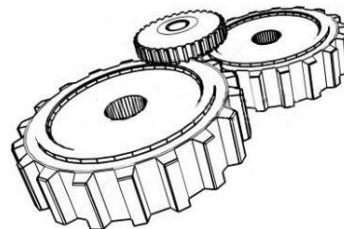


2017-18 SECME Competition Theme



M-DCPS  
Competition Booklet  
2018



(Adapted from the National SECME  
Competition Guidelines October 2017)

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**TABLE OF CONTENTS**

	Page
Introduction .....	3
SECME Logo and 2017-2018 Theme .....	4
School Summary of Registered Events Invoice .....	5
Student Registration Form .....	6
General Instructions .....	7
Check-in Procedures .....	8
Description of Events .....	9
Banner Competition .....	11
Brain Bowl Competition .....	13
Bridge-Building Competition .....	15
Egg-Drop Competition .....	17
Essay Competition .....	20
Mousetrap Car Competition (Elementary) .....	28
Mousetrap Car Competition (Middle and Senior) .....	34
Mathematics Challenge (Middle and Senior) .....	45
Mathematics Challenge (Elementary) .....	47
Water-Bottle Rocket Competition .....	48
Water-Bottle Rocket Technical Report (Middle and Senior) .....	54
Bionic/Robotic Hand Kit Exposition Event .....	63
Vex Robotics (Senior High School Only) .....	64
VEX IQ Robotics (Elementary and Middle) .....	70
FPL Generator Build Competition .....	72
ECybermission .....	78
STEM Video Competition .....	79
Awards .....	83
Student Competition Grievance .....	84
National and International Competition .....	85
Frequently Asked Questions .....	86

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**ANNUAL DISTRICT SECME FESTIVAL & OLYMPIAD COMPETITION**  
**SATURDAY, FEBRUARY 10, 2018**

**Miami Dade College, North Campus**  
**11380 N. W. 27 Avenue**  
**Miami Florida 33167**

**Check-in February 9, 2018 (1:00 p.m. – 7:00 p.m.) in the Gymnasium**

**INTRODUCTION**

The Miami-Dade County Public Schools (M-DCPS) Department of Mathematics and Science 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 ONLY (bridge, mousetrap-car, egg-drop, water-bottle rocket)* will occur on February 9<sup>th</sup>. Competition will begin on February 10<sup>th</sup> at 8:30 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 best degree possible, this year's theme, ***"SECME: The Gold Standard in STEM"*** 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.** In order to compete, your 2017-2018 data must be entered electronically into the SECME National database **prior to your Regional/State Competition.** This is to be done by the school site SECME coordinator. \*Only students active in a local SECME program are eligible to enter National competitions.

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**

Dr. Ava Rosales, Executive Director, SECME Program Director  
Mr. Dane Jaber, Instructional Supervisor, SECME Coordinator

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**LOGO:**



**2017-2018 SECME THEME:**

***“SECME: The Gold Standard in STEM”***

The 2017-2018 year's 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.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SCHOOL SUMMARY OF REGISTERED EVENTS INVOICE**

School Name: \_\_\_\_\_ Work Location #: \_\_\_\_\_

SECME Coordinator: \_\_\_\_\_ Principal's Signature: \_\_\_\_\_

**All schools:**

1. **Must register online by Wednesday, December 13, 2017** at <http://science.dadeschools.net/secme/default.html>
2. **Must enter the following competitions: Banner (required) and at least one team event.** Please indicate below the categories in which your school will participate.
3. Submit a **\$75 registration fee (per level)** payable to **MECA** and indicate **SECME** in the notes/memo section by **Wednesday, December 13, 2017** along with this form and all other required competition reports, as indicated by the event, to:

**M-DCPS Department of Mathematics and Science**

**Attention: SECME**

**U.S. Mail – 1501 N.E. 2<sup>nd</sup> Ave., Suite 327 Miami, FL 33132**

**NOTE: HAND DELIVERY PREFERRED PRIOR TO DEADLINE– LATE REGISTRATIONS WILL NOT BE ACCEPTED**

**EVENTS**

\_\_\_\_\_ **BANNER:** (REQUIRED K-12) Each school **must** enter a banner which will be displayed in the Parade of Schools (team contest)

\_\_\_\_\_ **BIONIC/ROBOTIC HAND KIT EXPOSITION:** (6-12) This is a 2 - 4 member student team event. Bring robotic hand on day of competition.

\_\_\_\_\_ **BRAIN BOWL:** (K-12) This is a 4-member student team event. Only one team per school.

\_\_\_\_\_ **BRIDGE-BUILDING:** (6-12) 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. Bridge must be checked in on Friday, February 9, 2018.**

\_\_\_\_\_ **eCybermission:** (6-9) This is a 3 or 4 member student team event. Multiple entries allowed via [www.ecybermission.com](http://www.ecybermission.com) Deadline: **December 13, 2017**

\_\_\_\_\_ **EGG-DROP CONTAINER:** (6-12) This is a 3-member student team event. Only one team per school. **Vehicle must be checked in on Friday, February 9, 2018.**

\_\_\_\_\_ **ESSAY:** (K-12) Each school **may enter one individual student** essay.  
Due: **Wednesday, December 13, 2017 (Individual contest)** through email ([djaber@dadeschools.net](mailto:djaber@dadeschools.net)) **AND** hardcopy with registration fee submission.

\_\_\_\_\_ **FPL GENERATOR BUILD:** (K-12) This is a 2 - 4 member student team event. Bring generator on day of competition.

\_\_\_\_\_ **MATHEMATICS CHALLENGE:** (K-12) This is a 4-member student team event. Only one team per school

\_\_\_\_\_ **MOUSETRAP CAR:** (K-12) This is a 3-member student team event. Only one team per school. **Vehicle must be checked in on Friday, February 9, 2018.**

\_\_\_\_\_ **STEM Video Competition:** Online submission Due **December 13, 2017**

\_\_\_\_\_ **VEX ROBOTICS:** (9-12) This is a 3-member team event. Bring robot on day of competition.

\_\_\_\_\_ **VEX IQ ROBOTICS:** (K-8) Teams typically have 5-10 members. Bring robot on day of competition.

\_\_\_\_\_ **WATER-BOTTLE ROCKET COMPETITION:** (K-12) This is a 3-member student team event. **Patch (All) and Technical Report (Secondary Only). Due Wednesday, December 13, 2017 with registration fee submission.** Only one team per school. **Vehicle (All) and drawing (Secondary Only) must be checked in on Friday, February 9, 2018.**

# **STUDENT REGISTRATION FORM**

**(Please PRINT legibly)**

## SECME Competition form

[illegible]

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**GENERAL INSTRUCTIONS**

1. All schools must register online by **Wednesday, December 13, 2017** at the **SECME Competition form** page. **Combination schools (e.g. K-8, K-12, 6-12) will need to register grade groups (e.g. Elementary, Middle, High School) levels separately including separate registration payments. \*Note: All mentions of one entry per school should also be understood as one entry per grade group per school for K-8 and combination schools.**
2. **Schools participating in SECME must register their school information with the National SECME office at the Registration and Reporting Forms link <http://secme.secme.org/Logon.aspx> PRIOR to the competition.**
3. **Check-in of pre-designed projects (Bridge, Egg-Drop Container, Water-Bottle Rocket, and Mousetrap Car) begins at 1:00 p.m. on Friday, February 9<sup>th</sup>, 2018 and concludes at 7:00 p.m. at Miami Dade College, North Campus (Gymnasium for all except bridges. Bridges checked-in will take place in another location). Participating schools must be registered with the Department of Mathematics and Science: SECME District office AND the national SECME office. Each school must have on file at the National SECME office its complete list of all SECME students in order to compete (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 areas at 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 name, school level (elementary, middle or senior high) and names of team members.**
5. Two students **ONLY** must be in line outside the Science Complex with the school's banner at **8:15 a.m. for the opening ceremony on Saturday, February 10<sup>th</sup>, 2018 (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. All entries in the competitions are expected to be neat, original, and completed by the students participating in this year's Olympiad.
8. Each school must enter the following contests: banner (required), and at least one other team event.
9. Elementary level students will compete against elementary level students only. Similarly, middle and senior high level students will only compete against their own level. Combination schools may NOT submit combined level teams for any event (e.g. a 7<sup>th</sup> grade and 9<sup>th</sup> grade student cannot be on the same banner team).
10. First-, second-, and third-place medals will be awarded to participants and trophies awarded to schools. All participants will receive certificates.

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**✓ CHECK-IN PROCEDURES**  
**SATURDAY FEBRUARY 10<sup>TH</sup>, 2018**  
**DAY OF THE FESTIVAL AND OLYMPIAD**

Upon arrival, the SECME Coordinator/Designee should check-in at the general registration area outside of the Science Complex.

**Be prepared to submit the following:**

- ☐ ☐ **Student Registration Forms**  
(All information completed, see page 6.)
  - ☐ ☐ **Evaluation Sheets For Each Event**  
(Completed with school and team information for registered events)  
\*Evaluation sheets for projects checked-in on Friday should be submitted with the project.
- 

**Check the program for room locations; then proceed to the audience area Science Complex with all students for the Opening Ceremony, not including the two students that will be presenting the banner.**



*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**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 (ELEM/MIDDLE/SENIOR)**

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

**BRAIN-BOWL (ELEM/MIDDLE/SENIOR)**

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 (MIDDLE/SENIOR)**

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 (MIDDLE/SENIOR)**

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 (ELEM/MIDDLE/SENIOR)**

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 Wednesday, December 13, 2017, by email ([djaber@dadeschools.net](mailto:djaber@dadeschools.net)) AND hardcopy submitted with registration fee.** Entries received after that date are not eligible for inclusion in the competition (individual event).

**STEM Video Competition**

Students create brief, standards-aligned resources in teams of up to 3 highlighting experiences and thoughts regarding math and science from experts, teachers, professionals, and skilled enthusiasts

**FPL GENERATOR BUILD (ELEM/MIDDLE/SENIOR)**

Students will work in teams minimum 2, maximum 4 to construct a generator and measure the voltage output. The voltage must be generated using electromagnetic induction (no static electricity, photovoltaic, etc.) and the design should produce a continuous voltage, not a single spike. Team will be interviewed by judges (written and oral) and will provide a drawing and one page abstract.

**MOUSETRAP CAR (ELEM/MIDDLE/SENIOR)**

Students build cars that are propelled by the spring of a mousetrap. All teams (3 students on each) must have

- Mousetrap Car – (Constructed and Running) (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.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**DESCRIPTION OF EVENTS, continued**

**MATHEMATICS (ELEM/MIDDLE/SENIOR)**

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 (ELEM/MIDDLE/SENIOR)**

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: Wednesday, December 13, 2017**)
- Technical Report (middle and senior high, **Due: Wednesday, December 13, 2017**)
- Technical Drawing (middle and senior high)
- Written Report (elementary) **Due: Wednesday, December 13, 2017**

**BIONIC/ROBOTIC HAND KIT EXPOSITION EVENT (MIDDLE/SENIOR)**

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 (SENIOR)**

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

**VEX IQ ROBOTICS (ELEMENTARY/MIDDLE)**

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

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME BANNER COMPETITION**  
**(REQUIRED BY ALL SCHOOLS)**

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

**I. DESIGN AND CONTEST RULES:**

1. Banner measurements **MUST BE 72 inches wide and 36 inches high.** (Cannot be smaller than or exceed the measurement requirements within a **half-inch margin of error.**)



2. All entries must include the
  - School name and colors
  - City and state
  - Current year of competition
  - SECME logo (see page 4 for clarification of logo)
    - Creative depiction of the competition theme ("SECME: The Gold Standard in STEM")
  - The word "SECME" must appear on the banner
3. Banners must be hand-made original work for the year it is submitted.

Additionally, 1<sup>st</sup> place winning District Engineering Design (Middle/High Mousetrap Cars) 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.**

**In the case of a tie: Judges will re-judge the tied banners side-by-side to determine a winner.**

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

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

Please Check      ☐ Elementary      ☐ Middle School      ☐ 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 (+/- ½ inch) \_\_\_\_\_ School Name and colors \_\_\_\_\_  
 City and State \_\_\_\_\_ Current Year \_\_\_\_\_ SECME Logo on the banner \_\_\_\_\_  
 Creative depiction of the theme "SECME: The Gold Standard in STEM!" \_\_\_\_\_

The maximum number of points for a banner is 16

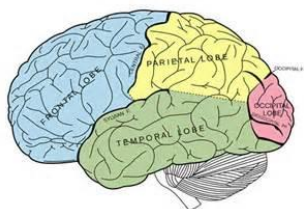
EVALUATION CATEGORIES:		POINTS
I.	CONTENT: Measure the quality and organization of the information on the banner (0-4 points)	____/4
II.	ORIGINALITY: Evaluate the innovativeness of the design, how well it presents the ideas on the entry (0-4 points)	____/4
III.	CREATIVITY: Judge the uniqueness of the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

**SECME Banner Rubric**

CATEGORY				
Points	4	3	2	1
<b>Content</b>	The poster shows a high quality of organizing the information and includes complex visual or conceptual ideas.	The poster shows some quality of organizing the information with some use of visual and conceptual ideas.	The poster shows little quality of organizing the information and simple visual or conceptual ideas.	The poster shows no quality of organizing the information and limited visual or conceptual ideas.
<b>Originality</b>	The poster shows a large amount of original thought. Ideas are creative and inventive and demonstrate personal expression.	The poster shows some original thought, new ideas and insights.	The poster shows little evidence of original thinking and lacks personal expression.	The poster does not show evidence of original thinking and does not demonstrate a personal expression.
<b>Creativity</b>	The poster makes excellent use of font, color, graphics, effects, etc. in its composition to enhance the presentation.	The poster makes good use of font, color, graphics, effects, etc. to enhance the presentation and composition.	The poster makes little use of font, color, graphics, effects, etc. in its composition that may detract from the overall presentation content.	The poster makes no use of font, color, graphics, effects in its composition.
<b>Appearance</b>	The poster's is exceptionally done in terms of design, layout, and neatness and craftsmanship	The poster's is good in terms of design, layout and neatness and demonstrates good craftsmanship.	The poster is acceptable in terms of design, layout and neatness, however lacking in good craftsmanship.	The poster is distractingly messy or very poorly designed with no visible craftsmanship.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**BRAIN-BOWL COMPETITION**  
**(ELEM/MIDDLE/SENIOR)**



**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 finalist teams that will compete orally head-to-head with buzzers, to determine first – third places.
4. A team will compete with two or more other teams in a head-to-head competition. All questions will be taken from **earth/space, life, 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.

**Finals:**

6. A question will be stated only once.
7. Before beginning the match, the judge will ask each contestant to test his or her buzzer. Each team will also designate a captain.
8. 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.
9. 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.
10. 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.
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.
4. 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.

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

5. 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.
6. 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.
7. 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.**
8. 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.
9. 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.
10. 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.
11. 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.**

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**2018 INTERNATIONAL BRIDGE BUILDING CONTEST SPECIFICATIONS**  
**AS USED IN THE SECME OLYMPIAD**  
(MIDDLE/SENIOR)



The rules are being developed by the International Bridge Building Committee for the **2018 International Bridge Building Contest**. Once released, questions about the rules should be directed to Dane Jaber by email at [djaber@dadeschools.net](mailto:djaber@dadeschools.net).

<http://bridgecontest.phys.iit.edu/>

DRAFT

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**BRIDGE-BUILDING COMPETITION**

**(Registration and Evaluation Worksheet)**

Please Check ☐ Middle School ☐ High School

*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:** \_\_\_\_\_

**High School Teams Only:** *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:**

**I. CONSTRUCTION REQUIREMENTS**

SCALE	MEASUREMENT	COMMENTS
-------	-------------	----------

**II. SCORING\*\***

**The load will increase until bridge failure occurs\***

**\*Failure-includes** inability of the bridge to carry additional load, or a load deflection of 25. mm under the loading location, whichever occurs first, or if a bridge has leg(s) which fail.

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

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

**\*\*Note:** The decisions of the judges are final



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**EGG-DROP COMPETITION**  
**(MIDDLE/SENIOR)**



**General Rules:**

The contestants shall design and build a shipping container that will prevent an uncooked Grade A Large chicken egg (approximate mass of 57-63 grams) 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. Egg drop machines that do not fulfill the requirements below will be disqualified and not tested until after all the official ones have gone through both trials only if time permits:

- a. **The container must be less than 800 cm<sup>3</sup> in volume**, with no single dimension longer than 25 cm. Any irregularly shaped containers will have volumes calculated using standard geometric formulas that best resemble the container during check-in. Any disputes regarding the volume of a container must be resolved during check in, not at the Olympiad.
- b. The maximum weight, including the egg, cannot exceed 1,000 grams.
- c. Contestants must be able to remove the egg without damage.
- d. A maximum of 30 seconds will be allowed to open the container, place the egg in the container and re-seal it.
- e. After the drop, 30 seconds to unseal, competitors must remove and show the undamaged egg then 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 being dropped.
3. Once an egg is weighed-in with the structure, that egg cannot be exchanged with another.

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

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 = 10 if egg breaks on 2<sup>nd</sup> drop  
S = 1 if egg breaks on 1<sup>st</sup> drop

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.**

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**EGG DROP COMPETITION**  
**(Evaluation Worksheet)**

Please Check

☐ Middle School

☐ High School

**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

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

$$(W + L^2 + V)$$

S2= \_\_\_\_\_ S2 (winner)= \_\_\_\_\_

**FINAL Overall Score:**

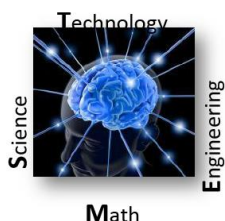
$$\frac{S2}{S2 \text{ (winner)}} \times 100 = \text{_____ points}$$

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

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

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM



### **ESSAY COMPETITION RULES** (ELEM/MIDDLE/SENIOR)



SECME Student WebQuest and 2017-18 Essay Competition Guidelines

**Due: Wednesday, December 13, 2017**

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

#### **INTRODUCTION:**

What makes you smile, gets you excited, makes you want to “do” something? What SECME activities that involve **Science**, **Technology**, **Engineering**, or **Math** do you find to be fun? Why are they fun? How can you make a living doing what you love to do? What kinds of careers use **Science**, **Technology**, **Engineering**, and **Math**? What level of education do you need to prepare you for these careers? This SECME competition will give you the opportunity to explore this year’s SECME National Student Competition theme “***SECME: The Gold Standard in STEM!***”

#### **COMPETITION TASK:**

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:**

Be prepared to use technology to travel to places around the world and beyond.  
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.

Your exploration will be divided into five phases and 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?

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME WebQuest and 2017-18 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? Balsawood 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 you love the roar of engines? Does forensic science excite you? Maybe you love computers or robotics. Ask yourself “What am I so excited about and would love to have a career doing every day; wake up thinking about it and go to sleep thinking about it, and never getting bored with it?” Whatever your answer is, that is your “passion” and that passion will help drive you to become successful at it.

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.texascaresonline.com/>

<http://www.discovere.org/discover-engineering>

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

<http://stemcareer.com/>

<http://www.onetonline.org/find/stem?t=0>

<http://www.wisegeek.com/science.htm>

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME WebQuest and 2017-18 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 green menu bar across the top, hover your mouse over "More" and click on "Gov & Industry Partners." When you click on this link, you will see the seven (7) corporations that are major SECME sponsors. Click on each one to 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 green menu bar at the top of the website and hover your mouse over "More." This time, click on "Other Alliance Partnerships." 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.aboriginalaccess.ca/adults/types-of-engineering>

<http://www.egfi-k12.org/>

<http://www.egfi-k12.org/#/cards/mechanical>

<http://www.egfi-k12.org/#/cards/computer>

<http://teachers.egfi-k12.org/resource-engineering-scholarships/>

<http://www.stem-works.com/>

<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>

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME WebQuest and 2017-18 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. Hover your mouse over "More" and select "Member Universities." If you click on the "Founding Universities" button in the upper right corner, 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 **40 years ago!** Can you imagine how many SECME students have been STEMulated over the past 39 years because these Founders of SECME wanted kids to explore STEMulating lives?

2. Now go back one page to see the "SECME University Council Member Institutions." You will find **42 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 fingertips – Enjoy! Don't forget to take good notes! You're almost ready to start your essay!

---

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME WebQuest and 2017-18 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 have figured out your destination!

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.

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 what gets you excited and ready to go for your goals.* 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!

***SECME: The Gold Standard in STEM!***



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME WebQuest and 2017-18 Student Essay Phase 5: Essay Checklist, Form Completion, and Submission**

**It's all about YOU!  
(and Science, Technology, Engineering, and Mathematics...)**

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 a winner because you've successfully completed a journey of personal exploration that you will remember for a lifetime!

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**2018 SECME Student Essay Competition: Required Information Cover Page**

Title: *SECME: The Gold Standard in STEM!*

Student Name

Grade

School Name

School Address

District

SECME Coordinator Name

Date Due

---

**2017-18 SECME Student Essay Competition: 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
-

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**2017-18 COPY OF JUDGES' EVALUATION RUBRIC CRITERIA**

**Points Earned/Out of Points Possible**

**Essay Organization (30 Possible Pts)**

\_\_\_\_/10 Writing demonstrates age-appropriate, thoughtful progression of writer's interest in STEM to career interest and educational preparation needed to fulfill personal goals

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

\_\_\_\_/5 Writing includes ideas that are fully developed and fully supported

\_\_\_\_/5 Writing is logical and coherent as a whole

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

\_\_\_\_/30 **Essay Organization Total**

**Research (45 Possible Points)**

\_\_\_\_/15 Writer explains how their SECME participation will help prepare them for a STEM career

\*Judges should refer to SECME webquest essay research phases

\_\_\_\_/10 Writer identifies their STEM "catalyst"—the STEM discipline or activity that capture their interest

\_\_\_\_/15 Writing demonstrates attention to, and incorporation of, research required for this competition

\_\_\_\_/5 Essay includes actual sources of their research

\_\_\_\_/45 **Research Total**

**Writing Style (10 Possible Points)**

\_\_\_\_/5 The writer's voice is strong, demonstrating the writer's creativity

\_\_\_\_/5 The writer's voice is strong, demonstrating the writer's reflection on his/her research for this competition

\_\_\_\_/10 **Writing Style Total**

**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 [5 pts]
- ✓ Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.) [5 pts]
- ✓ Writing is free of (age-appropriate) spelling errors [5 pts]

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

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN - MOUSETRAP CAR**  
**CONSTRUCTION AND OPERATION**  
**(ELEMENTARY SCHOOL DIVISION ONLY)**

**ENGINEERING DESIGN COMPETITION REQUIREMENTS:**

The Engineering Design Competition **requires participation in these two areas:**

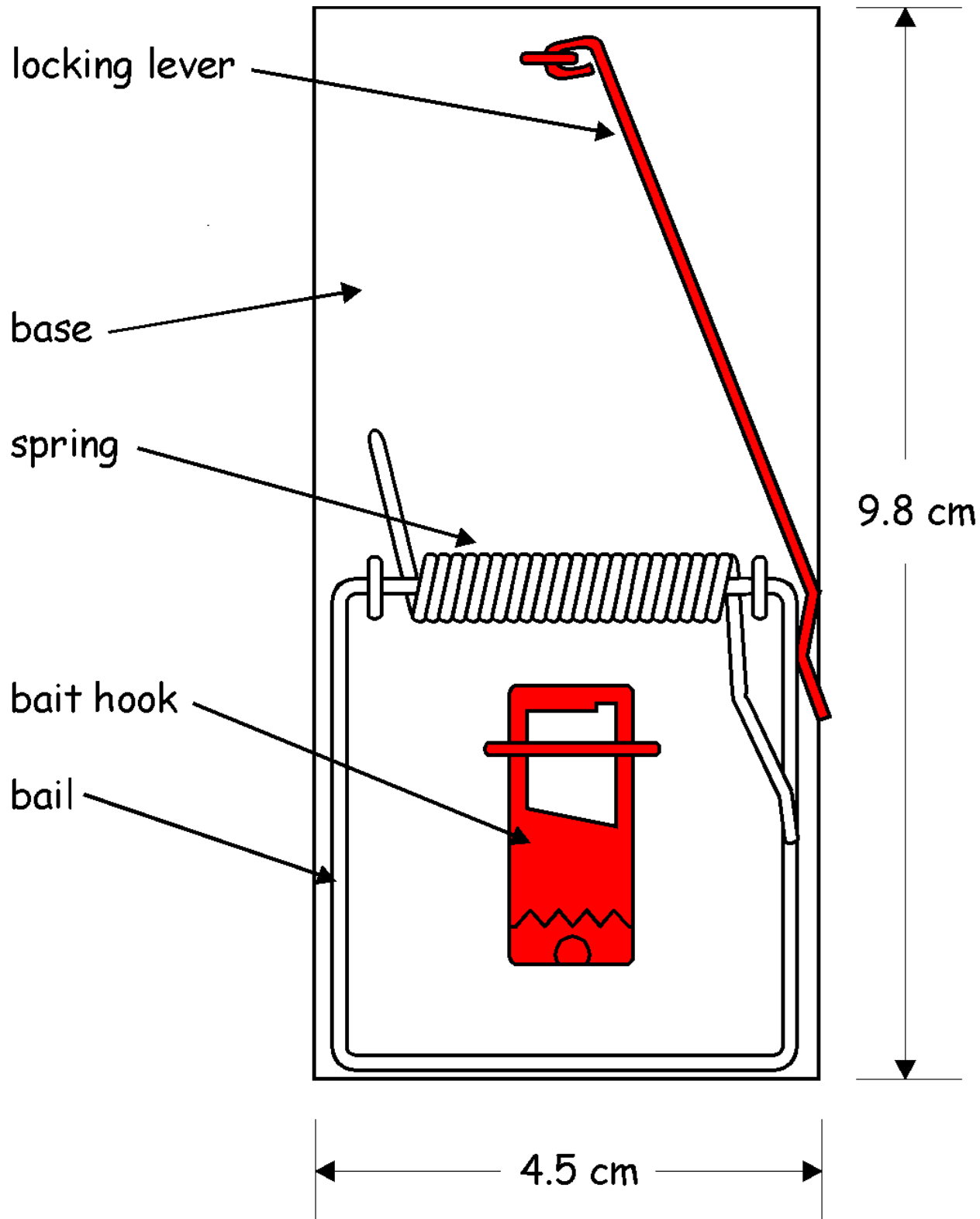
1. Mousetrap Car Construction and Run
2. Written Report on Mousetrap Car

This is a **team competition** and **three (3) students must be on each team.**

**CAR CONSTRUCTION AND DESIGN:**

1. A **standard mousetrap**, usually about 4.5 X 10 centimeters and weighing about 25 grams **MUST** be used to build the car.
2. The standard mousetrap **MUST** have **one single spring** (not two small springs). Standard mousetraps with more than one spring are not allowed.
3. Components of the mousetrap are: wooden base (on which other components are mounted), spring, bail, locking lever, and bait hook (see component sketch on next page).
4. The mousetrap's "single" 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.
5. In the 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 (and the staples that hold them on) may be removed from the base, if desired. The bail may be straightened from its original bent configuration but **NOT** cut (shortened), added to (lengthen), or reinforced. It must remain as a component of the completed car.
6. The spring must be visible and/or accessible to the judges for inspection.
7. The car must have a minimum of three wheels and can be made as long or short as desired as long as requirement #5 above is met.
8. Mousetrap cars will be tested on a smooth flat surface. Distance will be measured from the front of the front wheel(s) at the starting point to the front of the front wheel(s) at the stopping point of travel, utilizing a straight line to connect the two points (**total displacement and not the path traveled**).
9. There will be two runs for each car and the run with the highest performance score will be used for final scoring of the mousetrap car's performance.

Standard Mousetrap Diagram



**NOTE:** Red parts may be removed.

**CALCULATING THE ENGINEERING DESIGN (MOUSETRAP CAR) SCORE**

**ELEMENTARY PERFORMANCE SCORE**

The Performance Score (P) and the Final Performance Score (F) for the Mousetrap car run is calculated using the following equation:

$$P = \frac{D}{L} + \frac{3D}{T} \qquad F = \frac{P}{P_H} \times 100$$

where:

**D** is distance the mousetrap car travels (measured in centimeters).

**L** is the length of the competing mousetrap car (measured in centimeters).

**T** is time measured from the time the mousetrap car is released until the car has stopped (measured in seconds).

**P** is the mousetrap car performance run score.

**P<sub>H</sub>** is the highest performance mousetrap car score on the competition.

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

Distance will be measured from the front of the front wheel(s) at the starting point to the front of the front wheel(s) at the stopping point of travel, utilizing a straight line to connect the two points. There are **NO MINIMUM OR MAXIMUM distances**. If the mousetrap car stops due to hitting an object or wall, the distance will be measured from the starting point to the point of impact. So that all teams have the same advantages/disadvantages, **OBJECTS WILL NOT BE MOVED (chairs, cones, tables, signs, etc.)** during the competition to allow a mousetrap car to gain more distance.

**Overall Team Score in this competition is sum of:**

1. Performance (car run) as calculated above (**max. 100 points**)
2. Written Report (**max. 100 points**)
3. Bonus Handwritten Calculations (**max. 15 pts**)
  - Show hand written calculation of hypothesis of the mousetrap car performance.

**Therefore, the maximum total is 215 points.**

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME ENGINEERING DESIGN: MOUSETRAP CAR**  
**WRITTEN REPORT REQUIREMENTS (Elementary School)**

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. Your written report should be a reflection of this year's efforts by your team. Evidence of plagiarism or re-submission of previous years' reports will result in deduction of points or zero score

**STRUCTURE: (0-25 points)**

1. Cover page (0-5 points)
  - a. Title of the Written Report (SECME Engineering Design Competition: Mousetrap Car Written Report)
  - b. Competition Division (Elementary School Division)
  - c. Team Name
  - d. Each individual team member's name and grade
  - e. Team's school name & address
  - f. School System/District name
  - g. School Coordinator's name
  - h. Date (date of competition)
2. Double-spaced text (0-5 points)
3. 8½" × 11" white paper with one-inch borders at the top, bottom, and on each side (0-5 points)
4. 12 pt. standard font, computer typed (0-5 points)
5. Report is neat and thorough; pages are numbered and in order (0-5 points)

**CONTENT: (0-50 points)**

1. Writing includes an original, age-appropriate introduction (0-10 points)
2. Writing includes ideas that are fully developed, fully supported, and describe the design, construction and operation of the car and age-appropriate (0-10 points)
3. Writing is logical and coherent as a whole and age-appropriate (0-15 points)
4. Writing includes an original, age-appropriate close (0-15 points)

**MECHANICS, SPELLING & GRAMMAR: (0-25 points)**

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

1. Writing is free of (age-appropriate) punctuation errors (0-5 points)
2. Writing is free of (age-appropriate) spelling errors (0-8 points)
3. Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.) (0-12 points)

**ACCEPTABLE FONTS:**

Arial	This is an example of 12 point Arial font
Calibri	This is an example of 12 point Calibri font
Courier New	This is an example of 12 point Courier New font
Times New Roman	This is an example of 12 point Times New Roman font

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

**SECME ENGINEERING DESIGN COMPETITION:**  
**MOUSETRAP CAR WRITTEN REPORT EVALUATION**  
Elementary School Division

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**STRUCTURE (0 – 25 pts): Points**

- ☐ Cover Page (0 – 5 pts) \_\_\_\_\_/5
- ☐ 8 ½" x 11" white paper w/ 1" margins (0 – 5 pts) \_\_\_\_\_/5
- ☐ 12 pt./Standard Font/Computer Typed (0 – 5 pts) \_\_\_\_\_/5
- ☐ Double-spaced Text (0 – 5 pts) \_\_\_\_\_/5
- ☐ Report is neat and thorough; pages are numbered and in order (0 – 5 pts) \_\_\_\_\_/5

**STRUCTURE TOTAL (max 25 pts) \_\_\_\_\_/25**

**CONTENT (0 – 50 pts):**

- ☐ Writing includes an original, age-appropriate introduction (0 – 10 pts) \_\_\_\_\_/10
- ☐ Writing includes ideas that are fully developed, supported and describe the design, construction and operation of the car (0 – 10 pts) \_\_\_\_\_/10
- ☐ Writing is logical and coherent as a whole (0 – 15 pts) \_\_\_\_\_/15
- ☐ Writing includes an original, age-appropriate close (0 – 15 pts) \_\_\_\_\_/15

**CONTENT TOTAL (max 50 pts) \_\_\_\_\_/50**

**MECHANICS, SPELLING & GRAMMAR (0 – 25 pts):**

- ☐ Writing is free of punctuation errors (age-appropriate) (0 – 5 pts) \_\_\_\_\_/5
- ☐ Writing is free of spelling errors (age-appropriate) (0 – 8 pts) \_\_\_\_\_/8
- ☐ Writing has correct subject/verb agreement and free of sentence errors, misplaced sentence parts, sentence fragments, run-ons, etc. (age-appropriate) (0 – 12 pts) \_\_\_\_\_/12

**MECHANICS, SPELLING & GRAMMAR TOTAL (max 25 pts) \_\_\_\_\_/25**

**OVERALL TOTAL (max 100 pts) \_\_\_\_\_/100**

**Judge's Notes:**



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN COMPETITION:**  
**MOUSETRAP CAR CONSTRUCTION AND OPERATION**  
(Elementary Evaluation Sheet)

Team Name			
School Name			
District		State	
Student Name #1		Grade	
Student Name #2		Grade	
Student Name #3		Grade	
Judge's Name		Date	

**Calculation Formulas**

$$P = \frac{D}{L} + \frac{3D}{T}$$

$$F = \frac{P}{P_H} \times 100$$

<sup>1</sup> D <sub>1</sub> (cm) – 1 <sup>st</sup> Run Distance measured	cm
<sup>2</sup> T <sub>1</sub> (s) – 1 <sup>st</sup> Run Time measured	s
P <sub>1</sub> - 1 <sup>st</sup> Run Performance Score	
D <sub>2</sub> (cm) – 2 <sup>nd</sup> Run Distance measured	cm
T <sub>2</sub> (s) – 2 <sup>nd</sup> Run Time measured	s
P <sub>2</sub> - 2 <sup>nd</sup> Run Performance Score	
<sup>3</sup> P <sub>H</sub> - Highest Performance Score on Competition Day	

Mousetrap Car Performance Point Score:

**F** = \_\_\_\_\_

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

Written Report (Max 100 pts.)	
Bonus Handwritten Calculations (Max 15 pts)	
Best Performance Run F (Max 100 pts)	
Overall TOTAL (Max 215 pts)	

<sup>1</sup>Distance is measured from the **marked starting line** to the **front wheel(s)** of the mousetrap car in centimeters (cm).

<sup>2</sup>Time is measured from the **time the mousetrap car is released until the vehicle stopped** in seconds (s).

<sup>3</sup>This is the **highest performing mousetrap car on competition day**.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME MOUSETRAP CAR CONSTRUCTION REQUIREMENTS**  
**(MIDDLE AND HIGH)**

**(Any team not adhering to the construction guidelines will not be able to place)**

The Mousetrap Car Engineering Design Competition **requires participation in these areas:**

1. Mousetrap Car Performance Run
2. Technical Report on Mousetrap Car
3. Design Drawing of Mousetrap Car
4. ~~Team Interview with Judges~~ (Team interviews only occur at the National SECME competition)

This is a **team competition** and should reflect the coordinated efforts of all members. **Three (3) students must be on each team.** TIP: Consider alternate students that have worked with the team throughout the process to have replacements in the event an initial team member is not available to compete at local/regional competitions and/or travel to the national competition. Also, each team member is expected to be able to serve as a spokesperson and be fully involved with all aspects of the entry.

**CAR CONSTRUCTION AND DESIGN**

1. A **standard mousetrap**, usually about 4.5 X 10 centimeters and weighing about 25 grams **MUST** be used to build the car.
2. The standard mousetrap **MUST** have **one single spring** (not two small springs). Standard mousetraps with more than one spring each are not allowed.
3. Components of a mousetrap are: wooden base (on which other components are mounted), spring, bail, locking lever, and bait hook (see component sketch on page 29).
4. Each mousetrap's "single" spring must be the sole source of power for the car. You may **NOT** use rubber bands, CO<sub>2</sub> boosters, or any other agent or element for extra power.
5. In the 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 levers and bait holders (with the staples that hold them on) may be removed from the base, if desired. The bails may be straightened from their original bent configurations but **NOT** cut (shortened), added to (lengthen), or reinforced. Bails must remain as components of the completed car.
6. The spring must be visible and/or accessible to the judges for inspection.
7. The car must have a minimum of three wheels and can be made as long or short as desired as long as requirement #5 above is met.
8. Mousetrap cars will be tested on a smooth flat surface. Distance will be measured from the front of the front wheel(s) at the starting point to the front of the front wheel(s) at the stopping point of travel, utilizing a straight line to connect the two points (**total displacement and not the path traveled**).
9. There will be two (2) runs for each car and the run with the highest performance score will be used for final scoring of the mousetrap car's performance.

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**CALCULATING THE ENGINEERING DESIGN (MOUSETRAP CAR) SCORE**  
**(MIDDLE AND HIGH SCHOOL PERFORMANCE SCORE)**

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

$$P = \left(\frac{w}{W}\right) \times \left(\frac{D}{L}\right) + \left(\frac{3D}{T}\right) \qquad F = \frac{P}{P_H} \times 100$$

where

**w** is average weight of a standard mousetrap measured in grams (always a constant 25 g).

**W** is the total weight of the completed mousetrap car (measured in grams).

**D** is distance the mousetrap car travels (measured in centimeters).

The mousetrap car's distance will be measured from the front of the front wheel(s) at the starting point to the front of the front wheel(s) at the stopping point of travel, utilizing a straight line to connect the two points. **There are NO MINIMUM OR MAXIMUM distances.** If the mousetrap car stops due to hitting an object or wall, the distance will be measured from the starting point to the point of impact. So that all teams have the same advantages/disadvantages, **OBJECTS WILL NOT BE MOVED (chairs, cones, tables, signs, etc.)** during the competition to allow a mousetrap car to gain more distance.

**L** is the length of the completing mousetrap car (measured in centimeters).

The mousetrap car will be measured from the furthest point of the front of the car to the furthest point of the rear of the car while the car is at resting state and the spring unwound.

**Please refer to MOUSETRAP CAR DRAWING EXAMPLE (on next page) for more information on how to measure L.**

**T** is time measured from the time the mousetrap car is released until the car has stopped (measured in seconds).

**P** is the mousetrap car performance run score.

**P<sub>H</sub>** is the highest performance score on the competition.

**F** is the final performance score.

**NOTE:** The final performance score will be combined with scores for the Technical Report, Design Drawing, and Team Interview.

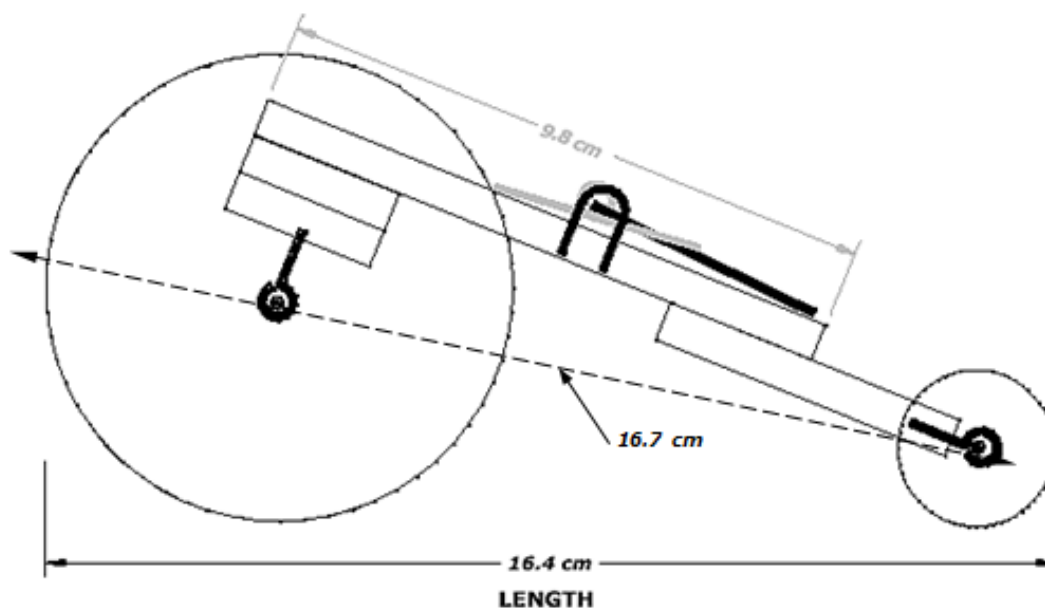
\*Judges will measure "L" (see illustration on following page) and "W" prior to the mousetrap car Performance runs. These measurements, together with "D" and "T" (determined by the car's performance), are used to calculate "P" in the formula above.

Overall Team Score for the whole competition is sum of the following 4 categories (Max Total of 365 pts)

- 1) Performance Run (max 100 points)
- 2) Technical Report (max 105 points)
  - Bonus Handwritten Calculations (**max 5 points**)
    - Show hand written calculation of hypothesis of the mousetrap car performance.
- 3) Technical Drawing (max 85 points)
- 4) Team Interview (max 75 points) – Nationals Only

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

**Measurement of “L,” the Mousetrap Car’s Longest Dimension**  
(From the farthest point at the front of the car to farthest point at the rear of the car)



“L” is the car’s length (measured in centimeters) from the farthest point at the front of the car to the farthest point at the rear of the car while the car is at a resting state and the spring unwound. If the bail has been straightened and protrudes past the front or rear of the car, the measurement will be taken from the end of the bail to the other end of the car.

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

Technical Report:	
Design Drawing:	
Best Performance Run:	

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:**  
**MOUSETRAP CAR CONSTRUCTION AND OPERATION**  
**(MIDDLE AND SENIOR EVALUATION SHEET)**

Please Check

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	
<b>Distance:</b>	<b>First Run</b>	<b>Second Run</b>	
<b>Time:</b>	<b>First Run</b>	<b>Second Run</b>	

**Calculation Formulas**

$$P = \left(\frac{w}{W}\right) \times \left(\frac{D}{L}\right) + \left(\frac{3D}{T}\right)$$

$$F = \frac{P}{P_H} \times 100$$

<sup>1</sup> W (g) – Weight of Standard Mousetrap	<u>25 g</u>
W (g) – Weight of Mousetrap Car	
<sup>2</sup> D <sub>1</sub> (cm) – 1 <sup>st</sup> Run Distance measured	
<sup>3</sup> L (cm) – Length of Car measured	
<sup>4</sup> T <sub>1</sub> (s) – 1 <sup>st</sup> Run Time measured	
P <sub>1</sub> -1 <sup>st</sup> Run Performance Score	
D <sub>2</sub> (cm) –2 <sup>nd</sup> Run Distance measured	
T <sub>2</sub> (s) – 2 <sup>nd</sup> Run Time measured	
P <sub>2</sub> - 2 <sup>nd</sup> Run Performance Score	
<sup>5</sup> P <sub>H</sub> - Highest Performance Score on Competition Day	

Technical Report ( <u>max 105 pts</u> )	
Technical Drawing ( <u>max 85 pts</u> )	
Interview ( <u>max 75 pts</u> )	
Best Performance Run, F ( <u>max 100 pts</u> )	
Overall Total ( <u>max 365 pts</u> )	

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

<sup>1</sup> This is the **standard weight of a mousetrap** in grams (g), which is **always 25 g**.

<sup>2</sup> This distance is measured from the **marked starting line** to the **front wheels** of the mousetrap car in centimeters (cm).

<sup>3</sup> This is the length of the mousetrap car **measured from the front of the car to back of the car**.

<sup>4</sup> This time is measured from the **time the mousetrap car is released until the vehicle stopped** in seconds (s).

<sup>5</sup> This is the **highest performing mousetrap car on competition day**.

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN COMPETITION: MOUSETRAP CAR DRAWING**  
**(MIDDLE AND HIGH ONLY)**

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. **The drawing evaluation, which is normally completed during the competition registration, must take place before the performance runs of the mousetrap cars begin. If the drawing is not evaluated before the performance runs begin the technical drawing points will be forfeited.**

**ENGINEERING PAPER REQUIREMENTS (0-5 points):**

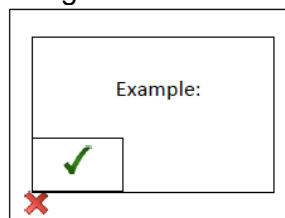
1. The engineering paper is required to be the standard ANSI C 17" X 22" paper (see pg. 86 for online paper vendor) (0-1 pt)
2. The paper must be a plain, non-grid, 16-pound vellum sheet (0-1 pt)
3. There must be a 1" border on all sides (0-1 pt)
4. A **legend** is to be drawn in the bottom left corner of the drawing inside the 1" border (0-2 pt)

**REQUIREMENTS GUIDELINES:**

**1. NO MOUNTING OR FRAMES ALLOWED BUT DRAWING MAY BE LAMINATED FOR PROTECTION IF DESIRED.**

2. Allowing for the required 1" border on all sides, the actual drawing is to cover the exposed area of 15" X 20."
3. 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).
4. All dimensions are required to be illustrated on the drawing.
5. The scale and the units are required to be indicated on the drawing.
6. The team's Mousetrap Car Drawing is required to show front, side, and top views.
7. All parts of the car are required to be labeled.
8. Ink pens, pencils or markers may be used.
9. A **legend** is to be drawn in the bottom left corner of the drawing inside the 1" border with the following information:

- **Competition Division**
- **Team name**
- **Team Members' Names and Grade Levels**
- **School Name**
- **School District**
- **School Coordinator's Name**
- **Date of Competition**



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

- ☐ ENGINEERING PAPER REQUIREMENTS (0-5 pts)
- ☐ RESEMBLANCE (between the actual mousetrap car and the drawing) (0-25 pts)
  - Be sure to have a completed technical drawing with **all views (front, side, and top views)** of the mousetrap car illustrated. If **all views (front, side, and top views)** are not illustrated on the technical drawing the team will receive **zero points**.
- ☐ SCALE (0-15 pts)
- ☐ NAMING/LABELING (of all of the parts) (0-15 pts)
- ☐ APPEARANCE/NEATNESS (0-15 pts)

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:**  
**MOUSETRAP CAR DRAWING**

(Evaluation Sheet)

Please Check

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**ENGINEERING PAPER REQUIREMENTS(0 – 5 pts):**

**POINTS:**

- |  |         |
|--|---------|
| <input type="checkbox"/> ANSI C Size Engineering Paper (17" x 22") | _____/1 |
| <input type="checkbox"/> 1" Border (All Sides)                     | _____/1 |
| <input type="checkbox"/> 16 pound Vellum Paper                     | _____/1 |
| <input type="checkbox"/> Title and legend (on drawing)             | _____/2 |

**TOTAL ENGINEERING PAPER REQUIREMENTS (max 5 pts)** /5

**EVALUATION CATEGORIES(0 – 80 pts):**

**POINTS:**

**I. RESEMBLANCE: (0-25 points)** \_\_\_\_\_/15

The accuracy to which the Mousetrap Car Drawing illustrates the actual Mousetrap Car designed and built by the team.

**II. SCALE : (0-20 points)** \_\_\_\_\_/15

The proportions in the Drawing correctly relate to and represent the team's actual Mousetrap Car.

**III. NAMING/LABELING: (0-20 points)** \_\_\_\_\_/15

The correctness of the names/labels of all of the parts in the Drawing of the Mousetrap Car.

**IV. APPEARANCE/NEATNESS: (0-15 points)** \_\_\_\_\_/15

The quality of the visual presentation of the Mousetrap Car Drawing.

**EVALUATION CATEGORIES TOTAL (max 80 pts)** /80

**TOTAL (The highest possible score is 85)** /85

**Judge's Notes:**

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN MOUSETRAP CAR**  
**WRITTEN TECHNICAL REPORT**  
**(MIDDLE AND HIGH SCHOOL)**

The technical report is a very important part of being a professional engineer. In addition to designing and building new technologies, engineers have to be able to communicate their ideas, efforts, processes, progress, and results in a professional written format. As a part of the SECME Engineering Design-Mousetrap Car Competition and to help sharpen technical written communication skills, each team is required to write a Technical Report describing the design, construction, and operation of their Mousetrap Car.

Your technical report should be a reflection of this year's efforts by your team. Evidence of plagiarism or re-submission of previous years' reports will result in deduction of points or zero score.

**STRUCTURE:** (Maximum points for Structure is 25 points)

1. Cover Page: The technical report must include a cover page that is formatted as specified on the next page.
2. The technical report must be double-spaced.
3. The technical report must be on 8½" x 11" white paper with 1" margins on all sides.
4. The technical report must be typed with a 12pt standard legible text font (see acceptable fonts below).
5. The technical report must be neat with all pages numbered and in order.

**ACCEPTABLE FONTS:**

Arial	This is an example of 12 point Arial font
Calibri	This is an example of 12 point Calibri font
Courier New	This is an example of 12 point Courier New font
Times New Roman	This is an example of 12 point Times New Roman font

**CONTENT:** (Maximum points for Content is 65 points)

1. COVER PAGE (1 page)
2. TABLE OF CONTENTS (1 page)
3. ABSTRACT (½ -1 page)
4. INTRODUCTION
5. DESIGN
6. CONSTRUCTION PROCEDURE
7. OPERATION OF MOUSETRAP CAR
8. CONCLUSION/RECOMMENDATIONS (1-2 pages)
9. ACKNOWLEDGMENTS (Optional)
10. APPENDIX

Main Body: These 4 Sections  
Should Be a Maximum of 7 Pages

**MECHANICS:** (Maximum points for Mechanics is 15 points)

1. Correct punctuation, capitalization, and spelling
2. Use of past tense and passive voice
3. Report flows logically from one idea to the next with minimal fragmentation

**AT ALL COMPETITIONS, THE MOUSETRAP CAR TECHNICAL REPORT WILL BE  
JUDGED ACCORDING TO THE TECHNICAL REPORT BREAKDOWN. (See next  
page for breakdown)**



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**MOUSETRAP CAR ENGINEERING DESIGN TECHNICAL REPORT BREAKDOWN**  
**(MIDDLE AND HIGH SCHOOL)**

**Structure (0 – 15 points)**

- 1) Cover Page (0–2.5 pts):
  - a) Title (SECME: Mousetrap Car Technical Report)
  - b) Name, grade, and complete home address of team members
  - c) Team's school name & address
  - d) School system/district name
  - e) School coordinator's name
  - f) Date (date of competition)
- 2) Double-Spaced (0–2.5 pts)
- 3) 8½"x11" white paper w/ 1" margins (all sides) (0–2.5 pts)
- 4) 12pt standard acceptable text font (0–2.5 pts)
- 5) Pages are numbered and in order; Report is neat (0–5 pts)

**Content (0 – 70 pts + 5 bonus pts)**

**Table of Contents:** (0–5 pts)

- a) Professionally indicates which page each parts of the report can be located
- b) Maximum one page

**Abstract:** (0–5 pts)

- a) Includes the essential points of the purpose, methods, scope, results, conclusions, and recommendations
- b) This is your chance to convince the readers that they should continue reading in a clear and concise way
- c) One-half to one page of technical report
- d) Should be 10% or less of the total report

**Introduction:** (0–5 pts)

- a) Introduce the problem to be solved, your hypothesis, and your planned methods and design process to resolve the problem while dealing with any restrictions.

**Design:** (0–15 pts)

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

**Construction Procedure:** (0–25 pts)

- a) List materials and tools utilized
- b) Clearly describe the procedures taken to build your car so that someone with little knowledge of your car would be able to understand your efforts.

**Operation:** (0–8 pts)

- a) Explain the actions necessary to prepare the car to operate as well as what actually happens when the car is in motion. Be explicit about the steps taken.

**Conclusion:** (0–5 pts)

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

**Acknowledgements:** Optional

**Appendix:** (0–5 pts)

- a) **MUST** include sketches of the car (top, profile, and undercarriage views)
- b) **MUST** include all data tables and/or charts from experimentation comparing the various trials
- c) Bonus points for including handwritten calculations (5 pts).

**Mechanics (0 – 15 pts)**

1. Correct punctuation, capitalization, & spelling (0–5 pts)
2. Use of past tense and passive voice (0–5 pts)
3. Report flows logically from one idea to the next with minimal fragmentation (0–5 pts)

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:**  
**MOUSETRAP CAR WRITTEN TECHNICAL REPORT**  
**(EVALUATION SHEET)**

Please Check

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**STRUCTURE:** (0 – 15 points)

**POINTS**

- |   |          |
|---|----------|
| <input type="checkbox"/> Cover Page (0 – 2.5 pts)   | ____/2.5 |
| <input type="checkbox"/> 8 ½" x 11" white paper w/ 1" margins (0 – 2.5 pts)                       | ____/2.5 |
| <input type="checkbox"/> 12 pt./Standard Font/Computer Typed (0 – 2.5 pts)                        | ____/2.5 |
| <input type="checkbox"/> Double-spaced Text (0 – 2.5 pts)   | ____/2.5 |
| <input type="checkbox"/> Report is neat and thorough; pages are numbered and in order (0 – 5 pts) | ____/5   |

**STRUCTURE TOTAL**

**/15**

**CONTENT:** (0 – 70 points +5 bonus points)

- |   |         |
|---|---------|
| <input type="checkbox"/> Table of Contents (0 – 5 pts)        | ____/5  |
| <input type="checkbox"/> Abstract (0 – 5 pts)                 | ____/5  |
| <input type="checkbox"/> Introduction (0 – 5 pts)             | ____/5  |
| <input type="checkbox"/> Design Background (0 – 15 pts)       | ____/15 |
| <input type="checkbox"/> Construction Procedures (0 – 25 pts) | ____/25 |
| <input type="checkbox"/> Operation (0 – 5 pts)                | ____/5  |
| <input type="checkbox"/> Conclusion (0 – 5 pts)               | ____/5  |
| <input type="checkbox"/> Appendix (0 – 5 pts)                 | ____/5  |
| <input type="checkbox"/> Bonus Hand Written Calculations      | ____/5  |

**EVALUATION TOTAL**

**/75**

**MECHANICS:** (0 – 15 points)

- |  |        |
|--|--------|
| <input type="checkbox"/> Correct punctuation, capitalization, and spelling (0 – 5 pts)                         | ____/5 |
| <input type="checkbox"/> Correct use of past tense and passive voice (0 – 5 pts)                               | ____/5 |
| <input type="checkbox"/> Report flows logically from one idea to the next with minimal fragmentation (0-5 pts) | ____/5 |

**TOTAL (The highest possible score is 105)**

**/105**

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

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME ENGINEERING DESIGN MOUSETRAP CAR**  
**TEAM PRESENTATION/INTERVIEW WITH JUDGES**  
**(MIDDLE/HIGH)**

All mousetrap car teams that advance to the 2017-18 SECME **National Competition** will be required to deliver a PowerPoint presentation. To foster and encourage our SECME students to practice and sharpen their interview skills, each team will be required to prepare and deliver a 5-7 minute PowerPoint presentation to the panel of interview judges. After the presentation the judges will have 2-3 minutes to ask questions.

**TEAM PRESENTATION/INTERVIEW REQUIREMENTS AND GUIDELINES:**

1. The presentation will be delivered as a group.
2. Each team member is expected to have a speaking part.
3. Each team member is expected to be able to serve as a spokesperson in response to the judges' questions.
4. School coordinators, chaperones, and/or parents (or any other adults) are not allowed to accompany their team during the presentation/interview. Only the 3-member student team and the judges will attend the team interview (with exception of other competition staff/facilitators, photographers, etc.)
5. The team presentation/interview will be conducted apart from and after the car's performance runs.
6. The team presentation/interview has a maximum point value of 75 points and is a single element in determining each team's overall competition score. The other 290 potential points are earned from the Technical Report, Technical Drawing, and Performance (car's best run).
7. If your team wins their Regional/District/State competition, their PowerPoint presentation is due at the SECME national office on or by May 7, 2018 (11:59pm EST). Failure to send the PowerPoint presentation on or before the due date will result in a deduction of twenty points (20 pts) from their presentation/interview score.
8. Resubmissions are not allowed. Please review, edit, correct and save the version you want to use before submitting it on or before the due date.
9. The PowerPoint presentation submitted to the SECME National office will be the one used during the interview. No updated versions.

Minimal sections to include in PowerPoint presentation: Introduction, Traditional or alternate design, materials, construction methods, operation, conclusion and recommendations.

**HINT:** Practice, Practice, Practice so that your presentation is 5-7 min long.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:**  
**MOUSETRAP CAR TEAM PRESENTATION/INTERVIEW WITH JUDGES**  
**(Evaluation Sheet)**

Please Check:

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**Evaluation Categories:**

**POINTS**

**TEAMWORK** (0 – 10 pts) \_\_\_\_\_/10

- Each member contributed with identifiable roles in final design and preparing their car to run in competition.

**APPLICATION OF TECHNICAL PRINCIPLES** (0 – 15 pts) \_\_\_\_\_/15

- Team analyzed requirements for car to perform and efficiently transfer energy from spring to propel their car

**KNOWLEDGE OF DESIGN** (0 – 15 pts) \_\_\_\_\_/15

- The design reflects understanding of the formula used to judge performance
- The design demonstrates systematic efforts to maximize score

**ORAL COMMUNICATION SKILLS** (0 – 15 pts) \_\_\_\_\_/15

- Each team member speaks clearly to the basis for their car's design and what was applied in construction and testing.

**DELIVERY** (0 – 5 pts.) \_\_\_\_\_/5

- Appropriate volume and rate of speech
- Speech is varied to show emphasis and interest
- Appropriate posture, eye contact, and gestures

**VISUAL AIDS** (0 – 15 pts.) \_\_\_\_\_/15

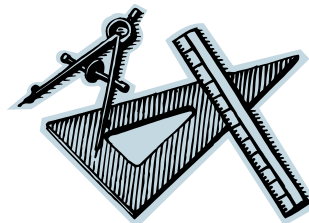
- Visual aids reflect thought and creativity
- Clear connection between visual aids and message
- Visual aids add value to the presentation

**TOTAL SCORE: (The highest possible score is 75)** \_\_\_\_\_/70

**TOTAL TEAM INTERVIEW SCORE (Average of all interviewers)** \_\_\_\_\_/75

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**MATHEMATICS CHALLENGE RULES**  
**(Middle and Senior High School)**



Time: 1 hour

Each school may enter one (1) team per eligible division 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:**

- a. Each student will be asked to read, comprehend, and analyze scenarios to solve problems. They will then discuss their findings among the team members.
- b. 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.
- c. 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).
- d. Teams will be asked to make connections across the disciplines and identify real-world connections.
- e. Teams will also be asked to provide justifications or explanations at various points.
- f. An optional individual round will be available to all individual participants.

**Individual Round and Bonus Points Allocation**

The individual round of the SECME Mathematics Challenge for Middle School and High School will follow a format similar to the team portion of the event with two major differences:

- All students will compete, as the name suggests, individually
- The entire individual round will last no more than 30 minutes

Points will be added to a team's overall score based on the tables below.

Place	Bonus points	Additional bonus points if school has multiple top placements in the individual round
1 <sup>st</sup>	3	N/A
2 <sup>nd</sup>	2	0.5
3 <sup>rd</sup>	1	0.25

Combination	Total Bonus Points
1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup>	3.75 points
1 <sup>st</sup> and 2 <sup>nd</sup>	3.5 points
1 <sup>st</sup> and 3 <sup>rd</sup>	3.25 points
2 <sup>nd</sup> and 3 <sup>rd</sup>	2.25 points

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM

**MATHEMATICS CHALLENGE**  
**(EVALUATION WORKSHEET)**

Please Check:

☐ Middle School

☐ High School

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

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

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

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

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

<b><i>EVALUATION CATEGORIES:</i></b>	<b><i>Points</i></b>
Correct Calculations	_____
Logical Explanations	_____
Graphs, Data Tables, Charts	_____
Real World and Curriculum Connections	_____
Model Drawing/Construction	_____

TOTAL POINTS: (maximum score without bonus points will be 100): \_\_\_\_\_

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

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**MATHEMATICS CHALLENGE**  
**(ELEMENTARY)**

**General Rules**

- There will be one team per school. Each team will have four (4) students, including one captain per team.
- The team will solve one problem at a time.
- 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.
- Team members will work together to solve the problem.
- 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.
- The judges will score the solution, and points will be given for correct responses.
- First, second, and third place will be determined according to the total number of points each team has accumulated.
- In case of a tie, first, second, and third place will be selected according to the earliest completion time.

# 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

## SECME: The Gold Standard in STEM

### WATER-ROCKET VEHICLE COMPETITION



While promoting Space Propulsion Awareness, the Water 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. For resources on how to build a water rocket visit [www.secme.com](http://www.secme.com)

**The Mission:** *The mission is to design a Water Rocket Vehicle capable of staying aloft for the longest amount of time (measured in seconds).*

**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 (ALL):

1. Each design team must consist of three (3) students.
2. **Technical Paper (Middle and High School ONLY), Patch Design, and Completed Entry Form must be submitted to the District Office no later than Wednesday, December 14, 2016**
3. At check-in the day prior to the competition the following must be submitted:
  - ✓ Pre -registered completed entry form
  - ✓ Technical Drawing (Middle and High School ONLY)
  - ✓ Operating Rocket (meeting specifications)

**\*\*Note:** At this time 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.

An overall winner will be judged, upon the following criteria (based on 100%)

#### MIDDLE AND HIGH SCHOOLS

Hang time of Rocket - 45%	Technical Report - 25%
Patch Design - 15%	Technical Drawing - 15%

#### ELEMENTARY SCHOOLS (Based on 110 Points)

Hang time of Rocket - 70%	Patch Design - 30%	Written Report – Bonus - 10%
---------------------------	--------------------	------------------------------

#### **Final Hang time Score Calculation**

$$\text{Final Score} = \left( \frac{\text{team hangtime}}{\text{max hangtime}} \right) \times 100$$

#### **Important Definitions:**

**HANG TIME ...is defined as the time from when the rocket leaves the launch pad until the time it reaches the ground or strikes an object.**

This measurement will be taken using a stopwatch by at two or three qualified judges; the average of the judges' times will be used as the final "hang time".

**Max hang time... maximum hang time recorded during the competition**

The objective of the contest is for each team to launch a rocket propelled by water and air and for it to stay aloft for the maximum amount of time (measured in seconds). The launch angle, which can be adjusted from approximately **90 degrees (90°)**, will be kept the SAME for all rockets launching during a particular competition. Each rocket will be launched using **12 ounces** of water and at **70 psi** of air pressure.

**Middle/High:** The maximum final Middle/High school Water Rocketry score should be between 0-100.

□ Maximum hang time score:  $(1) \times 100 = 100 \times 45\% = 45$

□ Max patch design score:  $100 \times 15\% = 15$

□ Max technical report score:  $100 \times 25\% = 25$

□ Max technical drawing score:  $100 \times 15\% = 15$

Maximum final score for four parts:  $45 + 15 + 25 + 15 = 100$  (final scores should range from 0-100).

Final scores more than 100 will be disregarded.

**Elementary:** The maximum final elementary Water Rocketry score should be between 0-110.

□ Maximum hang time score:  $(1) \times 100 = 100 \times 70\% = 70$

□ Maximum patch design score:  $100 \times 30\% = 30$

□ Maximum written report score:  $100 \times 10\% = 10$

Maximum final elementary score must range from 0-110).



**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

**Construction and Operation Requirements (ALL):**

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.
3. **Do not use the following materials to construct you rocket...!!!**

<u>a. Metal</u>	<u>d. Spikes</u>
<u>b. Glass</u>	<u>e. Antennas of any kind</u>
<u>c. Hard plastics</u>	<u>f. Rocks</u>

These materials are dangerous and could cause harm to the operator and those present in the presence of the water rocket launch.

**NOTE: \* \* \* USE OF THESE MATERIALS WILL AUTOMATICALLY DISQUALIFY THE TEAM FROM THE COMPETITION \* \* \*.**

4. On the bottom of the rocket, **leave 7.5 cm from the throat of the exit plane clear of any coverings** (paint, markings, drawings, etc.), see Diagram 1.
5. The maximum 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 2.  
**Note: \*\*No forward-swept types 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 (ALL):**

**What is a Patch?**

**A Patch is a creative display that reflects the dedication and mission of the team. This symbolic picture must comply with the following rules:**

1. Each entry is to be prepared and submitted by the SECME School Teams who will be participating in the Water Rocket Design Competition.
2. Patch designs must be submitted on **13" X 13" poster board**.
3. All entries must contain the team name and follow the theme of this year's SECME competition.
4. A short (less than 1-page) explanation of the symbols of the patch must be included on the back of the patch (**Refer to example on next page**)
5. All teams participating in the Water Rocket Competition must be prepared to display their patch prior to the launch of their rocket.
6. Patches must be **hand-made** original work.
7. Only Ink pens, pencils, markers, or paint may be used.

**\*\*NOTE: Any Patch Design deemed inappropriate will be pulled from the competition.**

**THE PATCH DESIGN WILL BE JUDGED ON:**

- I. PAPER SIZE REQUIREMENT (0 – 10 points): Correct patch size is 13"x13"
  - II. SECME THEME (0 – 15 points): Incorporation of SECME's competition theme (and team name)
  - III. APPEARANCE (0 – 20 points): Attractiveness and neatness of the patch
  - IV. CREATIVITY (0 – 25 points) Uniqueness of the information depicted
  - V. EXPLANATION OF PATCH (0 – 30 points) Description which explains each part or idea of the patch (on the back of the patch)
- Total: (0 – 100 points)**

**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 8-point stars symbolize the enrichment of Science, Engineering, Communication, and Mathematics, whereas, the seven 4-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.

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

**HOW TO BUILD THE WATER ROCKET**

Note: These build instructions are basic suggestions and is **NOT** the only (or necessarily the best) way to design you rocket

**Materials and Tools Needed:**

1. Pressure Vessel ( **Clear** 2-Liter Bottle)  
**\*\*Note: Be certain that your clear, 2-liter bottle is free of scratches, nicks, dents, and discoloration.**
2. Adhesive, **\*\*Caution: Hot Glue Guns weaken walls of Pressure Vessel.**
3. Foam mounting tape (approximately 1/16 thick, 2-sided adhesive)
4. Carpet tape (thin 2-sided adhesive)
5. Clear packing tape is **HIGHLY RECOMMENDED FOR CONSTRUCTING ROCKETS**
6. Use adhesive to bond fins, nose cone, and other allowed materials onto the water rocket
7. Cutting utensils (Scissors, Hacksaw Blade, Utility Knife, etc.)
8. Markers, spray paint, stickers, etc. for decoration of the rocket (No water color paint).
9. Safety First: Children should be supervised **at all times** while constructing their Water Rockets
10. For Fin Construction:  
Balsa and Bass Wood, Plastic, Foam Board, 1/4" to 1/2" thick Styrofoam, Plastic Plates, and/or PE (2L) Bottle Material

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

**SECME: The Gold Standard in STEM**

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:  
WATER ROCKETRY WRITTEN REPORT REQUIREMENTS  
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 Water Rocketry. The main body of the report should be a maximum of 1-2 pages. **YOUR WRITTEN REPORT SHOULD BE A REFLECTION OF THIS YEAR'S EFFORTS BY YOUR TEAM. EVIDENCE OF PLAGIARISM OR RE-SUBMISSION OF PREVIOUS YEARS' REPORTS WILL RESULT IN DEDUCTION OF POINTS OR ZERO SCORE.**

**STRUCTURE (0 - 25 pts):**

1. Cover page (0 - 5 pts)
  - a. Title of the Written Report (SECME Engineering Design Competition: Water Rocketry Written Report)
  - b. Competition Division (Elementary School Division)
  - c. Team Name
  - d. Each individual team member's name and grade
  - e. Team's school name & address
  - f. School System/District name
  - g. School Coordinator's name
  - h. Date (date of competition)
2. Double-spaced text (0 - 5 pts)
3. 8½" × 11" white paper with one-inch borders at the top, bottom, and on each side (0 - 5 pts)
4. 12 pt. standard font, computer typed (0 - 5 pts)
5. Report is neat and thorough; pages are numbered and in order (0 - 5 pts)

**CONTENT (0 - 50 pts):**

1. Writing includes an original, age-appropriate introduction (0 - 10 pts)
2. Writing includes ideas that are fully developed, fully supported, and describe the design, construction and operation of the car and age-appropriate (0 - 10 pts)
3. Writing is logical and coherent as a whole and age-appropriate (0 - 15 pts)
4. Writing includes an original, age-appropriate close (0 - 15 pts)

**MECHANICS, SPELLING & GRAMMAR (0 - 25 pts):**

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

1. Writing is free of (age-appropriate) punctuation errors (0 - 5 pts)
2. Writing is free of (age-appropriate) spelling errors (0 - 8 pts)
3. Writing is free of (age-appropriate) sentence errors (misplaced sentence parts, subject/verb agreement, sentence fragments, run-ons, etc.) (0 - 12 pts)

**PLEASE NOTE:** Late written reports **will not** be accepted. **Late** written reports will receive a **zero score**.

**ACCEPTABLE FONTS:**

Arial	This is an example of 12 point Arial font
Calibri	This is an example of 12 point Calibri font
Courier New	This is an example of 12 point Courier New font
Times New Roman	This is an example of 12 point Times New Roman font

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**  
**SECME ENGINEERING DESIGN COMPETITION:**  
**WATER ROCKETRY WRITTEN REPORT EVALUATION**  
**Elementary School Division**

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**STRUCTURE (0 – 25 pts): Points**

- ☐ Cover Page (0 – 5 pts) \_\_\_\_\_/5
- ☐ 8 ½" x 11" white paper w/ 1" margins (0 – 5 pts) \_\_\_\_\_/5
- ☐ 12 pt./Standard Font/Computer Typed (0 – 5 pts) \_\_\_\_\_/5
- ☐ Double-spaced Text (0 – 5 pts) \_\_\_\_\_/5
- ☐ Report is neat and thorough; pages are numbered and in order (0 – 5 pts) \_\_\_\_\_/5

**STRUCTURE TOTAL (max 25 pts) \_\_\_\_\_/25**

**CONTENT (0 – 50 pts):**

- ☐ Writing includes an original, age-appropriate introduction (0 – 10 pts) \_\_\_\_\_/10
- ☐ Writing includes ideas that are fully developed, supported and describe the design, construction and operation of the car (0 – 10 pts) \_\_\_\_\_/10
- ☐ Writing is logical and coherent as a whole (0 – 15 pts) \_\_\_\_\_/15
- ☐ Writing includes an original, age-appropriate close (0 – 15 pts) \_\_\_\_\_/15

**CONTENT TOTAL (max 50 pts) \_\_\_\_\_/50**

**MECHANICS, SPELLING & GRAMMAR (0 – 25 pts):**

- ☐ Writing is free of punctuation errors (age-appropriate) (0 – 5 pts) \_\_\_\_\_/5
- ☐ Writing is free of spelling errors (age-appropriate) (0 – 8 pts) \_\_\_\_\_/8
- ☐ Writing has correct subject/verb agreement and free of sentence errors, misplaced sentence parts, sentence fragments, run-ons, etc. (age-appropriate) (0 – 12 pts) \_\_\_\_\_/12

**MECHANICS, SPELLING & GRAMMAR TOTAL (max 25 pts) \_\_\_\_\_/25**

**OVERALL TOTAL (max 100 pts) \_\_\_\_\_/100**

**Judge's Notes:**

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**  
**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. Drawings, sketches, and tables may be included in appendix.

**STRUCTURE: (0-25 points)**

- Cover Page
- White 8.5"x11" Paper
- 12-pt type/standard font
- Double-spaced text
- 1" margins on all sides

**1. COVER PAGE:**

- ☐ Title of Technical Report (SECME: Water Rocketry Technical Report)
- ☐ Name, addresses, grade level of team members
- ☐ Team's school name and address
- ☐ School System Name: Miami-Dade County Public Schools
- ☐ School Coordinator's Name
- ☐ Date (February 4, 2017)

**EVALUATION CATEGORIES: (0-60 points)**

**2. ABSTRACT (1/2 to 1 page):**

- ☐ Includes the essential points of the purpose, methods, scope, results, conclusions, and recommendations
- ☐ This is your chance to convince the readers that they should continue reading in a clear and concise way

**3. TABLE OF CONTENTS**

**4. INTRODUCTION**

**5. DESIGN BACKGROUND**

- ☐ Discussion of the thoughts, design ideas, and experimental process by which you designed your car.

**6. CALCULATIONS:** (See the Calculations Manual at [www.secme.org](http://www.secme.org) > Resources & Forms > Student Resources)

- ☐ 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**

- ☐ Discussion of the results of your final design and why you feel it is superior to prior designs

**8. ACKNOWLEDGMENT/REFERENCES**

**9. APPENDIX**

**MECHANICS: (0-15 points)**

Correct grammar, punctuation, and spelling

Correct use of past tense and passive voice

Report flows logically with minimal fragmentation

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

**ROCKET IDENTIFICATION DIAGRAMS**

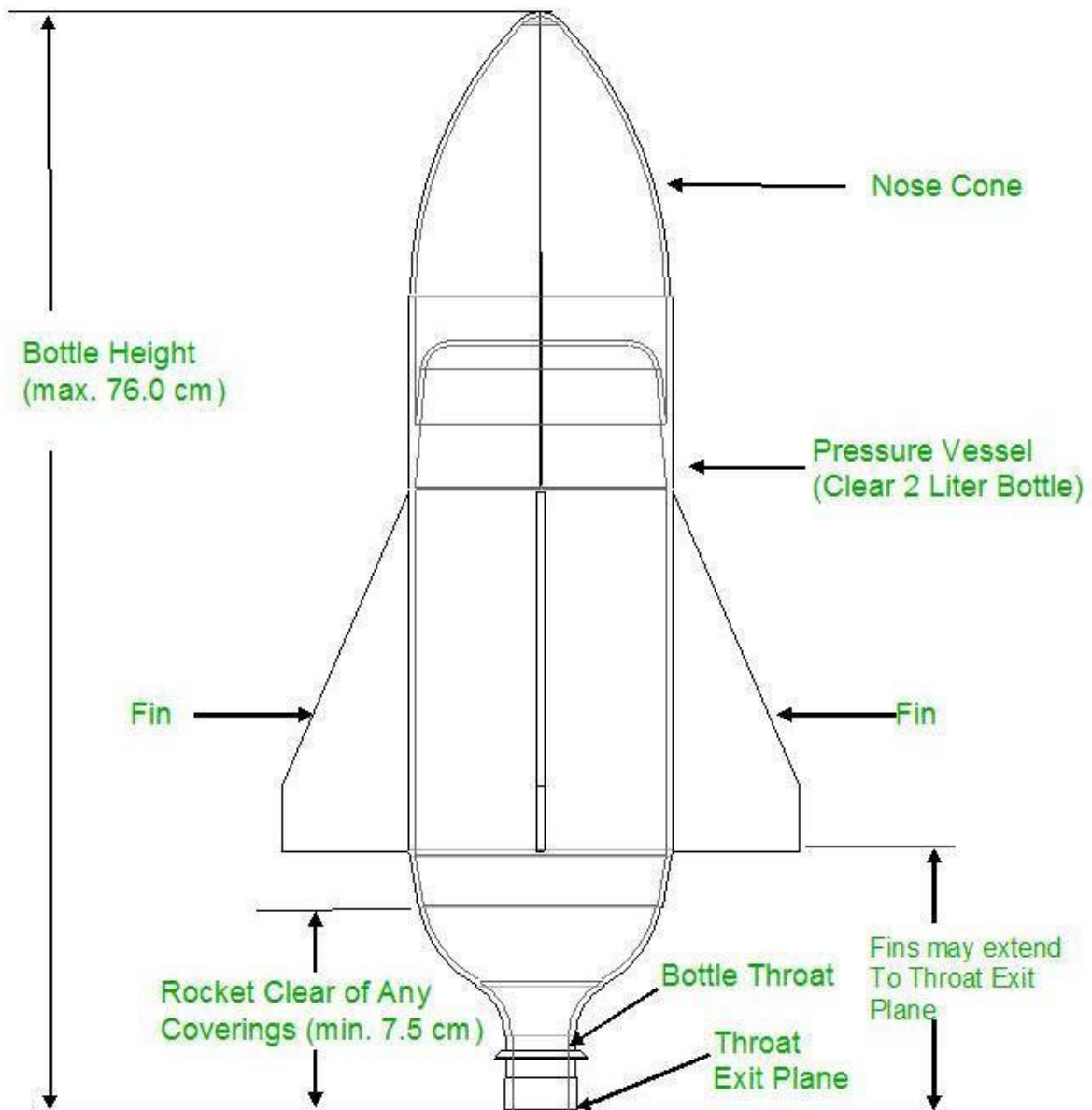
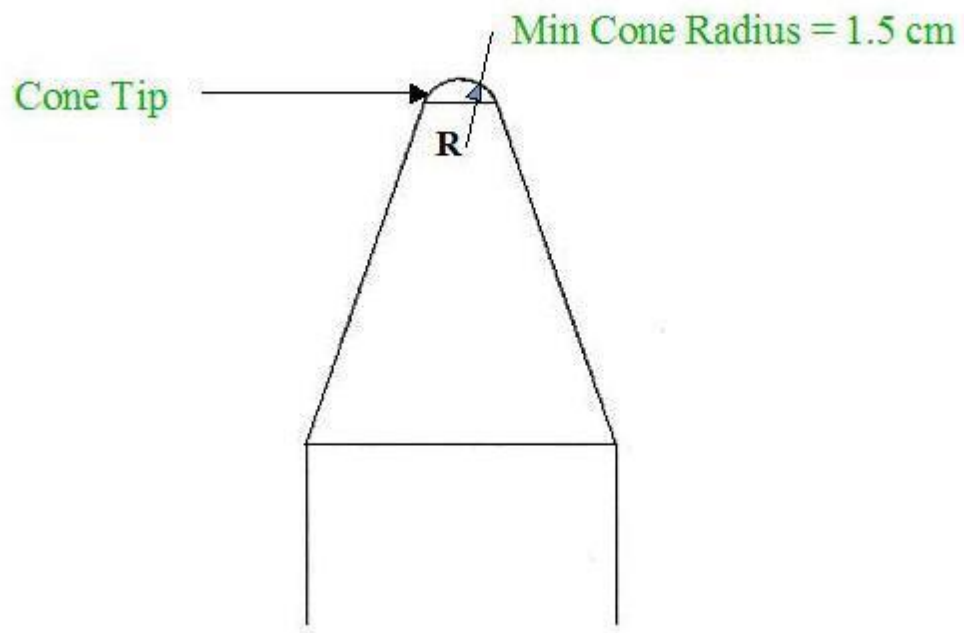
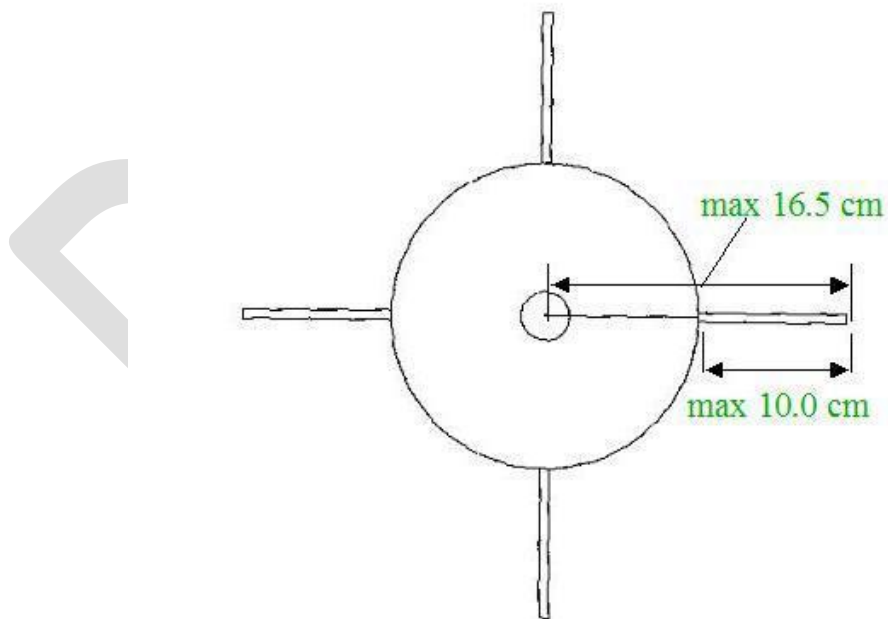


Diagram 1

**NOSE CONE DIAGRAM**



**NOSE CONE DIAGRAM**





## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

### **WATER-ROCKET VEHICLE TECHNICAL DRAWING**

**(MIDDLE AND SENIOR ONLY)**

As a part of the Engineering Design Competition, each team is required to prepare a scaled drawing depicting the rocket that they have designed and built. **The drawing evaluation, which is normally completed during the competition registration, must take place before the start of the rocket launches. If the drawing is not evaluated before the rockets are launched then the technical drawing points will be forfeited.**

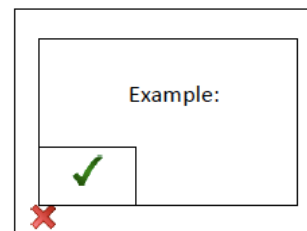
#### **ENGINEERING PAPER REQUIREMENTS (2.5 points each):**

1. The engineering paper is required to be the standard ANSI C 17" X 22" paper (see pg. 86 for online paper vendor)
2. The paper must be a plain, non-grid, 16-pound vellum sheet
3. There must be a 1" border on all sides
4. A **legend** is to be drawn in the bottom left corner of the drawing inside the 1" border (see example below)

#### **GUIDELINES:**

1. **NO MOUNTING OR FRAMES ALLOWED BUT DRAWING MAY BE LAMINATED FOR PROTECTION IF DESIRED.**
2. Allowing for the required 1" border on all sides, the actual drawing is to cover the exposed area of 15" X 20."
3. The Water Rocketry Drawing entry is required to illustrate the actual rocket that will be used in the competition (photographs and computer generated drawings will NOT be allowed).
4. All dimensions are required to be illustrated on the drawing.
5. The scale and the units are required to be indicated on the drawing.
6. The team's Water Rocketry Drawing is required to show at least the front and top views.
7. All parts of the rocket are required to be labeled.
8. Ink pens, pencils or markers may be used.
9. A **legend** is to be drawn in the bottom left corner of the drawing inside the 1" border with the following information:

- **Team name**
- **School Name**
- **School District**
- **Team Members' Names and Grade Levels**
- **School Coordinator's Name**
- **Date of Competition**



#### **AT ALL COMPETITIONS, THE WATER ROCKET DRAWING WILL BE JUDGED ON:**

ENGINEERING PAPER REQUIREMENTS

RESEMBLANCE (between the final version of the rocket and the drawing)

SCALE

NAMING/LABELING (of all of the parts)

APPEARANCE/NEATNESS

# 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

## **SECME WATER ROCKET TECHNICAL REPORT**

### **Evaluation Sheet**

**(MIDDLE AND SENIOR ONLY)**

Please Check

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

### **STRUCTURE: (0-25 points)**

### **POINTS**

<input type="checkbox"/> Cover Page with required information (0 – 5 pts)	___/5
<input type="checkbox"/> 8 ½" x 11" white paper w/ 1" margins (0 – 5 pts)	___/5
<input type="checkbox"/> 12 pt./Standard Font/Computer Typed (0 – 5 pts)	___/5
<input type="checkbox"/> Double-spaced Text (0 – 5 pts)	___/5
<input type="checkbox"/> Report is neat and thorough; pages are numbered and in order (0 – 5 pts)	___/5

### **EVALUATION CATEGORIES: (0-60 points)**

<input type="checkbox"/> Table of Contents (0-4 pts)	___/4
<input type="checkbox"/> Abstract (0-7 pts)	___/7
<input type="checkbox"/> Introduction (0-6 pts)	___/6
<input type="checkbox"/> Design Background (0-10 pts)	___/10
<input type="checkbox"/> Calculations (0-15 points)	___/15
<input type="checkbox"/> Conclusions/Recommendations (0-7 pts)	___/7
<input type="checkbox"/> Acknowledgement/References (0-6 pts)	___/6
<input type="checkbox"/> Appendix (0-5 pts)	___/5

### **MECHANICS: (0-15 points)**

<input type="checkbox"/> Correct grammar, punctuation, and spelling (0 – 5 pts)	___/5
<input type="checkbox"/> Correct use of past tense and passive voice (0 – 5 pts)	___/5
<input type="checkbox"/> Report flows logically with minimal fragmentation (0-5 pts)	___/5

TOTAL: \_\_\_\_\_/100

**Judge's**

**Notes:**

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

# 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

## SECME WATER ROCKET TECHNICAL DRAWING

### EVALUATION SHEET (MIDDLE AND SENIOR HIGH SCHOOL ONLY)

Please Check

☐ Middle School

☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

#### **ENGINEERING PAPER REQUIREMENTS:**

**0-10 POINTS**

<input type="checkbox"/> ANSI C Size Engineering Paper (17" x 22")	___/2.5
<input type="checkbox"/> 1" Border (All Sides)	___/2.5
<input type="checkbox"/> 16 pound Vellum Paper	___/2.5
<input type="checkbox"/> Title and legend (on bottom left hand corner of drawing)	___/2.5

- Team name
- School Name
- School District
- Team Members' Names and Grade Levels
- School Coordinator's Name
- Date of Competition

#### **EVALUATION CATEGORIES:**

**0-90 POINTS:**

I.	RESEMBLANCE – between the drawing and actual rocket (0 – 25 points)	___/25
II.	SCALE (0 – 20 points)	___/20
III.	NAMING/LABELING OF ALL PARTS (0 – 25 points)	___/25
	a. All parts should be clearly labeled.	
IV.	APPEARANCE/NEATNESS (0 – 20 points)	___/20

**TOTAL: (The highest possible score is 100)**

\_\_\_/100

**Judge's Notes:**

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

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

*SECME: The Gold Standard in STEM*

**SECME WATER-ROCKET VEHICLE COMPETITION**  
**(VEHICLE PATCH DESIGN EVALUATION WORKSHEET)**

Please Check      ☐ Elementary      ☐ Middle School      ☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

**EVALUATION CATEGORIES**

**POINTS**

I.	PAPER SIZE REQUIREMENT (0 – 10 points)	___/10
	Correct patch size is 13"x13"	
II.	SECME THEME (0 – 15 points)	___/15
	Incorporation of SECME's competition theme (and team name)	
III.	APPEARANCE (0 – 20 points)	___/20
	Attractiveness/neatness of the presentation	
IV.	CREATIVITY (0-25 points)	___/25
	Uniqueness of the information depicted	
V.	EXPLANATION OF PATCH (0 – 30 points)	___/30
	Description that explains each part or idea of the patch (on the back of patch)	
<b>TOTAL (The highest possible score is 100)</b>		<b>___/100</b>

**Judge's Notes:**

---

**(ATTACH PATCH DESIGN TO EVALUATION SHEET)**

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

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

*SECME: The Gold Standard in STEM*

**SECME WATER ROCKET VEHICLE COMPETITION**  
**CONSTRUCTION AND OPERATION EVALUATION WORKSHEET**

Please Check      ☐ Elementary      ☐ Middle School      ☐ High School

<b>Rocket Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1 (Mission Captain)</b>		<b>Grade</b>	
<b>Student Name #2 (Mission Specialist)</b>		<b>Grade</b>	
<b>Student Name #3 (Mission Specialist)</b>		<b>Grade</b>	
<b>Launch site</b>		<b>Date</b>	

**EVALUATION CATEGORIES:**

**Requirement Met (check one):**

Overall Height: max. 76.0 cm

Yes ☐ No ☐

Fin-Width Distance (from pressure valve): max. 10.0 cm  
 or 16.5 cm from center of bottle axis

Yes ☐ No ☐

Nose-Cone Tip Radius: min. 1.5 cm

Yes ☐ No ☐

Throat-Exit Clearance: min. 7.5 cm

Yes ☐ No ☐

**SCORING:**

**HANG TIME (Seconds)**

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

$$Final\ Score = \left( \frac{team\ hangtime}{max\ hangtime} \right) \times 100$$

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

*SECME: The Gold Standard in STEM*

**SECME WATER ROCKET COMPETITION**

**OVERALL EVALUATION SHEET**

Please Check      ☐ Elementary      ☐ Middle School      ☐ High School

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Coordinator's Name</b>		<b>Date</b>	

**EVALUATION CATEGORIES:**

**Middle and Senior High**

**Elementary**

Hang Time of Rocket (45%) \_\_\_\_\_ Hang Time of Rocket (70%) \_\_\_\_\_

Patch Design (15%) \_\_\_\_\_ Patch Design (30%) \_\_\_\_\_

Technical Report (25%) \_\_\_\_\_ Written Report (10%) \_\_\_\_\_

Technical Drawing (15%) \_\_\_\_\_

**Total Score** \_\_\_\_\_ **Total Score** \_\_\_\_\_

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

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

THE YAEGER FOUNDATION, INC.

**BIONIC / ROBOTIC HAND KIT COMPETITION**

(MIDDLE AND HIGH SCHOOL ONLY)

An exposition event at the Miami-Dade District SECME Olympiad

Please visit the District SECME website for additional competition details:

<http://science.dadeschools.net/secme/competitions.html>



Forming a bioengineering team with your classmates --



Creating a functioning bionic hand prototype --



Competing against other student teams for awards!

**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, tools & 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 to teams scoring the highest points overall in four judging categories.

**ELIGIBILITY** - Teams of 2 to 4 students can enter in the Middle School Division (grades 6-8) or Senior High Division (grades 9-12)

**HOW TO ENTER** – To receive the Competitor's Packet and official 2017 Mark I Bionic/Robotic Hand Kit, complete the Entry Form and return with registration fee (\$150/team via credit card or check only).

For forms and additional information please contact:

*The Yaeger Foundation, Inc. at:*  
(305) 751-4208; fax (305) 691-3784;

[IG500@aol.com](mailto:IG500@aol.com);

1177 M.L. King Boulevard, Miami, FL 33150.

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

### VEX ROBOTICS COMPETITION (HIGH SCHOOL ONLY)



[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 has been a SECME National Student Competition. Please follow the instructions below to participate in the SECME/VEX Competition.

1. **Team Registration:** You are encouraged to register your team with VEX Robotics at [www.RobotEvents.com](http://www.RobotEvents.com) . Registration also gets you plugged into the system and access to resources.

- a. Registration costs \$100 for the first team and \$50 for each additional team at the same school.
- b. Registration gets you access to the official VRC Competitions and a welcome kit that includes:
  - i. Sample Game Pieces
  - ii. Robot License Tags
  - iii. Robot Flags
  - iv. Other promotional items
- c. Teams **DO NOT** have to be registered to participate in "SECME only" events.

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. Please visit <http://www.vexrobotics.com/find-a-reseller/> to find a reseller in your area or visit the VEX Robotics website at [www.vexrobotics.com](http://www.vexrobotics.com) . You can also contact the SECME National office to direct you to the support representative for your state.

3. **2017-18 Game:** This year's game is [In the Zone](#). 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. For access to the official VEX In the Zone Competition Resources [CLICK HERE](#).

[CLICK HERE](#) to see the VEX In the Zone video.



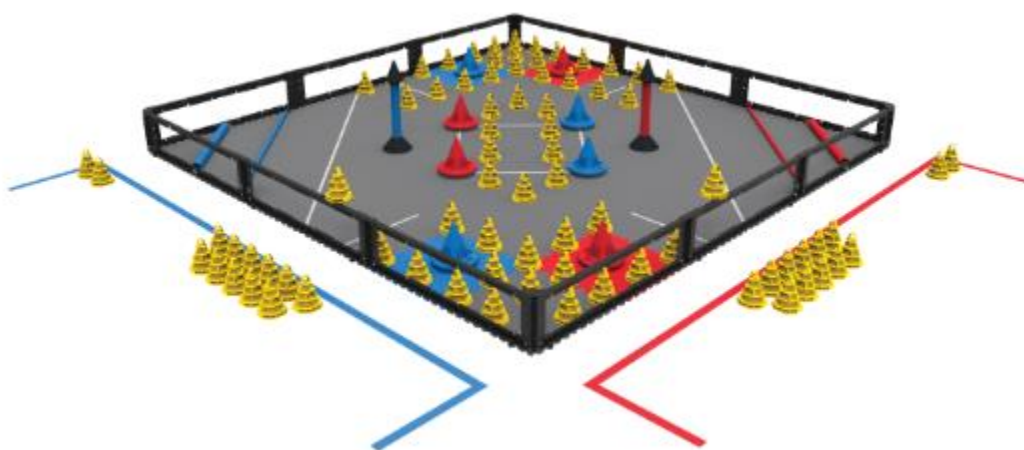
*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*

**4. Competition Format:**

SECME will follow the VEX Robotics In the Zone “Game Rules” and may or may not include the following:

- o Alliances
- o Head-to-head
- o Autonomous Period
- o Robot Skills Challenge
- o Programming Challenge

**5. SECME Team Requirements:** Each SECME VEX Robotics team must be represented by three (3) and only three (3) team members. While more than three (3) students are allowed (and encouraged) to work on the project, three (3) students must be present to compete. If three (3) students are not present to compete, they will be allowed to participate in the National Competition but will be ineligible to place.



**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

**SECME: The Gold Standard in STEM**

**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. Each team's engineering 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.

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, encounter instances of success and failure, and learn many lessons through their experiences. It is this process that students should document in their Engineering Notebook.

The Engineering Notebook is also 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 (but not limited to):**

- ☐ Cover page
  - o Title of the Written Report (SECME/VEX Robotics Engineering Notebook)
  - o Team Name
  - o Each team member's name, grade and complete address
  - o Each team member's email address
  - o Team's school name and complete address
  - o School System/District name
  - o School Coordinator's name
- ☐ Table of Contents
- ☐ Brief description of each team member
  - o describe each team member's strengths and benefits to the team
- ☐ Design ideas
- ☐ Team meetings notes
- ☐ Construction of the robot
- ☐ Operation – describe how the robot has be designed to score/de-score points
- ☐ Problems encountered and methods to resolve them
- ☐ Conclusion

## **SECME ENGINEERING DESIGN COMPETITION GUIDELINES: VEX ROBOTICS TEAM INTERVIEW WITH JUDGES**

As a part of the Engineering Design (VEX Robotics) Competition, each student team will be interviewed by a panel of judges.

This 5-8 minute discussion will cover details of the Robot's design and testing.

### **TEAM INTERVIEW REQUIREMENTS AND GUIDELINES:**

1. Team members are interviewed as a group.
2. Each member is expected to be able to serve as a spokesperson in response to questions from the judges.
3. The team interview will be conducted before the Robotics Competition/Exhibition
4. The team interview will be one element—along with Engineering Notebook--in arriving at the overall score in competition/exhibition.

### **AT ALL COMPETITIONS, THE VEX ROBOTICS TEAM INTERVIEW WILL BE JUDGED ON:**

- Teamwork
- Application of Technical Principles
- Knowledge of Design
- Oral Communication Skills

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

**SECME: The Gold Standard in STEM**

**Vex Robotics Engineering Notebook**

**Evaluation Sheet**

High School ONLY

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

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

**Engineering Notebook should be clear and completely documented of the team's design and build process.**

**Tips to improve you Engineering Notebook:**

- ☐ 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 of their robot development

DEVELOPING	AVERAGE	PROFICIENT	EXCEPTIONAL
0-69 points	70-79 points	80-89 points	90-100 points

**TOTAL (The highest possible score is 100)**

\_\_\_\_/100

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

**SECME: The Gold Standard in STEM**

**SECME ENGINEERING DESIGN COMPETITION GUIDELINES:**

**VEX ROBOTICS TEAM INTERVIEW WITH JUDGES**

**(Evaluation Sheet)**

<b>Team Name</b>			
<b>School Name</b>			
<b>District</b>		<b>State</b>	
<b>Student Name #1</b>		<b>Grade</b>	
<b>Student Name #2</b>		<b>Grade</b>	
<b>Student Name #3</b>		<b>Grade</b>	
<b>Judge's Name</b>		<b>Date</b>	

Team is able to explain their design and strategy decisions throughout the season.

DEVELOPING								PROFICIENT									EXCEPTIONAL		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

TOTAL SCORE IN TEAM INTERVIEW CATEGORY

\_\_\_\_/20

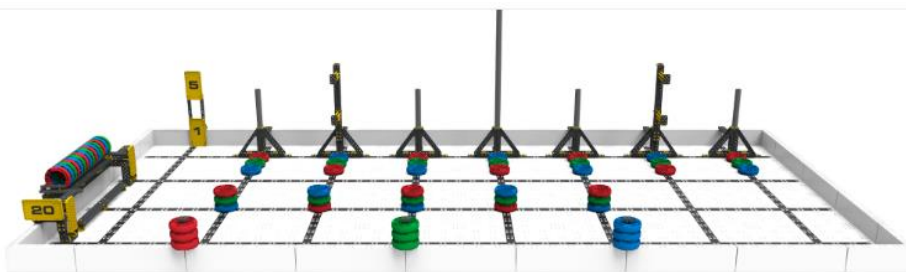
---

**Judge's Notes:**

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

### SECME: The Gold Standard in STEM

#### **VEX IQ Robotics** (ELEMENTARY AND MIDDLE)



#### **The Game:**

Ringmaster is played on a 4'x8' rectangular field configured as seen above. Two robots compete in the Teamwork Challenge as an alliance in 60 second long teamwork matches, working collaboratively to score points. Teams also compete in the Robot Skills Challenge where one robot takes the field to score as many points as possible. These matches consist of Driving Skills Matches, which will be entirely driver controlled, and Programming Skills Matches, which will be autonomous with limited human interaction.

The object of the game is to attain the highest score by Scoring colored Rings on the Floor Goal and on Posts, by having Uniform Posts, by Emptying Starting Pegs, and by Releasing the Bonus Tray.

#### **The Details:**

There are a total of sixty (60) Rings available as scoring objects in the game. There are seven (7) Posts to score on, one (1) Floor Goals, three (3) Starting Pegs, and one (1) Bonus Tray on the field.

#### **Scoring:**

Each Ring Scored in the Floor Goal	1 point
Each Ring Scored on a Post	5 points
Each Ring Scored on a Uniform Post	10 points
Each Emptied Starting Peg	5 points
Releasing the Bonus Tray	10 points

Additional information can be found at: <http://www.roboticseducation.org/vex-iq-challenge/viq-current-game/>

**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**

*SECME: The Gold Standard in STEM*

**VEX ROBOTICS Evaluation Sheet  
ELEMENTARY AND MIDDLE**

Please Check:

☐ Elementary School

☐ Middle School

<b>Team Name</b>			
<b>School Name</b>			
<b>Judge's Name</b>		<b>Date</b>	

Criteria	Points	Count	Total
Each Ring Scored in the Floor Goal	1 point		
Each Ring Scored on a Post	5 points		
Each Ring Scored on a Uniform Post	10 points		
Each Emptied Starting Peg	5 points		
Releasing the Bonus Tray	10 points		

**Note:** "Having Two Robots Parked on the Bridge" awards 15 points only and not 15 points in addition to 5 points for "Having One Robot Parked on the Bridge"

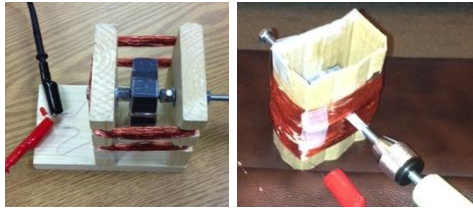
<b>Final score</b>	
--------------------	--

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

### **FPL GENERATOR BUILD** (ELEM/MIDDLE/SENIOR)

**An exposition event at the Miami-Dade District SECME Olympiad**



The generator building competition will prepare the students for STEM programs by challenging them to understand the following:

- Basic forms of energy, including electrical, mechanical, and conversions from one form to another.
- The basic magnetic theory
- The relationship between magnetic and electric fields.
- The flow of electrical circuits.
- The law of electromagnetic induction (Faraday's Law).

**Team Entry:** Minimum of 2 and a maximum of 4 team members.

#### **COMPONENTS-**

##### **Design:**

- Construct a generator and measure the voltage output
- The voltage must be generated using electromagnetic induction (no static electricity, photovoltaic, etc)
- The design should produce a continuous voltage, not a single spike.

##### **Communication:**

- Team will be interviewed by judges (written and oral)
- Team shall provide a drawings with a one page abstract
- Technical Report (Future Competitions)

##### **Generator Output: (Voltage output x 200)**

- The highest voltage achieved in a timed duration (10 seconds for elementary or 30 seconds for middle & high school) will be recorded towards final score.

##### **Team Interview: Max 100 points**

- Application of technical principles (40pts) – Written test
- Knowledge of design (20pts)
- Demonstrate knowledge of Ohms Law (20pts)
- Creativity (20pts)

##### **Design Drawing plus 1 page abstract: Max 100 points**

#### **REQUIREMENTS-**

- Maximum Dimensions: 30 cm X 30 cm X 30 cm
- No batteries or external voltage source can be used.
- No generator kits allowed
- All items must be hand assembled
- Generator must be able to run for continuously for a duration of time- 10 seconds (elementary) or 30 Seconds (middle & high school)
- Materials such as wood, cardboard, plastic, etc. can be used for the base of the generator. Long nails, screws, pencils, etc. can be used for the rotor.
- 500' Maximum of #28AWG Magnetic Wire
- Magnets:
  - Elementary and Middle school must use option (a)
  - High school may choose either (a) or (b)
    - (a) Maximum 4: Ceramic Bar Magnets (3/8" x 7/8 x 1-7/8")
    - (b) Maximum 12: Neodymium Disc Magnets (3/16" x 1/4")



**2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES**  
**SECME: The Gold Standard in STEM**

**GUIDELINES FOR TESTING**

**ELEMENTARY:**

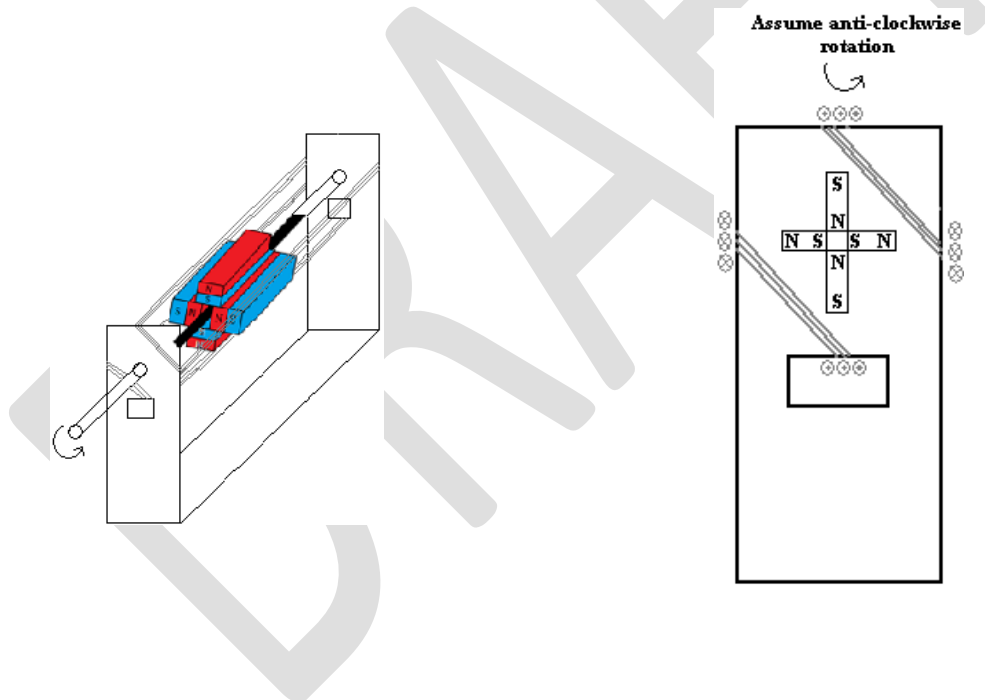
- Rotor will be turned by a standard electric drill at a set speed of approximately 200 rpm.
- Judging will be based on the maximum peak voltage output for duration of 10 seconds.
- The rotor is to stick out at least 2cm for the judges to attach the electric drill.
- The students must have an adult help them with the drill portion; when testing their design.

**MIDDLE:**

- The students are to construct a generator powered by wind.
- Wind source used shall be from a shop/home vacuum.
- Students will operate the vacuum themselves.
- Judging will be based upon maximum peak voltage output for duration of 30 seconds.

**SENIOR:**

- The students are to construct a generator powered by water.
- Water source used shall be from a 1 gallon container & a funnel with a flow rate of 2 gal/min
- Students to place the funnel apparatus and pour the water themselves.
- Judging will be based upon maximum peak voltage output for duration of 30 seconds.
- Water shall not come in contact with the generator structure. Students shall build a shielding device to prevent water from contacting the generator structure.



# 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

## SECME FPL GENERATOR BUILD

### Evaluation Sheet

Students should complete only the School and Team section below. All other sections will be filled out by the judges and competition administrators.

ID# \_\_\_\_\_ Check one: \_\_\_ Elementary (grade 3-5) \_\_\_ Middle (grade 6-8) \_\_\_ Senior (grade 9-12)

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

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

**Students' Names:**

1. \_\_\_\_\_

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

3. \_\_\_\_\_

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

Scoring Voltage output x 50	Output	Score
Generator Run		

Evaluations	Max pts	Point
Creativity	20	
Knowledge of team's design	20	
Knowledge of Ohms Law	20	
Application of Technical Principles	(40)	
Question 1	10	
Question 2	10	
Question 3	10	
Question 4	10	
Sub Total	100	

Middle and High School only

Abstract Report	50	
Technical Drawing	50	

<b>Final Score</b>	
--------------------	--

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

**SECME GENERATOR BUILD**

**Originality/Creativity (20pts total)**

Check one: \_\_\_ Elem (gr 3-5) \_\_\_ Middle (gr 6-8) \_\_\_ High School (gr 9-12)

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

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

**Students' Names:**

1. \_\_\_\_\_

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

3. \_\_\_\_\_

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

Things to look for:

- Differs from the designs that we presented to their coordinators (10pts) \_\_\_\_\_
- Low cost or commonly available materials (10pts) \_\_\_\_\_

**Total** \_\_\_\_\_

**SECME GENERATOR BUILD TECHNICAL DRAWING**

**EVALUATION SHEET TO JUDGES**

Check one: ☐ Middle (gr 6-8) ☐ High School (gr 9-12)

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

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

Students' Names:

1. \_\_\_\_\_

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

3. \_\_\_\_\_

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

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

The maximum points for the Generator Build Technical Drawing are 50.

**EVALUATION CATEGORIES: POINTS:**

Paper size (1 or 5 points) \_\_\_\_\_

Resemblance (between the actual drawing and generator) (1-25 points) \_\_\_\_\_

Scale (1 or 5 points) \_\_\_\_\_

Naming/labeling of all parts used (1-5 points) \_\_\_\_\_

Appearance/Neatness (1-10 points) \_\_\_\_\_

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

(ATTACH TECHNICAL DRAWING TO EVALUATION SHEET)

**SECME GENERATOR BUILD ABSTRACT REPORT**

**EVALUATION SHEET TO JUDGES**

Check one: ☐ Middle (gr 6-8) ☐ High School (gr 9-12)

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

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

Students' Names:

1. \_\_\_\_\_

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

3. \_\_\_\_\_

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

The maximum points for the Generator Build Abstract Report are 50.

**EVALUATION CATEGORIES: POINTS:**

Theory Content (1-10 points) \_\_\_\_\_

Design Background (1-25 points) \_\_\_\_\_

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

Grammar and Internal and External Citations for all references

Conclusion/ Recommendations (1-10 points) \_\_\_\_\_

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

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
SECME: The Gold Standard in STEM



Taking the science fair out of the auditorium and into cyberspace...

## Take the CHALLENGE

Are you in 6th, 7th, 8th, or 9th grade?

Compete for state, regional and national awards while working to solve real problems in your community.

eCYBERMISSION is a web-based Science, Technology, Engineering and Mathematics competition for 6th, 7th, 8th and 9th grade teams. Your team will propose a solution to a real problem in your community and compete for State, Regional and National Awards.

While implementing the Next Generation Science Standards, eCYBERMISSION challenges students to explore how Science, Technology, Engineering and Mathematics work in their world.

### About AEOP & eCYBERMISSION

eCYBERMISSION is one of several science, technology, engineering and mathematics (STEM) initiatives offered by the Army Educational Outreach Program (AEOP). The U.S. Army is committed to answering the nation's need for increased national STEM literacy and expanding STEM education opportunities across the country to open doors to new career paths for America's students that lead to a brighter tomorrow.

### How to Compete

Click the picture below for each of the four (4) parts



### What does it take for a sports team to be successful?

Great team players? Leadership? Yes, but what else? Helping any great team are **coaches, trainers, cheerleaders and fans.** eCYBERMISSION works the **same way.** Click on each role to learn more

- [Students](#)
- [Parents](#)
- [Advisors](#)
- [Ambassadors](#)
- [Cyberguides](#)
- [Virtual Judges](#)

Click [HERE](#) for the complete eCYBERMISSION competition guidelines.  
[Download the eCYBERMISSION Rules and Regulations here!](#)

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*  
*SECME: The Gold Standard in STEM*  
**STEM VIDEO COMPETITION**  
**(MIDDLE/SENIOR)**

In this challenge, students will create brief, standards-aligned resources highlighting experiences and thoughts regarding math and science from experts, teachers, professionals, and/or skilled enthusiasts. These videos are useful for strengthening content knowledge, learning new approaches to teaching, and for highlighting the appearance of science and mathematics concepts in practical, real-world situations. Examples of existing videos may be seen at <http://stemvideos.org/>.

Awards for the top 3 videos in each grade band will be based on content accuracy, alignment to Florida's current mathematics and science educational standards, educational value, and artistic merit.

**Team Rules:** Teams will have a maximum of three student members and may be advised by school faculty. Schools are restricted to one team per grade band.

**Judging Criteria and Content Requirements**

- Videos will be judged based on standards alignment (30 points), content accuracy (30 points), creativity and artistic merit (25 points), and alignment to technical guidelines (15 points) for a total of 100 points.
- Each video should capture an interview and supporting b-roll designed to support the content aligned to Florida's education standards\*
- Each video should focus on one of the following areas:
  - Expert explaining a STEM concept
  - Innovative and engaging STEM teaching ideas for the classroom
  - Interesting real-world STEM example
- Valid entries will contain a video file, signed release forms, and a submission form.

\*Please see [CPALMS.ORG](http://CPALMS.ORG) for information regarding Florida's education standards. Content related to Florida's science and mathematics standards should be the focus of these videos. For science, use standards beginning with SC. For math, use standards beginning with MAFS.

2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES  
 SECME: The Gold Standard in STEM  
**SECME: FCR-STEM CPALMS PERSPECTIVES STEM VIDEO COMPETITION**  
 (MIDDLE/SENIOR)

**TECHNICAL GUIDELINES:**

Criterion	Specification
Aspect ratio	16 : 9
Dimensions	Submit one 1920 x 1080 (full HD) after the competition.
Video compression	H.264
File type	.mp4
File name	Gradeband_standardcode_schoolname_city.mp4 For example: <i>hs_SC912L1810_centralhs_miamiville.mp4</i>
Time	5:00 minutes maximum total run time
On-screen information	Interviewees should be clearly identified with name, title, and affiliation in superimposed text. Sans serif fonts only.
Copyright	No copyright-protected work can be used in the video. Original material only unless fair use rules apply and verification is provided.
Permissions	Each identifiable person in your video must complete a CPALMS video release form. Please download/print the form (see next page), have it signed by your video participants, and upload it to the submission form when you submit your video.  Minors (under 18 years old) must have their form signed by a parent or guardian.
Entry limits	Submissions are limited to one video per grade band per school (grade bands: 6-8, 9-12)
Other notes	Interviewees should be clearly audible. Cuts and graphics should support, not distract from the content. Please retain all project files in case additional materials are required from the winners. Entries that do not meet these guidelines may not be considered for judging.

Most tablets and smartphones are compatible with these guidelines. You may use an iPhone or similar device if you have one!



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

**SECME: STEM VIDEO COMPETITION**  
(MIDDLE/SENIOR)

## On Camera Release

### AUTHORIZATION TO REPRODUCE PHYSICAL LIKENESS, VOICE, AND OTHER SOUNDS

For good and valuable consideration, the receipt of which from Florida State University is acknowledged, I hereby grant to said Florida State University and its employees, agents and assigns, the right to photograph me and use my picture, silhouette, and other reproductions of my physical likeness (as the same may appear in any still camera photography and/or motion picture film or videotape recording), in and in connection with the exhibition, theatrically, on television or otherwise, or manufacture of videocassettes, of any motion pictures or videotape recordings in which the same may be used or incorporated; and also in the advertising, exploiting and/or publicizing of any such motion pictures, but not limited to television or theatrical motion pictures. I also permit the use of any printed material in connection therewith. I further give Florida State University the right to reproduce in any manner whatsoever any recordings made by Florida State University of my voice and all instrumental, musical or other sounds produced by me.

I hereby certify and represent that I have read the foregoing and fully understand the meaning and effect thereof and, intending to be legally bound, I have hereunto set my hand this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Please complete the following **as you would like them to appear on video (if needed):**

Print Name, degree if applicable: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

### Contact information (for records only):

Street Address : \_\_\_\_\_

City, State, ZIP: \_\_\_\_\_

E-mail and Telephone: \_\_\_\_\_

Signature: \_\_\_\_\_

Witness: \_\_\_\_\_

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

### **SECME: STEM VIDEO COMPETITION** (MIDDLE/SENIOR)

#### **SUBMISSION INSTRUCTIONS:**

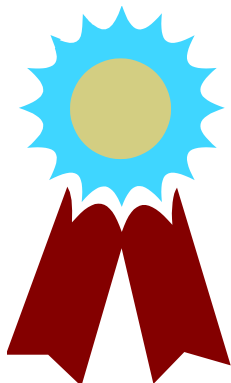
1. Submissions are due by 5:00PM, December 14, 2016
2. By submitting an entry to this contest, you and your team automatically agree to the [CPALMS Terms and Conditions](#). Please review the Terms and Conditions prior to submitting an entry.
3. To submit your files, go to <https://www.wetransfer.com/>
4. Click on “Add files”
5. Select and add the following files:
  - a. Your **final** video file
  - b. Your **completed and signed** CPALMS release form(s) for each on-screen video participant (see form on previous page). You will need to scan the signed forms so they can be attached as a file.
  - c. Your **completed** Submission Information form. (Copy and paste the Submission Information Form at the bottom of the page in to a separate word document and complete parts 1-6 for your team’s video.)
6. Select and add the following email addresses to “Friend’s email” (these are the video competition administrators who will receive your files):  
DJaber@dadeschools.net
7. Add your email address to the “Your email” field.
8. Add the following information to the “Message” field:
  - a. Teacher Sponsor name (e.g. Teacher: Mr. John Doe)
  - b. Submitter name (e.g. Submitter: Mr. John Doe)
  - c. School name (e.g. Florida Middle School)
9. Click Transfer.
10. You should receive a confirmation email from WeTransfer within a short period of time.

Good luck!

#### **Submission Information Form**

Please complete the following items and save the file with the following title format prior to submission:  
*info\_YourSchoolName\_YourGradeBand.doc; e.g. info\_FloridaMiddleSchool\_MS.doc*

1. Teacher/submitter name (first name and last name): *e.g. Mr. John Doe*
2. Teacher/submitter email address: *e.g. jdoe@floridaMiddleSchool.edu*
3. Student team members (first and last names): *e.g. Mark Smith, Jane Doe, & Marcus James*
4. Video Title: *e.g. Nitrogen Ice Cream*
5. Video Summary (brief description): *e.g. In this video, ...*
6. CPALMS Standard(s) that were addressed (code only): *e.g. SC.912.L.16.5*



## **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 February 10, 2018.



2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

**SECME STUDENT COMPETITION GRIEVANCE**

Request for Review by Judges

Competition Site/Date \_\_\_\_\_

School \_\_\_\_\_

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

SECME School Coordinator/Teacher Leader \_\_\_\_\_

Preferred Email \_\_\_\_\_

Telephone \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Specific Concern \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Use 2nd sheet if needed to document fully)

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

(Student Name)

Date \_\_\_\_\_

**Please submit to judges.**

Additional documentation relative to the grievance may be submitted to [djaber@dadeschools.net](mailto:djaber@dadeschools.net)

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

SECME: The Gold Standard in STEM

# 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)
- **Water Rocket**
- **Essay**

Although four (4) projects are sent to the National Student Competition, **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 in **June/July (TBA)**. The District and the National SECME offices along with the host university provide travel, housing, and meal expenses for the students and a teacher chaperone for each team; district funding permitting.

**Should the winning team DECLINE participation in and travel to the national competition, notification of such action MUST reach the District SECME office prior to April 1, 2018.** 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, Rocket and Elementary Mousetrap winners are identified prior to the National Mousetrap and Vex Competitions.)***

### INTERNATIONAL BRIDGE COMPETITION

Two (2) **individual\*** Bridge competition winning bridges will represent Miami-Dade County Public Schools in the **International Bridge Competition**. 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

## 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

### SECME: The Gold Standard in STEM

### NATIONAL SECME, INC. FREQUENTLY ASKED QUESTIONS

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

☐ Engineering Design (Mousetrap Car): the Engineering Faculty Consultant or Minority Engineering Program Director at the Member University which sponsors your Regional/State competition

☐ Engineering Design (Water Rocketry): the Engineering Faculty Consultant or Minority Engineering Program Director at the Member University which sponsors your Regional/State competition

☐ VEX Robotics: SECME National Office • [secme@coe.gatech.edu](mailto:secme@coe.gatech.edu)

☐ Essay: SECME National Office • [secme@coe.gatech.edu](mailto:secme@coe.gatech.edu)

The SECME National Office is always here to help. We can be reached at [secme@coe.gatech.edu](mailto:secme@coe.gatech.edu)

1. **Can we purchase mousetrap kits from the SECME National Office?** No; SECME no longer sells mousetrap kits. Instead SECME has adopted and encourage scratch-build designs to foster more creativity and innovation. Car kits can be purchased at the following places:

1. Pitsco
2. Midwest Supply company
3. <http://www.docfizzix.com>
4. [http://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)
5. [www.sciencekit.com](http://www.sciencekit.com)

2. **Where can we purchase the engineering paper?** Please find one suggested supplier below:

[http://www.artsupply.com/Clearprint-Vellum-17-X-22-10-Sheet-Pack\\_p\\_45604.html](http://www.artsupply.com/Clearprint-Vellum-17-X-22-10-Sheet-Pack_p_45604.html) (10 sheets for \$16.24 as of 8/30/2017)

3. **Our team won our Regional/State Competition but 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 should be able to participate in the competition, in particular, the team interview as outlined in the guidelines.

4. **Our team won our Regional/State Competition but one of the team members is unable to attend National Competition Finals and we are NOT able to replace them. Can we still come and compete with two team members?** You will be allowed to come to the National Competition to participate and get "the experience" but any team without 3 team members are not eligible to **place** in the competition.

5. **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 members. The Host University is only responsible for meals and lodging for the 3-member student teams and the authorized chaperone(s). A listing of local hotels will be provided.

6. **We are the 1st place winning team from our Regional/State Competition. Do we send in our Technical Drawing and Report prior to attending National Competition Finals?** Email your Technical Report (PDF format) **only** and physically bring your drawing with you to National Competition Finals.

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

☐ Engineering Design (Mousetrap Car) and Vex Robotics: Winning Regional/State 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 [secme@coe.gatech.edu](mailto:secme@coe.gatech.edu) for additional guidance.

☐ Essay: 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

☐ eCYBERMISSION: All students can participate in the eCYBERMISSION competition.

*2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES*

*SECME: The Gold Standard in STEM*

**SECME NATIONAL COMPETITION DATES AND DEADLINES**

**April 16, 2018 (on or before 11:59pm EST)**

- **Certification** of Regional/District/State 1<sup>st</sup> place winners (deadline)
- **Registration** for the 2017-18 SECME National Competition **OPENS** (School Coordinators only)

**April 23, 2018 (on or before 11:59pm EST)**

- Elementary Mousetrap Car Written Report due
- Water Rocketry Written and Technical Report due (ALL DIVISIONS)
- First place winning essays due at the SECME National Office

**May 7, 2018 (on or before 11:59pm EST)**

- ALL National winners will be notified
- Mousetrap Car **Technical Reports** are due at the SECME National Office (Middle & High school)
- Mousetrap car PowerPoint presentations are due at the SECME National Office
  - (only for Middle and High school teams advancing to the national competition)
- VEX Robotics **Engineering Notebooks** are due at the SECME National Office (All divisions)

**May 23, 2018 (on or before 11:59pm EST)**

- ALL Teams must be Registered for the 2017-18 SECME National Competition Finals

**NOTE:** All announcements of changes and/or updates will be published in the monthly SECME Spotlight Newsletter

# 2018 DISTRICT SECME FESTIVAL AND OLYMPIAD COMPETITION RULES

## SECME: The Gold Standard in STEM

### 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:

**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 Education 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.

**Title II of the Genetic Information Nondiscrimination Act of 2008 (GINA)** - prohibits discrimination against employees or applicants because of genetic information.

**Boy Scouts of America Equal Access Act of 2002** – no public school shall deny equal access to, or a fair opportunity for groups to meet on school premises or in school facilities before or after school hours, or discriminate against any group officially affiliated with Boy Scouts of America or any other youth or community group listed in Title 36 (as a patriotic society).

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

#### **In Addition:**

**School Board Policies 1362, 3362, 4362, and 5517** - Prohibit harassment and/or discrimination against students, employees, or applicants on the basis of sex, race, color, ethnic or national origin, religion, marital status, disability, genetic information, age, political beliefs, sexual orientation, gender, gender identification, social and family background, linguistic preference, pregnancy, and any other legally prohibited basis. Retaliation for engaging in a protected activity is also prohibited.