

**Southwest Suburban
Conference
Mathematics League**

**Contest Handbook
And League Manual**

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In addition to the Table of Contents below, a set of bookmarks exists for the .pdf file. Click on the 'Bookmarks' tab in Adobe Reader.

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INTRODUCTION

The original Southwest Suburban Math League Committee was formed under the auspices of the Southwest Suburban Math League Committee of Mathematics in February of 1963. The committee was united by a desire to give recognition for outstanding mathematical ability. The members of this committee were Charles Cummins of Rich East, Stephen Ivens, a student teacher at Rich East, and James High, Della Hussey, and Norman West of Lincoln-Way High School.

The first math contest in the state of Illinois was held between Rich East High School and Lincoln-Way High School in May of 1963. "Mathletes" of both schools readily accepted the idea, in both this contest and the subsequent one held in September of 1963.

In the fall of 1963, Cade Cottingham of Rich East joined the committee. The efforts of this committee were directed toward making necessary revisions in rules and policies, and in producing the initial contest manual. On October 21, 1963, this committee turned over its efforts, in the form of the first contest manual to the first Central Committee.

In the 1970's the conference grew to include most SICA schools. Mathletes continued to grow exponentially until the 2004-2005 season, when the league reached a 34 school limit.

Forty-two years after that first math contest in 1963, the growth of the south suburban area spawned a new conference...the SWSC. Founded in the fall of 2005, ten schools began a new generation of mathematics competitions. Those original schools were: Andrew, Bolingbrook, Bradley-Bourbonnais, Homewood-Flossmoor, Joliet Township, Lincoln-Way Central, Lincoln-Way East, Lockport, Sandburg, and Stagg.

The founders of the SWSC Mathletes League wishes to acknowledge and thank those founders from 1963 for their endless hours of work and dedication to students and student learning. As we enter a new generation of mathletes, it is our hope that we can continue the tradition of excellence in mathematics which began in 1963. Our efforts are dedicated to these founders. Without your efforts, we would not exist today.

Though a new conference, the SWSC Mathletes League maintains the original 1963 purpose of existence:

***to recognize outstanding mathematical ability,
encourage independent study,
stimulate interest in mathematics,
and provide a wholesome meeting ground for
students of mathematics through
academic competition.***

-Fall 2005

COACHING ETHICS

GENERAL STATEMENT OF ETHICS

The SWSC Mathematics League is organized for the purposes of recognition of outstanding mathematical ability, encouragement of independent study, stimulation of interest in mathematics, and provision of a wholesome meeting ground for students through academic competition.

With these purposes in mind, every mathematics teacher should be encouraged to promote and support the SWSC Mathematics League and encourage student participation in Mathletes. The dissemination of information and the promotion of the Mathletes within the mathematics classroom should be encouraged.

ETHICAL PROCEDURES

- Recruitment – Do not require class members to be on the team.
- Selection of team for a given contest – Do not give intrasquad competition tests to an entire class for the purpose of selecting the team.
- Preparation of Team
 - Do not change the nature or sequence of topics of a class in order to prepare the team members who are in a class. Course and textbook changes are expected for other reasons.
 - Do not offer a course for which topics change from year to year to deliberately coincide wholly or partially with SWSC League topics.
 - Do not suspend regular class instruction procedures to accommodate the preparation of members of the class and team for a contest.

CONFIDENTIALITY OF QUESTIONS

Under ordinary circumstances, coaches are not to look at any questions relating to the contest before that contest begins. Should there be a question from a judge regarding the oral competition, the statistician should be notified immediately. Should the coach be placed in a position to judge an oral, the questions should NOT be examined until the day of the contest. In addition, no coaching is to take place in any manner once questions have been examined.

THE CENTRAL COMMITTEE

- The Central Committee consists of the coaching representatives from each participating school. This committee is the controlling body of the SWSC Mathlete League. Each school has one vote. An administrative representative from the SWSC Activity Directors is also a non-voting member of the Central Committee
- All contests are governed by the Central Committee. This committee is responsible for the following:
 - The scheduling of all contests in cooperation with the SWSC Activity Directors. When creating the schedule, consideration should be made for potential weather problems.
 - Selection of categories in cooperation with the question writer
 - Determines the order and procedures of competitions
 - Serve as the rules and arbitration board (Note: All proposed rule and procedure revisions must be ratified by **three-fourths** of the Central Committee.)
- The voting representatives from the schools are the head coaches or their designees. One vote is allowed per school. The responsibilities of each coach are to:
 - Provide an opportunity for each student to prepare for competition
 - Attend meets with participants
 - Attend coaches meetings...one in the Fall and one in the Spring, as scheduled by the Central Committee
 - Prepare judges as requested by a contest host and prescribed by this manual, and to notify the host school if this is impossible. If impossible, it is the responsibility of the school without judge(s) to provide remuneration to the school providing the judge(s) at the rate of the school providing the judge
- Officers of the Central Committee are the President and Secretary.
 - The term of each office shall be from June 1 of each year to May 31 of the following year.
 - The President shall be the Secretary from the previous year.
 - The Secretary shall be appointed by the Central Committee from the rotation established in Appendix A.
 - If the President position is vacated for any reason, the Secretary shall take over the office of President. The next school in the rotation will take over the office of Secretary.
 - If the Secretary position is vacated for any reason, the next school in the rotation will take over the office of Secretary.
- The President shall:
 - Run meetings according to [Robert's Rules of Order](#)
 - Facilitate communication between the SWSC Activity Directors and the Central Committee
 - Form and abolish committees as needed
 - Communicate with the question writer, webmaster and statistician during the summer, passing on any necessary information including restrictions and copies of oral reference material.
 - Provide appropriate material to the webmaster for uploading to the league website, currently <http://swscmathletes.vjamath.org/>. This includes:
 - Meeting agendas
 - Appropriate restrictions for competitions
 - The latest version of the League Manual
 - Schedule of Contests
 - Other Pertinent Information

- The Secretary shall:
 - Record minutes of meetings, providing copies to each of the following in a timely fashion:
 - Webmaster
 - Question writer
 - Statistician
 - SWSC Activity Directors
 - Assist the President in communication with coaches, et. al.
 - Create a schedule of contests and hosts for the following year. When creating the schedule, consideration should be made for potential weather problems.
 - In the absence of the President, call the meeting to order, serving as temporary President and appoint a temporary Secretary
 - Assume the responsibilities of the President immediately after one year of service as Secretary
- The Central Committee, with approval from the SWSC Activities Directors, shall contract the two positions of question writer and statistician. Each contract will be for one school year.
- The Question Writer shall:
 - Prepare questions in final format as prescribed by this League Manual and the Central Committee.
 - Provide copies of questions to the statistician for checking and eventually copying. Each contest shall be provided to the statistician no less than four weeks before the date of the contest. Final versions of each contest shall be provided to the statistician no less than three weeks before the date of the contest.
 - Provide a proposal of restrictions to the Central Committee two years in advance of competition.
 - Adjust questions for each contest based upon the feedback from the Central Committee, which will be compiled by the statistician.
- The Statistician shall:
 - Work with the Question Writer in editing and revising contest questions and answers.
 - Prepare folders of material for each contest as prescribed by the Central Committee, and disseminate the materials to the appropriate host schools.
 - Collect, collate, and prepare the Group Competition questions (Competition G) as submitted by the members of the Central Committee
 - Coordinate the results of contests, and disseminate this information to all coaches. Note: This is currently being done on the website (as of Fall 2005).
 - Provide the 'SAMPLE CONTEST PACKET' to any school which has a new head coach. This packet will be provided at the Fall Coaches Meeting.
 - Provide coaches with an electronic copy of the questions after each contest.

CONTESTS

Schools participate in five meets during the school year, held on Wednesday evenings. The fifth and final meet is the SWSC Division Finals, and is held on a rotating basis at the end of each season.

Divisions are determined based upon team performance of the previous year. The two Red Division schools with the highest team total for the season move up to Blue Division, and the two Blue Division schools with the lowest team total for the season move down to Red Division. These moves take place for the subsequent season.

The dates, times, and locations of all meets are set by the Central Committee during the Spring Meeting of the preceding season. ONLY those changes which are logistically necessary may occur after this meeting.

The schedule and room assignment for each of the **first four** contests shall be as follows: (see Appendix D for a sample schedule):

Room	Round 1: 6:30 – 6:50	Round 2: 7:05 – 7:25	Round 3: 7:40 – 8:00
1, 2	Competition A1	Competition A2	Competition EF
3, 4	Competition B1	Competition B2	Competition EJ
5, 6	Competition C1	Competition C2	Competition GJ
7, 8	Competition D1	Competition D2	Competition GF
9	A1, B1, C1, D1 Alternates	A2, B2, C2, D2 Alternates	EF and EJ Alternates

Room 10 is reserved for Oral Preparation.

Rooms 10, 11, 12 and 13 are reserved for Competition F, which runs continuously per schedule determined by host schools. The schedule consists of 15 minute time intervals: 10 minutes for each contestant and 5 minutes between contestants.

For the **fifth** contest, Rooms 10, 11, 12, and 13 shall remain the same. The schedule for Rooms 1-8 shall be as follows:

Room	Round 1: 6:30 – 6:50	Round 2: 7:05 – 7:25	Round 3: 7:40 – 8:00
1, 2	Competition A1	Competition A2	Competition EF
3, 4	Competition B1	Competition B2	Competition EJ
5, 6	Competition C1	Competition C2	Competition GJ
7, 8	Competition D1	Competition D2	Competition GF

Note: Alternates are not permitted at the fifth contest.

Note: The sixth score will be used to break ties at the fifth contest. If a tie remains, duplicate awards will be ordered and sent to the affected schools.

RULES AND PROCEDURES

Before describing the contest rules and procedures, some vocabulary definitions are in order:

Senior	Any student in 9 th , 10 th , 11 th or 12 th grade
Junior	Any student in 9 th , 10 th , or 11 th grade
Sophomore	Any student in 9 th or 10 th grade
Freshman	Any student in 9 th grade

Each contest is divided into seven areas of competition:

Competition A – 100 points

- two separate topics, written competition open to seniors
- three questions: 2, 3, and 5 pts
- questions come from no lower than second semester geometry and no higher than pre-calculus, introductory calculus, or elementary statistics.
- maximum of six individual members to a team...top five scores count toward team total

Competition B – 100 points

- two separate topics, written competition open to juniors
- three questions: 2, 3, and 5 pts
- questions come from no lower than ninth grade algebra and no higher than first semester eleventh grade algebra two (it is assumed that geometry is a tenth grade course)
- maximum of six individual members to a team...top five scores count toward team total

Competition C – 100 points

- two separate topics, written competition open to sophomores
- four questions: 2, 2, 3, and 3 pts
- questions come from no higher than tenth grade geometry
- maximum of six individual members to a team...top five scores count toward team total

Competition D – 100 points

- two separate topics, written competition open to freshmen
- four questions: 2, 2, 3, and 3 pts
- questions come from no higher than ninth grade algebra
- maximum of six individual members to a team...top five scores count toward team total

Competition E – 100 points

- Graphing Calculator Competition
- FS Level: three sophomores and three freshmen
- JS Level: three juniors and three seniors
- Questions come from high school mathematical problems which require the use of a graphing calculator to solve. The emphasis is on problem solving and learning the capabilities and functions of the graphing calculator rather than formula memorization. See Appendix B for further information and examples.
- four questions: 2, 2, 3, and 3 pts
- maximum of six individual members to a team...top five scores count toward team total

Competition F – 150 points

- Oral Competition (see Appendix C)
- three separate topics, two senior topics and one sophomore topic
- Question level will vary from ninth grade material through college level material

- Scored by a panel of two judges assigned by the host school. Evaluation will be based upon presentation (10 pts each judge) and knowledge of subject (15 pts each judge). The maximum score is 50 points per topic.
- One contestant (with optional assistant in the preparation room) per topic

Competition G – 100 points

- FS Level: two sophomores and two freshmen
- FS questions will come from no higher than first semester geometry
- JS Level: two seniors and two juniors
- JS questions will come from no higher than 12th grade mathematics
- 15 questions (five 2 pt, five 3 pt, and five 5 pt questions)
- students work together as a team to complete ONE answer sheet

A school's score is the sum of the scores in Competitions A, B, C, D, E, F, and G.

A mathlete may enter as many areas of competition as the schedule permits.

Alternates are additional students who may participate in a competition in the designated alternate room. Schools may enter as many alternates as they wish in Competitions A, B, C, D, and E. There are NO alternates for competitions F and G. Scores of alternate students are not counted toward the team total.

A school with more than six students in any test in Competitions A, B, C, D, and E will have their five LOWEST scores used for a team total.

If there is no student name or school name on a paper, the paper will receive a score of zero.

A student **may enter a competition late**, but will not be given additional time to complete a full twenty minutes. However, should the tardiness be a result of the oral competition falling off schedule, the contest host is responsible for giving the student the full twenty minutes in a secluded area.

A student **may leave a competition early** ONLY for the purpose of competing in an oral competition.

The coach is to notify proctors if a student will be arriving late or leaving early for either of these reasons.

Each competition will specify in the restrictions the permissibility of calculators.

Mathletes may NOT take notes into the examination rooms in Comps A, B, C, D, E, and G.

In Competition F (oral competition), mathletes may use any reference material in the preparation room. HOWEVER, in their presentations, they may use only the original question sheet and those notes taken during the preparation period on paper provided by the faculty proctor. Oralists may ONLY use their calculator in the presentation room in response to a question asked by one of the judges.

HOSTING A CONTEST

If this is your first time hosting a contest, you are encouraged by ALL coaches in SWSC to feel free to call, email, etc. with questions. Though competitive, all coaches in SWSC are supportive of each other in their endeavors of enriching the mathematics education of students. All first time hosts will be assigned a 'mentor' from another SWSC school to aid in the hosting of your first contest.

1. GET YOUR BUILDING RESERVATION PAPERWORK COMPLETED. You will need to reserve the following:
 - Five standard classrooms (usually in the math area) with 36 desks in each room. If you cannot fit 36 desks, then you will need nine classrooms. These will serve as the competition rooms for A, B, C, D, E, and G, as well as alternate room. Note: All 'formula-type' posters should be removed from the walls of these rooms for the competition.
 - Three classrooms with 'larger' size chalkboard or whiteboard for Competition F (oral competition). These need not be large rooms. Keep in mind the board will be used for oral presentations by students...with two judges in the room as well.
 - One classroom, study hall, or library where students will have their 10 minute oral preparation time. There will be no more than six students and a faculty proctor in this room at any one time.
 - A homeroom area is needed for each school in which students of that school may keep their belongings, organize, and prepare for competition. This should be classrooms if at all possible. Note: Some schools bring a large team (50+ students) and may want to have two classrooms for homeroom. If possible, check with the schools coming to your site to see how many are coming.
 - The scores of the contest should be posted in a common area, with the exception of scores from the divisional finals meet. Spectators and mathletes who are not competing should be in this room, the oral presentation room, or their homeroom. Students should be supervised by faculty from their school in all locations.
 - Judges Room – This is an area where proctors will come and pick up their questions, drop off results, and scores entered on the website. This should be a room which has internet access. Refreshments for judges and coaches are traditionally found here.
2. Prepare a schedule and email it to the webmaster. This should be emailed to the conference webmaster before September 1st.
3. Before the day of the contest, the host is responsible for creating signs which direct other schools to the appropriate areas for the contest. Please include signs to the nearest bathrooms, if possible. These signs should be posted no later than 45 minutes before the competition is to begin.
4. The host should prepare one large (10 x 13 or thereabouts) envelope for each participating school. These envelopes should be labeled with the school name. During the contest, graded and compiled papers will be placed in these envelopes for coaches to take with them at the end of the contest. In addition, a copy of the answers should be given to each school.
5. The host is responsible for preparing an overhead where scores can be posted. See Appendix E - Sample Scoresheet.
6. The host is responsible for providing three student timers with a stopwatch for the oral competition. If this is not possible, contact another school coming to your site in advance and make arrangements. Each timer is to receive Appendix I – Instructions for Oral Competition Student Timers.
7. As host, you may wish to recruit a student runner. This is optional, but very helpful. The student can assist in bringing papers back from the competition rooms to the Judges' Room. The student can also bring the scores from the Judges' Room to the Cafeteria or wherever they are being posted.

8. You may wish to run concessions for participating mathletes. You will have to consult your school administration regarding the procedures necessary for this.
9. Make sure you know where the questions are. Chances are that either the questions have been delivered to your school, or another school will be bringing the questions on the bus. If you do not have the questions, call/email to remind the person bringing them to you to bring them. YOU are responsible for disseminating the oral questions to the coach running the oral judges meeting and the coach running the written judges meeting. The coaches running the written judges meeting will distribute the folders to the written judges and the coach running the oral judges meeting will distribute the folders to the oral judges and oral prep room judge.
10. If you are hosting conference finals, make sure you know where your awards are and that they are accurate.

A FINAL CHECKLIST...ARE YOU READY FOR THE CONTEST?

- Check all competition rooms for 'math formula' type posters. Remove them or cover them. Desks should be set up in rows.
- Copies of the schedule in homerooms, judges room, and/or cafeteria
- Transparency made for the posting of scores on the overhead.
- Make sure all signs are posted in clear view.
- SCRATCH PAPER – You need to have scratch paper available in all written competition rooms and in the oral preparation room.
- Check the oral presentation rooms for chalk/working markers and other necessary equipment.
- If any problems occur prior to the contest, contact the SWSC Mathlete President. If a problem occurs during the contest, consult with the head coaches of all participating schools.
- Meet with the other head coaches at 7:45 pm during the contest to resolve any problems that occur during the contest.
- Make sure your email is open; if you are unable to keep your email open, call the other host and let them know what number to reach you at.
- Relax....we all remember the first time we hosted a contest. Other coaches are more than willing to help out when needed. Do not hesitate to ask for help.

SWSC MATHLETES CONTEST PROCEDURES

A scheduled contest shall take place provided that the host school is able to host, schools are in session, and safety in travel is of no concern. A conference-wide cancellation of a scheduled contest will occur if any school in the conference provides notification by 2:00pm that it is cancelling. The cancelling school's Activities Director will notify the SWSC Mathletes liaison AD who will notify the coaches of the cancellation via the website and email. If no such notification occurs by 2:00pm, the contest will go forward as scheduled.

In the event a non-hosting school is unable to attend a given contest, a temporary score of zero will be added to the season total. At the end of four contests, a replacement score will be computed as the average of the three contests in which the school participated. This will serve as the official score for the missed contest, and will be used in computing season totals.

In the event a hosting school is unable to host, and in the event that no replacement can be found in a timely fashion, the same procedures will apply as above to all schools which would have participated at that site.

In the event that any of Contests 1-4 are cancelled, the contest will not be rescheduled. This is done to minimize conflict with other SWSC activities. Contest questions will be provided to coaches so that a 'practice' contest may be held if an individual school so chooses.

In the event that Contest 5 is cancelled, the contest will be rescheduled for the alternate date as determined by the SWSC Activities Board.

APPENDIX A
Rotation of Officers
Updated Fall 2008

All terms begin on June 1 and end on May 31

Year	President	Secretary
2005-2006	Lincoln-Way East	Bolingbrook
2006-2007	Bolingbrook	Lincoln-Way Central
2007-2008	Lincoln-Way Central	Sandburg
2008-2009	Sandburg	Andrew
2009-2010	Andrew	Lockport
2010-2011	Lockport	Stagg
2011-2012	Stagg	Joliet Township
2012-2013	Joliet Township	Homewood-Flossmoor
2013-2014	Homewood-Flossmoor	Bradley-Bourbonnais
2014-2015	Bradley-Bourbonnais	Lincoln-Way East
2015-2016	Lincoln-Way East	Lincoln-Way North
2016-2017	Lincoln-Way North	Lincoln-Way West
2017-2018	Lincoln-Way West	Joliet Central

APPENDIX B
Competition E: Graphing Calculator
Restrictions and Examples

Calculators with non-QWERTY keyboards and no symbolic logic may be used.

FS – Contest 1 – This contest will stress the basic functions of a scientific calculator. Order of operations will be stressed, understanding that mathletes may be just beginning an Algebra I class.

1. Simplify $(1674.23 - 1829)(17.893 + 932.91)$, rounding your answer to TWO DECIMAL PLACES.
2. Simplify $\frac{76291 - 42835}{23.21^5 - 82313}$, rounding your answer to THREE DECIMAL PLACES.
3. Simplify $\frac{73142}{0.03} - (714365 - 815723)$, rounding your answer to the NEAREST INTEGER.
4. Simplify $43257 - 68415 \times 3$.
5. Simplify $\frac{31 - \sqrt{7.1}}{2.3(7.1 + 8.2)}$, rounding your answer to THREE DECIMAL PLACES.

FS – Contest 2 – In addition to topics from Contest 1, mathletes are responsible for knowing how to evaluate algebraic expression. Examples of evaluations are given below.

1. Evaluate $xy - x^2$ if $x = 2.34$ and $y = 8.73$. Round your answer to THREE DECIMAL PLACES.
2. Evaluate $\frac{3a^2 - b^3}{ab}$ if $a = 17.98$ and $b = 10.1$. Round your answer to TWO DECIMAL PLACES.
3. Evaluate $c^2 - d^2 + 2cd$ if $c = 9.4$ and $d = 7.12$. Round your answer to THREE DECIMAL PLACES.
4. Evaluate $mn - 2(m + n) + 2n^2$ if $m = 6.2$ and $n = -2.9$. Round your answer to ONE DECIMAL PLACE.
5. Evaluate $\frac{5c + ef - 17d}{d^3}$ if $c = 4$, $d = 3$, and $e = 5$. Round your answer to TWO DECIMAL PLACES.

FS – Contest 3 – In addition to all topics from Contests 1 and 2, mathletes are responsible for knowing how to solve linear equations and basic proportion equations. Examples of the additional topics are given below:

1. Solve for a, rounding your answer to TWO DECIMAL PLACES: $\frac{2x}{11.3} = \frac{7}{41.2}$
2. Solve for b, rounding your answer to THREE DECIMAL PLACES: $7.8x - 4.78 = 7.39 - 9.18x$
3. Solve for c, rounding your answer to TWO DECIMAL PLACES: $13\left(\frac{18}{3}x - 14\right) = 31.3$
4. Solve for d, rounding your answer to ONE DECIMAL PLACE: $\frac{7}{3x + 2} = \frac{7.9}{8.33}$
5. Solve for e, rounding your answer to TWO DECIMAL PLACES: $2(3.1x + 83.12) - \frac{2}{3}(4x - 11) = 21$

FS – Contest 4 – In addition to all topics from Contests 1, 2, and 3, mathletes are responsible for knowing the quadratic formula and basic area/perimeter. Examples of the additional topics are given below:

1. Find the larger solutions of $4.83x^2 - 4.35x + 147 = 19 - 33x + 41x^2$. Round your answer to TWO DECIMAL PLACES.
2. Find the smaller solution of $\frac{32x + 18}{11} = \frac{83}{25x - 32}$. Round your answer to the NEAREST INTEGER.
3. Find the area of the circle that has radius 7.19. Use 3.14 for π , and round your answer to TWO DECIMAL PLACES.
4. Find the perimeter of a square which has a side of length 79.42. Round your answer to THREE DECIMAL PLACES.
5. If the area of a rectangle is 832.31 square units, and the length is twice the wide, find the measure of the length. Round your answer to TWO DECIMAL PLACES

FS – Contest 5 – Topics covered during the first four contests are all fair game for Contest 5.

JS – Contest 1 – The contestant should be able to do the following on a graphing calculator:

- Have an understanding of interval notation, including $[a, b]$ for closed and (a, b) for open intervals. Students should also understand the use of ∞ in an interval.
- Input various transcendental functions, including trigonometric, inverse trigonometric, exponential, logarithmic, and natural logarithmic.
- Solve an equation using the graphing calculator
- Graph using an appropriate window (outside of -10 to 10)
- Find the point of intersection between two graphs

1. How many times does the graph of $y = \tan x$ intersect the line $y = 2$ on the interval $[15, 20]$?
2. Find the x-coordinate of the point of intersection nearest to the y-axis of $y = \ln(x + 3)$ and $y = 2\cos x$. Round your answer to TWO DECIMAL PLACES.
3. Find the largest solution of $\cos x - \sin x + 2\ln x = 4$. Round your answer to THREE DECIMAL PLACES.
4. Find the largest solution of $\tan\left(\frac{1}{2}x + 3\right) = 4$ on the interval $[50, 70]$. Round your answer to THREE DECIMAL PLACES.
5. Find the y-coordinate of the point of intersection in the second quadrant of $y = |2x - 3|$ and $y = e^{x+3}$. Round your answer to TWO DECIMAL PLACES.

JS – Contest 2 – In addition to topics from Contest 1, mathletes should be able to:

- Evaluate a function at various points using $Y_1(a)$
- Perform basic matrix operations on a graphing calculator
- Compute the value of a composite function using $Y_1(Y_2(a))$
- Solve an inequality using the graph on a graphing calculator.

1. Compute $f(1.314) - f(3.145)$ if $f(x) = 2x^4 - 3\cos x + 2e^x$. Round your answer to TWO DECIMAL PLACES.

2. Find the value of the element in the first row, second column of $(AB)^2 - 2B$ if $A = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$ and

$$B = \begin{bmatrix} -3 & 1 \\ 2 & 2 \end{bmatrix}.$$

3. Compute $f(g(4.16))$ if $f(x) = x^2 - 2\cos x$ and $g(x) = \ln x - \log(2x^2)$. Round your answer to THREE DECIMAL PLACES.

4. Given the interval $[0, 10]$, for what values of x is $3\cos(x - 4) > \ln(x + 1) + 1$? Write your answer using interval notation (a, b) , where a and b are rounded to TWO DECIMAL PLACES.

5. Compute $\frac{f(5.14)}{g(3.91)}$ if $f(x) = 3x^3 - 2\sec x$ and $g(x) = \ln x - e^x$. Round your answer to TWO DECIMAL PLACES.

JS – Contest 3 – In addition to the topics from Contest 1 and Contest 2, mathletes should be able to:

- Perform basic complex number operations on a graphing calculator (bar notation for conjugate)

1. Simplify $(3.17 - 2.21i)^4$. Write your answer in the form $a + bi$, rounding a and b to TWO DECIMAL PLACES.

2. Simplify $(27.1 - 82.1i)\left(\overline{71.2 - 31.6i}\right)$. Write your answer in the form $a + bi$, rounding a and b to THREE DECIMAL PLACES.

3. Simplify $\frac{71.3 - 32.9i}{23.1 + 19.4i}$. Write your answers in the form $a + bi$, rounding a and b to THREE DECIMAL PLACES.

JS – Contest 4 - In addition to the topics from Contests 1, 2, and 3, mathletes should be able to:

- State the domain and/or range of a function using interval notation based upon its graph
- Graph an equation given in parametric and/or polar form

1. If $x(t) = 2.9t - 3.7$ and $y(t) = 7.1t - 4.2$, find the value of y when $x = 3.14$. Round your answer to TWO DECIMAL PLACES.

2. Given a domain of $[2, 5]$, find the range of $f(x) = \frac{(x+3)(2x+1)(3x-2)}{(x-1)(2x+3)(x-7)}$. Write your answer as the interval $[a, b]$, where a and b are rounded to TWO decimal places.

3. Find the x -coordinate of the point of intersection of $x_1(t) = 3t^2 - 2t$, $y_1(t) = 3\cos t$ and $x_2(t) = 3t + 2$, $y_2(t) = t - 5$. Round your answer to TWO DECIMAL PLACES.

JS – Contest 5 - Topics covered during the first four contests are all fair game for Contest 5.

APPENDIX C – Oral Competition (for Participants)

Preparation Room

- Contestants may bring reference books, notes, and calculators to the oral preparation room.
- Contestants will be given their questions ten (10) minutes prior to their presentation.
- Contestants may be assisted by one teammate **eligible to do the oral** in preparing for their presentation.
- The contestant may use only the question and notes prepared in the oral prep room while making their presentation.
- The contestant may only use his/her calculator during the presentation if requested to do so by a judge in response to a question asked.
- After a contestant has completed his/her presentation, he/she may return to the oral prep room to assist teammates.

Presentation Room

- There will be 2 judges.
- Each judge will rate the contestants according to the following scales:
 - Knowledge: 0-15 points
 - Presentation: 0-10 points
- **Upon entering the presentation room, the contestant should write name and school in the upper corner of the chalkboard. Timing will begin when you start your verbal introduction.**
- Each student is to have 7 minutes of uninterrupted presentation time. At the end of 6 minutes the student is to receive a cue notifying him that he has 1 minute to complete his/her presentation. At the end of 7 minutes, the student should stop and ask whether or not the judges have any question up to this point. Questions relative to what the contestant has presented should be the only type asked by the judges. They should not quiz on material that has not been discussed by the student.
- If there is still time left after answering the questions or if there are no questions, the contestant may continue the presentation to complete the 10-minute period. Note: The presentation period should never exceed 10 minutes.
- Each of the two judges may award a maximum of 25 points to each contestant, making a total of 50 points possible.
- Observers may be present in the presentation room if they have the **permission** of one of the coaches from the contestant's school.
- Students may bring a calculator into the presentation room for the purpose of answering judges' questions during the 3-minute questioning period. **No qwerty-keyboard calculators or calculators capable of symbolic algebra are allowed.**

APPENDIX D – SAMPLE TEAM ROSTER – SWSC I, II, III, IV

<p>E1: FS Calculator</p> <p>S S S F F F A A A</p> <p>6:30 - 6:50 Reg Rm Alt Rm</p>	<p>A2: Vectors</p> <p>1 2 3 4 5 6 A A A</p> <p>7:05 - 7:25 Reg Rm Alt Rm</p>	<p>A3: Series and Sequences</p> <p>1 2 3 4 5 6 A A A</p> <p>7:40 - 8:00 Reg Rm Alt Rm</p>
<p>E1: JS Calculator</p> <p>S S S J J J A A A</p> <p>6:30 - 6:50 Reg Rm Alt Rm</p>	<p>B2: Systems of Eq</p> <p>1 2 3 4 5 6 A A A</p> <p>7:05 - 7:25 Reg Rm Alt Rm</p>	<p>B3: Right Triangle Geo</p> <p>1 2 3 4 5 6 A A A</p> <p>7:40 - 8:00 Reg Rm Alt Rm</p>
<p>G1: FS Group</p> <p>S S F F</p> <p>6:30 - 6:50 Reg Rm</p>	<p>C2: Word Problems</p> <p>1 2 3 4 5 6 A A A</p> <p>7:05 - 7:25 Reg Rm Alt Rm</p>	<p>C2: Linear Functions</p> <p>1 2 3 4 5 6 A A A</p> <p>7:40 - 8:00 Reg Rm Alt Rm</p>
<p>G1: JS Group</p> <p>S S J J</p> <p>6:30 - 6:50 Reg Rm</p>	<p>D2: Linear Eq/Ineq</p> <p>1 2 3 4 5 6 A A A</p> <p>7:05 - 7:25 Reg Rm Alt Rm</p>	<p>D3: Exponents/Radicals</p> <p>1 2 3 4 5 6 A A A</p> <p>7:40 - 8:00 Reg Rm Alt Rm</p>
<p>F1: Conic Sections</p> <p>Prep Oral</p>		
<p>F2: Logic</p> <p>Prep Oral</p>		
<p>F3: Matrices</p> <p>Prep Oral</p>		

APPENDIX D – SAMPLE TEAM ROSTER – SWSC V

<p>E1: FS Calculator</p> <p>S S S F F F</p> <p>6:30 - 6:50 Room</p>	<p>A2: Vectors</p> <p>1 2 3 4 5 6</p> <p>7:05 - 7:25 Room</p>	<p>A3: Series and Sequences</p> <p>1 2 3 4 5 6</p> <p>7:40 - 8:00 Room</p>
<p>E1: JS Calculator</p> <p>S S S J J J</p> <p>6:30 - 6:50 Room</p>	<p>B2: Systems of Eq</p> <p>1 2 3 4 5 6</p> <p>7:05 - 7:25 Room</p>	<p>B3: Right Triangle Geo</p> <p>1 2 3 4 5 6</p> <p>7:40 - 8:00 Room</p>
<p>G1: FS Group</p> <p>S S F F</p> <p>6:30 - 6:50 Room</p>	<p>C2: Word Problems</p> <p>1 2 3 4 5 6</p> <p>7:05 - 7:25 Room</p>	<p>C2: Linear Functions</p> <p>1 2 3 4 5 6</p> <p>7:40 - 8:00 Room</p>
<p>G1: JS Group</p> <p>S S J J</p> <p>6:30 - 6:50 Room</p>	<p>D2: Linear Eq/Ineq</p> <p>1 2 3 4 5 6</p> <p>7:05 - 7:25 Room</p>	<p>D3: Exponents/Radicals</p> <p>1 2 3 4 5 6</p> <p>7:40 - 8:00 Room</p>
<p>F1: Conic Sections</p> <p>Prep Oral</p>		
<p>F2: Logic</p> <p>Prep Oral</p>		
<p>F3: Matrices</p> <p>Prep Oral</p>		

APPENDIX E – Instructions for Oral Competition (Judges)

Judging an oral competition is, and to some extent should be, a subjective process. However, the following is a checklist to be used in evaluating the presentation.

- Students should be given seven minutes of **uninterrupted time** to complete their presentation.
- Judges then have three minutes of questioning time. If there are no questions (presentation is clear), the oralist may continue if not finished presenting.

Judges should fill in the question number and maximum possible points on their judging sheets.

- Knowledge (0-15 points)- the maximum points per question is given on the question sheet.
 - Is a general overview of the material presented?
 - Is an appropriate approach to the solution of the problem(s) used?
 - Are the facts correct?
 - Is the logic correct?
 - Is correct vocabulary and notation used?
 - Are relevant theorems, axioms, etc., used and mentioned when they would contribute to a desired result?
 - Are judges' questions answered adequately?
- Presentation (0-10 points)
 - Introduction/Conclusion (2 points maximum)
 - Verbal Skills/Eye Contact (2 points maximum)
 - Use of Board/Visual (2 points maximum)
 - Clarity/Professionalism/Organization/ and other (4 points maximum)
- Judges will score in a manner similar to that shown on the Sample Judge's Sheet. Point values for each question will be given on the questions and judges solutions
- Comments and suggestions by the judges are important to the mathletes if they are to improve themselves. The judges must therefore justify their scores by making **positive, appropriate comments on the score sheets, along with positive suggestions for future improvement.**
- A score of zero should be given only in the event that a school does not send a representative to participate. No student who gives a bonafide presentation should receive a score of zero.
- Comments should be written carefully on both a complimentary level as well as a helpful one. Negative comments should not be placed on the judge's sheet, but rather should be forwarded directly to the coach of the student.
- The oral judges' sheet should be used to make comments toward the student participating in oral competition. No comments to the coaches regarding coaching style should be placed on the judge's sheet. These types of comments should be done verbally directly to the coach of the student.
- Observers (including coaches) may be present in the presentation room if they have the **permission** of one of the coaches from the contestant's school.
- The opinions of the judges are incontestable.
- There are **NO TIES** in oral competition at the conference finals. The one exception would be two 'perfect' presentations. Judges must break all other ties.

Mathletes

ORAL JUDGES SHEET

Final Score: _____
(max 25)

Oral Competition Topic: _____

Contestant: _____

School: _____

Question No.	Max Pos	Score	Comments (should support scores given for each question)
Total	15		

Presentation Score	Max Pos	Score	Comments (should support scores for each)
Introduction/Conclusion	2		
Verbal Skills/Eye Contact	2		
Use of Board/Visual	2		
Clarity/Professionalism/ Organization/and other	4		
TOTAL	10		

Judge: _____

School: _____

Mathletes

ORAL JUDGES SHEET

Final Score: **17** (max 25)

Oral Competition Topic: **Matrix Algebra**

Contestant: **Sample**

School: **School #1**

Question No.	Max Pos	Score	Comments (should support scores given for each question)
1	3	3	Nice job. Good thorough explanation
2a	2	2	Well done.
2b	3	1	You failed to include the coefficient of the matrix. Tried to get it during questioning, but unsuccessful
3a	3	2	Nice job...just a minor computation error
3b	4	0	I don't think you understood this question.
Total	15	8	You were ok on the first two problems, but you didn't convince us you knew how to do problem 3.

Presentation Score	Max Pos	Score	Comments (should support scores for each)
Introduction/Conclusion	2	2	Good introduction and good conclusion at the end.
Verbal Skills/Eye Contact	2	2	Great job
Use of Board/Visual	2	2	Good use of board. Thank you for not erasing your work as you went along.
Clarity/Professionalism/ Organization/and other	4	3	Your presentation stumbled a bit on problem 3. It was difficult to understand what you were trying to say.
TOTAL	10	9	Keep up the good work.

Judge: **A Great Judge**

School: **School #2**

APPENDIX F – Instructions for Oral Competition (Student Timers)

Thank you for your assistance in the oral competition. Your role as timer is critical not only to the oral competition, but to the timeliness of the overall competition. All coaches greatly appreciate your assistance this evening.

The oral competition consists of two timed segments:

- Students have a total of seven minutes of uninterrupted time to present their answers to previously completed questions.
- Judges then have three minutes to ask questions about the student presentation.

You have received four signs:

- 6 minutes
- 7 minutes
- 9 minutes
- 10 minutes

Be SURE to have a stopwatch in the room.

Contestants will enter the presentation room and write their name/school on the board. Most contestants will then check to see that the judges are ready. Your timing begins when the student verbally begins to introduce himself/herself.

At the end of six minutes, stand and hold the 6 minutes sign so the contestant can see it. Make sure the contestant recognizes the sign. If he/she does not, softly say “6 minutes”

At the end of seven minutes, stand and hold the 7 minutes sign so the contestant can see it. Make sure the contestant recognizes the sign. If he/she does not, softly say “7 minutes”

At the end of nine minutes, stand and hold the 9 minutes sign so the contestant can see it. Make sure the contestant recognizes the sign. If he/she does not, softly say “9 minutes”

At the end of ten minutes, stand and hold the 10 minutes sign so the contestant can see it. Make sure both the judges and contestant recognize that time has expired.

Keep in mind that outside the 10 minutes sign, your signs serve as a guideline to all. The actual length of each segment may vary from person to person and from topic to topic. Various factors contribute to this, including: complexity or simplicity of the questions, quality and clarity of presentation, etc. Nonetheless, it is vital that you remind everyone that after 10 minutes, the presentation or questioning must stop in order for the contest to remain on time.

Once again, we thank you for your assistance with this evening’s contest. Please contact your coach if you have any questions.

APPENDIX G – Instructions for A, B, C, D, E, G (Judges)

STUDENTS ARE NOT TO WEAR HEADSETS DURING COMPETITION.

- All contestants are to be seated before the competition begins. Contestants are to bring writing instruments and no other material into the written competition rooms.
 - **Any calculator without qwerty keyboards and NO symbolic algebra systems are allowed in the oral preparation/presentation room, Group Competition rooms, and Calculator Competition rooms.**
 - **Each Competition A, B, C, and D topic will specify where a conference approved calculator is permitted.**
 - **You should walk around the room after the start of the competition and check to be sure all calculators are appropriate.**
 - **Note: TI-89's, TI-Inspire-CAS are not allowed but they look like TI-83's and TI-86's, so be sure to check the number in the upper right hand corner on the front of the calculators.**
- For Comps A, B, C, D, E, judges should ask members of each school's team to raise their hands. If students from a school are seated together, the judge must ask them to comply with conference rules by splitting up. For Comp G, there will be four students present from each school who may sit together since they will be working together as a group.
- If more than 6 persons from a school raise their hands (4 for Comp G), the judge should inquire which ones have been designated as the alternates. Alternates should be asked to report to the Alternates Room.
- Judges should then pass out scratch paper. Students must be quiet from this point onward. Questions are then passed out face down, and judges instruct students to write their name (and "ALTERNATE", if appropriate) on the back.
- To provide consistency and fairness to all, read this statement to the students **VERBATUM:**
"When I say to begin, you may turn over your question sheets and begin to work on the problems. Each answer must be simplified and placed on the appropriate answer blank. You will have 20 minutes to work. You will be given a warning when 3 minutes remain, when 1 minute remains, and when 15 seconds remain. At the command to STOP, you must turn your paper over IMMEDIATELY and cease writing. Failure to do so may cause your paper to be disqualified. Good luck. You may begin."
- If a student asks any question regarding the interpretation of a problem, do NOT answer him or her. You may only answer questions regarding the clarity of printing. If you have any questions regarding either interpretation or clarity, please inform one of the coaches following the competition.
- When 3 minutes remain, say: "3 minutes left."
When 1 minute remains, say: "1 minute left."
When 15 seconds remain, say: "15 seconds left."
When time is up, say "STOP. Put all pencils down and turn over your question sheets." Collect the question sheets. The students may then leave the room.
- When the papers are collected, judges should read or post the answers to that category. This can save the suspense and curiosity, as well as act as another check on incorrect answers, as a vocal majority of disagreeing students is sometimes correct.
- Should students question an answer, judges should instruct them to see their coach.
- Note: CELL PHONES ARE NOT PERMITTED in the competition rooms. Any student with a cell phone in sight will receive a zero.

- Grade the papers. **Each judge should grade and mark each paper. All papers should show two markings of grading.** (Note: Judges in the Alternate room are not required to grade Round 3 papers) In Competitions A and B the questions are worth 2, 3, and 5 points respectively. In Competitions C, D, and E the questions are worth 2, 2, 3, and 3 points respectively. In Competition G, questions 1-5 are worth 2 points each, 6-10 worth 3 points each, and 11-15 worth 5 points each.
- All answers must be written in the appropriate answer blank. The answer blank may on rare occasion need extension or other modification.
- Simplified form for answers includes the following, and depending on the topic, may include more:
 - For radicals, no perfect square factors can be left under the radical sign; no fractions can be left under the radical; no radicals are to be left in the denominators (except for limit problems involving variables); and the index of a radical should be as low as possible.
 - Fractions should be reduced by common factors when possible, including -1 . Improper fractions are permitted so long as they are free of common factors unless otherwise stated in the problem. A 'simplified fraction' may be an improper fraction, but not a mixed number.
 - Numerical substitution should not be made for an irrational number unless otherwise specified in a problem.
 - Simplified equivalent answers are acceptable unless otherwise stated in a problem (e.g., $3\frac{1}{2}$ or 3.5 or $7/2$ are equivalent).
 - **Answers must be exact unless otherwise stated in the problem.**
- Judges must be alert to the entire room. Judges should not leave the room unless relieved by a coach. Judges should not discuss answers with each other aloud. Judges should not distract any student unnecessarily, including watching a particular student working out the problems. These and other standards may seem trivial, but all have led to complaints and problems in the past.
- Any difficulty in correctness of an answer or in the conduct of a student should be brought to the attention of a head coach as quickly as possible.
- Specific instructions stated in a given problem or problem set take precedence over any of the above instructions.
- When you are finished grading the papers, total the scores for each school and return those scores and the papers to the Judges Room. The 5 best papers for each school should be added together and reported as the score for that school.
- Thank you for your assistance!

APPENDIX H – SWSC ACTIVITY DIRECTORS' MANUAL

It is important that the Central Committee maintain a good and positive line of communication with the SWSC Activity Directors. With that in mind, below is the documentation currently in the SWSC Activity Directors Manual regarding Mathletes. It is the responsibility of the Central Committee to notify Activity Directors of changes in the documentation below.

SWSC All Conference Awards

Each school in the conference can nominate 12 students to receive the all-conference award. Determination of the criteria for the award is at the discretion of each individual coach/school. Certificates for the award are available through the Activity Director at each school.

SWSC Mathletes Awards

(All awards, except ribbons, should include the current school year.)

1 SWSC Blue Division Mathletes 1st Place Trophy

1 SWSC Red Division Mathletes 1st Place Trophy

12 Small SWSC Blue Division Mathletes COMP A 1st Place Medals

12 Small SWSC Red Division Mathletes COMP A 1st Place Medals

12 Small SWSC Blue Division Mathletes COMP B 1st Place Medals

12 Small SWSC Red Division Mathletes COMP B 1st Place Medals

12 Small SWSC Blue Division Mathletes COMP C 1st Place Medals

12 Small SWSC Red Division Mathletes COMP C 1st Place Medals

12 Small SWSC Blue Division Mathletes COMP D 1st Place Medals

12 Small SWSC Red Division Mathletes COMP D 1st Place Medals

6 Small SWSC Blue Division Mathletes COMP E-FS 1st Place Medals

6 Small SWSC Red Division Mathletes COMP E-FS 1st Place Medals

6 Small SWSC Blue Division Mathletes COMP E-JS 1st Place Medals

6 Small SWSC Red Division Mathletes COMP E-JS 1st Place Medals

4 Small SWSC Blue Division Mathletes COMP G-FS 1st Place Medals

4 Small SWSC Red Division Mathletes COMP G-FS 1st Place Medals

4 Small SWSC Blue Division Mathletes COMP G-JS 1st Place Medals

4 Small SWSC Red Division Mathletes COMP G-JS 1st Place Medals

6 Small SWSC Blue Division Mathletes COMP F 1st Place Medals

6 Small SWSC Red Division Mathletes COMP F 1st Place Medals

6 Small SWSC Blue Division Mathletes COMP F 2nd Place Medals

6 Small SWSC Red Division Mathletes COMP F 2nd Place Medals

180 White SWSC Mathletes 3rd Place Ribbons

180 Red SWSC Mathletes 2nd Place Ribbons

SWSC Mathletes Structure of Awards:

The 10 schools will compete in 2 divisions. The following awards will be given out at the Conference (SWSC V) meet:

- Division trophy to first place school in each division
- 1st place medals to the 6 students from the school in each division that has the highest total score in each of the 8 written events and 2 calculator events
- 2nd place red ribbons to the 6 students from the school in each division that has the 2nd highest total score in each of the 8 written events and 2 calculator events
- 3rd place white ribbons to the 6 students from the school in each division that has the 3rd highest total score in each of the 8 written events and 2 calculator events
- 1st place medals to the 4 students from the school in each division that has the highest total score in each of the 2 group events
- 2nd place red ribbons to the 4 students from the school in each division that has the 2nd highest total score in each of the 2 group events
- 3rd place white ribbons to the 4 students from the school in each division that has the 3rd highest total score in each of the 2 group events
- 1st place medals to the highest scoring student and assistant in each division on each of 3 oral presentations
- 2nd place medals to the 2nd highest scoring student and assistant in each division on each of 3 oral presentations
- 3rd place white ribbons to the 3rd highest scoring student in each division on each of 3 oral presentations

In the event of ties in each division, duplicate medals and/or ribbons will be provided

1. Goals/Objectives

Academic competition in mathematics encourages academic excellence, student interest, independent study and research and self-motivation. The purpose of the Mathematics League is to recognize outstanding mathematical ability and to provide a wholesome meeting ground for students of mathematics through academic competition.

2. Activities/Structure

The contest is divided into seven (7) varsity competitions:

- a. Competition "A" is the advanced level written competition.
 - (1) Any student may enter.
 - (2) The level of difficulty of the questions is second semester geometry through college freshman mathematics.
 - (3) The competition is divided into two (2) categories.
 - (a) Six (6) students per category, where top five (5) scores count.
- b. Competition "B" is the semi-advanced level written competition.
 - (1) Competition "B" is closed to seniors.
 - (2) The level of difficulty of the questions is from the ninth grade algebra through the eleventh grade algebra.
 - (3) The structure is the same as A – 3 above
- c. Competition "C" is the intermediate varsity level written competition.
 - (1) Competition "C" is closed to juniors and seniors.
 - (2) The level of difficulty of questions is from 9th grade algebra thru 10th grade geometry.
 - (3) The structure is the same as A – 3

- d. Competition "D" is beginning varsity competition.
 - (1) Competition "D" is closed to sophomores, juniors, and seniors.
 - (2) The level of difficulty of the questions is ninth grade algebra.
 - (3) The structure is the same as A – 3
- e. Competition "E" is graphing calculators.
 - (1) The competition is divided into two categories, freshman/sophomore and junior/senior.
 - (2) Of the six (6) students competing in each category, at most three (3) may be sophomores for freshman/sophomore and at most three (3) seniors for junior/senior.
 - (3) The level of difficulty for freshman/sophomore is algebra operations on the graphing calculator. The level of difficulty for junior/senior is prerequisites for AP Math classes.
- f. Competition "F" is the oral competition.
 - (1) The competition contains three categories with one student per school per category. There are two varsity orals and one freshman/sophomore oral.
 - (2) The varsity level is open to all students. The freshman/sophomore level is closed to juniors and seniors.
- g. Competition "G" is group competition.
 - (1) There are two levels of competition: junior/senior and freshman/sophomore.
 - (2) A team consists of a maximum of four students. There are at most two (2) seniors in the junior/senior group and at most two (2) sophomores in the freshman/sophomore group.
 - (3) The level of difficulty of the junior/senior group is ninth grade algebra through college freshman mathematics. The level of difficulty of the freshman/sophomore group is eighth grade pre-algebra through first semester tenth grade geometry.

3. Eligibility

- a. Student participants shall be eligible under the provisions of the SWSC eligibility policy.
- b. The Coaches Committee schedules all contests, selects the categories, selects all contest topics and the order in which the topics are administered.
- c. The committee is the central records agency and is the rules revision and rules arbitration board. All proposed rule and procedure revisions must be ratified by three-fourths of the committee.
- d. All contest dates, times, places and categories, the awarding of trophies, and all other decisions of the Coaches Committee and acts of the Mathematics League are subject to final review and approval of the Activities Directors.
- e. All contest events, where necessary, must be sanctioned by the I.H.S.A.
- f. All contests shall be governed by the rules and procedures listed in the Mathematics League Manual.

APPENDIX I – OFFICIAL SWSC MATHLETES BYLAWS

I. Goals/Objectives

The SWSC Mathletes group recognizes outstanding mathematical ability and provides a wholesome meeting ground for students of mathematics through academic competition.

Academic competition in mathematics encourages academic excellence, student interest, independent study and research, and self-motivation.

II. Activities/Structure

Mathletes shall be a competitive team activity, including cross division meets, with Blue and Red Division Championships.

Division Selection

Blue and Red Divisions are determined on team performance of the previous year. The two Red Division schools with the highest team total for the season move up to the Blue Division and the two Blue Division schools with the lowest team total for the season move down to the Red Division. These moves take place for the next season.

Facilities

The schedule and room assignment for each of the first four contests shall be as follows: (see Appendix D for a sample schedule):

Room	Round 1: 6:30 – 6:50	Round 2: 7:05 – 7:25	Round 3: 7:40 – 8:00
1, 2	Competition A1	Competition A2	Competition EF
3, 4	Competition B1	Competition B2	Competition EJ
5, 6	Competition C1	Competition C2	Competition GJ
7, 8	Competition D1	Competition D2	Competition GF
9	A1, B1, C1, D1 Alternates	A2, B2, C2, D2 Alternates	EF and EJ Alternates

Room 10 is reserved for Oral Preparation.

Rooms 10, 11, 12 and 13 are reserved for Competition F, which runs continuously per schedule determined by host schools. The schedule consists of 15 minute time intervals: 10 minutes for each contestant and 5 minutes between contestants.

For the fifth contest, Rooms 10, 11, 12, and 13 shall remain the same. The schedule for Rooms 1-8 shall be as follows:

Room	Round 1: 6:30 – 6:50	Round 2: 7:05 – 7:25	Round 3: 7:40 – 8:00
1, 2	Competition A1	Competition A2	Competition EF
3, 4	Competition B1	Competition B2	Competition EJ
5, 6	Competition C1	Competition C2	Competition GJ
7, 8	Competition D1	Competition D2	Competition GF

Note: Alternates are not permitted at the fifth contest.

Note: The sixth score will be used to break ties at the fifth contest. If a tie remains, duplicate awards will be ordered and sent to the affected schools.

The contest is divided into seven (7) varsity competitions.

- A. Competition "A" is the advanced level written competition.
 1. Any student may enter.
 2. The level of difficulty is second semester geometry through college freshmen mathematics.
 3. The competition is divided into two (2) categories.
 - a. Six (6) students per category, where top five (5) scores count.
- B. Competition "B" is the semi-advanced level written competition.
 1. Competition "B" is closed to seniors.
 2. The level of difficulty is from 9th through 11th grade algebra.
 3. Six (6) students per category, where top five (5) scores count.
- C. Competition "C" is the intermediate varsity level written competition.
 1. Competition "C" is closed to juniors and seniors.
 2. The level of difficulty is from 9th grade algebra through 10th grade geometry.
 3. Six (6) students per category, where top five (5) scores count.
- D. Competition "D" is beginning varsity competition.
 1. Competition "D" is closed to sophomore, juniors, and seniors.
 2. The level of difficulty is 9th grade algebra.
 3. Six (6) students per category, where top five (5) scores count.
- E. Competition "E" is graphing calculators.
 1. The competition is divided into two categories, freshmen/sophomore and junior/senior.
 2. Of the six (6) students competing in each category, at most three (3) may be sophomores for freshmen/sophomore and at most three (3) seniors for junior/senior.
 3. The level of difficulty for freshmen/sophomore is algebra operations on the graphing calculator. The level of difficulty for junior/senior is prerequisites for AP Math classes.
- F. Competition "F" is the oral competition.
 1. The competition contains three (3) categories with one student per school per category. There is one (1) freshmen/sophomore oral and two (2) varsity orals.
 2. The freshmen/sophomore level is closed to juniors and seniors. The varsity level is open to all students.
- G. Competition "G" is group competition.
 1. There are two (2) levels of competition: freshmen/sophomore and junior/senior.
 2. A team consists of a maximum of four (4) students. There are at most two (2) sophomores in the freshmen/sophomore group and at most two (2) seniors in the junior/senior group.
 3. The level of difficulty for the freshmen/sophomore group is 8th grade pre-algebra through first semester 10th grade geometry. The level of difficulty for the junior/senior group is 9th grade algebra through college freshmen mathematics.
 - An additional All-School competition will be held at the SWSC Invitational. The winning school take possession of the traveling trophy for the year.

III. Eligibility

Student participants shall be eligible under the provisions of the SWSC eligibility policy.

Any student enrolled at a SWSC school that is a member of the school's recognized Mathletes program is eligible to participate.

IV. Terms & Conditions

All contests must be sanctioned by the IHSA and will be governed by the rules and procedures listed in the SWSC Mathletes Coaches Manual found at the link

<http://swscmathletes.vjmath.org/documents/swscmathletesmanual.pdf>

All contest dates, times, places, categories, awards, and all other decisions of the Coaches Committee and acts of the Mathletes Sponsors are subject to final review and approval of the SWSC Activities Directors.

The competition tests will be emailed to the hosting Activities Directors the Monday prior to the contest for xeroxing.

V. Rules

The Coaches Committee schedules all contests, selects the categories, notifies the schools of the selected categories prior to a contest, selects all contest topics, selects the order in which the topics are administered, and distributes contest problems, topics, and answer sheets to the host schools.

The committee is the central records agency and is the rules revision and arbitration board.

All proposed rule and procedure revisions must be ratified by 75% of the committee.

VI. Judging

- Grade the papers. **Each judge should grade and mark each paper. All papers should show two markings of grading.** (Note: Judges in the Alternate room are not required to grade Round 3 papers) In Competitions A and B the questions are worth 2, 3, and 5 points respectively. In Competitions C, D, and E the questions are worth 2, 2, 3, and 3 points respectively. In Competition G, questions 1-5 are worth 2 points each, 6-10 worth 3 points each, and 11-15 worth 5 points each.
- All answers must be written in the appropriate answer blank. The answer blank may on rare occasion need extension or other modification.
- Judges must be alert to the entire room. Judges should not leave the room unless relieved by a coach. Judges should not discuss answers with each other aloud. Judges should not distract any student unnecessarily, including watching a particular student working out the problems. These and other standards may seem trivial, but all have led to complaints and problems in the past.
- Any difficulty in correctness of an answer or in the conduct of a student should be brought to the attention of a head coach as quickly as possible.
- Specific instructions stated in a given problem or problem set take precedence over any of the above instructions.
- When you are finished grading the papers, total the scores for each school and return those scores and the papers to the Judges Room. The 5 best papers for each school should be added together and reported as the score for that school.

VII. Awards

All awards, except ribbons, should include the current school year.

[1 SWSC Blue Division Mathletes 1st Place Trophy](#)

[1 SWSC Red Division Mathletes 1st Place Trophy](#)

[12 Small SWSC Blue Division Mathletes COMP A 1st Place Medals](#)

[12 Small SWSC Red Division Mathletes COMP A 1st Place Medals](#)

[12 Small SWSC Blue Division Mathletes COMP B 1st Place Medals](#)

12 Small SWSC Red Division Mathletes COMP B 1st Place Medals
 12 Small SWSC Blue Division Mathletes COMP C 1st Place Medals
 12 Small SWSC Red Division Mathletes COMP C 1st Place Medals
 12 Small SWSC Blue Division Mathletes COMP D 1st Place Medals
 12 Small SWSC Red Division Mathletes COMP D 1st Place Medals
 6 Small SWSC Blue Division Mathletes COMP E-FS 1st Place Medals
 6 Small SWSC Red Division Mathletes COMP E-FS 1st Place Medals
 6 Small SWSC Blue Division Mathletes COMP E-JS 1st Place Medals
 6 Small SWSC Red Division Mathletes COMP E-JS 1st Place Medals
 4 Small SWSC Blue Division Mathletes COMP G-FS 1st Place Medals
 4 Small SWSC Red Division Mathletes COMP G-FS 1st Place Medals
 4 Small SWSC Blue Division Mathletes COMP G-JS 1st Place Medals
 4 Small SWSC Red Division Mathletes COMP G-JS 1st Place Medals
 6 Small SWSC Blue Division Mathletes COMP F 1st Place Medals
 6 Small SWSC Red Division Mathletes COMP F 1st Place Medals
 6 Small SWSC Blue Division Mathletes COMP F 2nd Place Medals
 6 Small SWSC Red Division Mathletes COMP F 2nd Place Medals

180 Green SWSC Mathletes 4th Place Ribbons
 180 White SWSC Mathletes 3rd Place Ribbons
 180 Red SWSC Mathletes 2nd Place Ribbons

1 SWSC All-School COMP Traveling Trophy



SWSC All Conference Activity Certificates Criteria

Each school can nominate 12 students. Determination of the criteria is at the discretion of each individual coach/school.

SWSC All Academic Activity Pins Criteria

The group must be ranked, scored, or judged at an SWSC event. The student must be a Senior that has participated at the Varsity level in an SWSC activity. The student must have at least a 3.5 GPA on a 4.0 scale or the equivalent percentile rank designating honors as determined by the school after their 7th semester.

VIII. Rotations

2005-2006 Lincoln-Way East / Bolingbrook
 2006-2007 Bolingbrook / Lincoln-Way Central
 2007-2008 Lincoln-Way Central / Sandburg
 2008-2009 Sandburg / Andrew
 2009-2010 Andrew / Lockport
 2010-2011 Lockport / Stagg
 2011-2012 Stagg / Joliet West
 2012-2013 Joliet West / Homewood-Flossmoor
 2013-2014 Homewood-Flossmoor / Bradley-Bourbonnais
 2014-2015 Bradley-Bourbonnais / Lincoln-Way North
 2015-2016 Lincoln-Way North / Lincoln-Way West
 2016-2017 Lincoln-Way West / Thornridge
 2017-2018 Thornridge / Thornton
 2018-2019 Thornton / Thornwood
 2019-2020 Thornwood / Joliet Central
 2020-2021 Joliet Central / Lincoln-Way East