rick_folea@roboticseducation.org) • 678-455-7262  
Contact him if you have any questions, or need any help.

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:  
VEX ROBOTICS ENGINEERING NOTEBOOK**

One of the main missions of the VEX Robotics Competition is to help students acquire real world life skills that will benefit them in their academic and professional future. The Engineering Notebook is a way for teams to document how the VEX Robotics Competition experience has helped them to better understand the engineering design process while also practicing a variety of critical life skills including project management, time management, brainstorming and teamwork. **The Engineering Notebook has no specified format**; each notebook should be created through a concerted effort by a team to document their design decisions. Teams should start their notebooks early and update them often. **Handwritten notes should be clearly written.** Notebooks must be submitted to SECME National Office via [email—secme@coe.gatech.edu](mailto:secme@coe.gatech.edu) . Notebooks are due May 7, 2012 (for winning District Olympiad team ONLY).

Engineering is an iterative process requiring students to recognize and define a problem, brainstorm and work through various stages of the design process, test their designs, continue to improve their designs and continue the process until a solution has been produced. During this process, students will come across obstacles, will encounter instances of success and failure, and will learn many lessons through their experience. It is this process that students should document in their Engineering Notebook.

The Engineering Notebook is an opportunity to document everything a team does and can serve as a historical guide of lessons learned and best practices which can benefit the team and students in future years. **Students may document any number of things in their Engineering Notebook such as: team meeting notes, design concepts and sketches, pictures, notes from competitions, biographies of the members of their team (students, teachers and mentors), observations and thoughts of team members throughout the season, team organization practices and any other notes that a team finds useful.**

**REQUIREMENTS:**

Cover page

- a. Title of the Written Report (SECME/VEX Robotics Engineering Notebook)
- b. Team Name
- c. Each team member's name, grade and complete address
- d. Each team member's email address
- e. Team's school name and complete address
- f. School System/District name
- g. School Coordinator's name

Table of Contents

- a. Please list/identify the contents in your electronic notebook

## 2012 Vex Robotics Engineering Notebook Evaluation Sheet

Please check: High School (ONLY) \_\_\_\_\_

School \_\_\_\_\_

School name: \_\_\_\_\_

Team name: \_\_\_\_\_

Coordinator's name: \_\_\_\_\_

Student name: \_\_\_\_\_ Grade \_\_\_\_\_

Student name: \_\_\_\_\_ Grade \_\_\_\_\_

Student name: \_\_\_\_\_ Grade \_\_\_\_\_

**Requirements Check: Zero points for the Engineering Notebook if the requirements are not met**

Cover Page

Table of Contents

**Engineering Notebook is a clear, complete document of the team's design and build process.**

Laid out such that it can be easily understood

Regularly updated, documenting all team efforts

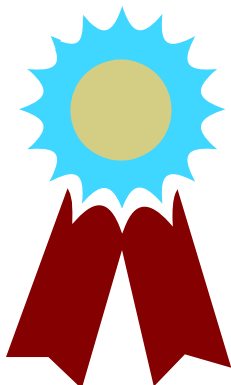
Information is easily found, making the notebook a useful tool to all team members

Evidence of an iterative design process, highlighting the various phases their robot development

DEVELOPING								PROFICIENT								EXCEPTIONAL			
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40

**TOTAL (The highest possible score is 40)**

..... /40



## AWARDS

All participating students will receive certificates. First-, second-, and third place trophies will be awarded for each event at each level (elementary, middle and high school) during the Awards program held at the Olympiad and Festival on January 22, 2011.



**SECME Student Competition Grievance  
Request for Review by Judges**

1. Competition Site/Date \_\_\_\_\_

2. School \_\_\_\_\_

3. Team Name \_\_\_\_\_

4. Adult Leader/Supervisor \_\_\_\_\_

5. Address \_\_\_\_\_

\_\_\_\_\_

6. Telephone/Fax \_\_\_\_\_

7. Competition Rule  
or Procedure in Question \_\_\_\_\_

\_\_\_\_\_

8. Specific Concern \_\_\_\_\_

(Use 2nd sheet if needed to document fully)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. Submitted by \_\_\_\_\_

Name \_\_\_\_\_

Signature \_\_\_\_\_

10. Date \_\_\_\_\_

**Submit to judges**

# NATIONAL SECME COMPETITION AND INTERNATIONAL BRIDGE COMPETITION

Each year, selected District Olympiad projects are entered in the **National SECME Competition** and the **International Bridge Competition**. Students are responsible for adhering to the National and International rules, which may vary slightly from the District competition, due to late clarifications and/or changes by the respective competition hosts.

## NATIONAL SECME COMPETITION

The following event winners are eligible for National competition:

- **Mousetrap Car**
- **Vex Robotics** (Senior High School only)

Although three (3) projects are sent to the National Student Competition, held this year at Clemson University in South Carolina. **Only the students on the winning mousetrap car (middle and senior high school) and Vex Robotics teams** are invited to travel to the competition and participate in the student program, **June/July (TBA)**. The District and the National SECME offices provide travel, housing, and meal expenses for the students and a teacher chaperone for each team; district funding permitting.

**Should the winning mousetrap car team DECLINE participation in the national competition, notification of such action MUST reach the District SECME office prior to April 20, 2012.** It is important that each winning school understand that last minute cancellations will cause a financial loss for the school system and would deprive a fellow school of representing the district at the national competition.

***(Note: First place Essay winners are identified prior to the National Mousetrap Competition)***

## INTERNATIONAL BRIDGE COMPETITION

Two (2) **individual\*** Bridge competition winning bridges, from first – second place, will represent Miami-Dade County Public Schools in the **International Bridge Competition** held this year in Las Vegas, Nevada. Bridge entries will be submitted by mail.

***(\*Please note: The International Bridge Competition is an individual event and not a team competition, therefore only 1 student from the winning team(s) will compete at the International competition)***

**\*\***For additional information on the National SECME Competitions, go to: [www.secme.org](http://www.secme.org) and click on National Competition Guidelines

2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
"SECME: Plan It. Build It. Live It!"

**FREQUENTLY ASKED QUESTIONS**

**and responses from the National SECME Office**

**FREQUENTLY ASKED QUESTIONS**

*If you have any questions, or need help in these specific areas, please contact:*

- Engineering Design (Mousetrap Car) Competition:* the Engineering Faculty Consultant or Minority Engineering Program Director at the Member University which sponsors your State/Regional competition
- Water Bottle Rocketry: Chris Garrett/Pratt&Whitney●Christopher.Garrett3@pwr.utc.com
- Vex Robotics: Rick Folea● [rfolea@VEXRobotics.com](mailto:rfolea@VEXRobotics.com) ● 678-455-7262
- ISTF: Bruce Furino● [Bruce@istf.ucf.edu](mailto:Bruce@istf.ucf.edu)

The SECME National Office is always here to help. We can be reached at [www.secme.org](http://www.secme.org)

Can we purchase mousetrap kits from the SECME National Office? *SECME no longer sells mousetrap kits. Kits may be purchased from your local hobby stores or the following vendors: Pitsco or Midwest Supply company as well as at the following sites:*

<http://www.docfizzix.com/>

[www.kelvin.com/Merchant2/merchant.mv?Screen=PROD&Product\\_Code=841315&Category\\_Code=ENDEEP](http://www.kelvin.com/Merchant2/merchant.mv?Screen=PROD&Product_Code=841315&Category_Code=ENDEEP)

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

Where can we purchase the engineering paper? *Here is one suggested supplier:*  
<http://www.waresdirect.com/products/Office-Supply/OCE-USA/17lb-Monochrome-Vellum32737?trackURL=shopzilla>

Our team won our State/Regional Competition. One of the team members is unable to attend National Competition Finals. Can we replace him/her? *YES. A student team member can be replaced with another SECME student. The replacement student has to be able to participate in the competition, in particular, the team interview, as outlined in the guidelines.*

Can parents/family members attend the National Student Competition Finals? *YES. Parents and family members are always encouraged to attend SECME events. Transportation, meals and lodging will need to be secured by the individual family. The Host University is only responsible for meals and lodging for the student team members (3) and the authorized chaperone. A listing of local hotels will be available at a later date.*

I am attending the National Student Competition Finals; can my child leave and have dinner with us? *Please arrange all "non competition" activities with the legally authorized chaperone for your child.*

Our flight arrives after the registration period. *SECME and its Host University work very hard for your child/student to have the best experience. Therefore, it is our recommendation that you exhaust all avenues in order to arrive within the registration period or earlier. If this is NOT possible, please notify the SECME National Office immediately. (Note: This DOES NOT apply to transportation delays due to circumstances out of our control)*



**2012 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**“SECME: Plan It. Build It. Live It!”**

We are the 1st place winning team from our State/Regional Competition. Do we send in our Technical Drawing and Report prior to attending National Competition Finals? Technical Reports due: May 6, 2011 at the National SECME Office: Submit Reports to: [secme@coe.gatech.edu](mailto:secme@coe.gatech.edu) SECME National is reviewing the option for drawings with the Host University and will advise you of such at a later date.

We have an active SECME program at our school but, there will be no State/Regional Competition in our area this year; can my students compete in the National Competitions? YES.

- Students can participate in the Internet Science and Technology Fair (ISTF)
  
- SECME programs can host a “local” Essay Competition and submit the winning essay to the SECME National Office for entry into the National Competition Finals
  
- Engineering Design (Mousetrap Car) and Vex Robotics. Winning State/Regional teams travel to the National Student Competition Finals to compete. In the absence of such it will be your responsibility to raise the travel funds to send your 3 student team and chaperone to the National Student Competition Finals to compete. Please contact us at [www.secme.org](http://www.secme.org) for additional guidance.

Can parents/family members attend the National Student Competition Finals? YES. Parents and family members are always encouraged to attend SECME events. Transportation, meals and lodging will need to be secured by the individual family. The Host University is only responsible for meals and lodging for the student team members (3) and the authorized chaperone. A listing of local hotels will be available at a later date.

**Concerns and Complaints.** Please complete and submit the Competition Grievance Form to the Festival & Olympiad Competition Hosts.

**SECME NATIONAL COMPETITION DATES AND DEADLINES**

**April 20, 2012**

- Certification of first place State/Regional Winners
- First Place Winning Essays due at the SECME National Office

**May 7, 2012**

- ALL National winners will be notified
- Engineering Design (Mousetrap Car) Technical Reports are due at the SECME National Office
- VEX Robotics Engineering Notebooks are due at the SECME National Office

**May 31, 2012**

- ALL Teams must be Registered for National Competition Finals

**ANTI-DISCRIMINATION POLICY**  
**Federal and State Laws**

The School Board of Miami-Dade County, Florida adheres to a policy of nondiscrimination in employment and educational programs/activities and strives affirmatively to provide equal opportunity for all as required by law:

**Title VI of the Civil Rights Act of 1964** - prohibits discrimination on the basis of race, color, religion, or national origin.

**Title VII of the Civil Rights Act of 1964**, as amended - prohibits discrimination in employment on the basis of race, color, religion, gender, or national origin.

**Title IX of the Educational Amendments of 1972** - prohibits discrimination on the basis of gender.

**Age Discrimination in Employment Act of 1967 (ADEA)**, as amended - prohibits discrimination on the basis of age with respect to individuals who are at least 40.

**The Equal Pay Act of 1963**, as amended - prohibits gender discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

**Section 504 of the Rehabilitation Act of 1973** - prohibits discrimination against the disabled.

**Americans with Disabilities Act of 1990 (ADA)** - prohibits discrimination against individuals with disabilities in employment, public service, public accommodations and telecommunications.

**The Family and Medical Leave Act of 1993 (FMLA)** - requires covered employers to provide up to 12 weeks of unpaid, job-protected leave to "eligible" employees for certain family and medical reasons.

**The Pregnancy Discrimination Act of 1978** - prohibits discrimination in employment on the basis of pregnancy, childbirth, or related medical conditions.

**Florida Educational Equity Act (FEEA)** - prohibits discrimination on the basis of race, gender, national origin, marital status, or handicap against a student or employee.

**Florida Civil Rights Act of 1992** - secures for all individuals within the state freedom from discrimination because of race, color, religion, sex, national origin, age, handicap, or marital status.

Veterans are provided re-employment rights in accordance with P.L. 93-508 (Federal Law) and Section 295.07 (Florida Statutes), which stipulates categorical preferences for employment.

Revised 9/2008