

HiMCM: Procedures and Tips for a Great Experience

NOTE: This article accompanies, but does not replace the official Rules, Registration, and Instructions information found at the contest website (www.himcmcontest.com). Please ensure you understand and follow the rules and procedures outlined on the contest website.

Introduction

The purpose of this article is to assist and guide students and advisors participating in the *High School Mathematical Contest in Modeling* (HiMCM). In the article, COMAP provides information about the administration of the contests from registration through solution submission, as well as tips to ensure your contest experience is smooth, successful, and enjoyable.

COMAP'S High School Mathematical Contest in Modeling (HiMCM) is an international contest designed to provide high school (or below) students with the opportunity to work as team members to engage in and improve their modeling, problem solving, and writing skills. Teams apply mathematics to model, develop, and communicate a solution to a real-world problem. Individuals who have graduated from high school, or moved on to an undergraduate level program, should consider our MCM/ICM contests.

The article is presented in three sections:

- **Before the Contest** – contest registration and preparation.
- **During the Contest** – contest process and avoiding common mistakes made by teams and advisors.
- **After the Contest** – submitting solution reports and contest forms, and getting results.

Look for  which indicates an important contest tip.

BEFORE THE CONTEST

Participants. The HiMCM is a true team competition. Each team may consist of one, two, three, or four (maximum allowed) high school (or below) students. Historically, the best teams have four members. All students on the team **MUST** be enrolled at the same institution at the start of the contest; COMAP will make no exceptions to this rule. After forming a team, the next step is choosing an advisor.

Advisor. Any faculty or staff member at the students' institution can fulfill the role of advisor. The advisor will act as the main point of contact for the team, and will help ensure the team follows the contest rules and regulations. The advisor does not have to be from the mathematics department. An advisor can serve as the faculty/staff advisor to multiple teams. At no time can a student act as the team advisor.

Contest Preparation. We encourage advisors and students to prepare for the contest by viewing previous years' problems and solutions, as well as relevant contest articles, at www.mathmodels.org. The problems are free to view, and the solutions and articles are available to mathmodels.org members. Look at the structure of the Outstanding papers in terms of organization and presentation.

The **best** contest papers present complete and logical analysis in an organized and clear presentation above and beyond simply addressing the requirements. These papers are easy to read, easy to follow, logical, and comprehensive. These papers will usually include sections that address assumptions with justifications, modeling process(es), results of modeling/analysis, strengths and weaknesses, sensitivity, and conclusions. These papers have in line documentation, footnotes, or endnotes with associated references.



Contest Tip

Look at problems from previous years to understand the choices you will have when the contest begins. Understand the general differences between the problem choices, both in terms of the mathematics involved and the topics addressed.

Registration. Review contest information and register teams via the contest website (www.himcmcontest.com) prior to the contest start date.

The registration fee is \$100 per team. We accept payment via all major credit cards, and payment must be made via our secure web site. We regret that we are not able to accept other forms of payment. After we confirm your payment, the advisor will be able to continue the registration process. Be sure to print the page that displays your **2Checkout** order number, as you will need this to continue the registration process. Additionally, this is your transaction receipt.

Example: 2Checkout.com Order Number 123456789



Contest Tip

Be sure to print or save a copy of your team's receipt with your 2Checkout order number. You will also receive a copy of your receipt via email using the email address provided during the payment process.

Advisors will then register their team or teams. Each team will have a designated Team Control Number. Advisors do not have to designate specific team members for each Team Control Number when initially paying for and registering the number of teams they need, BUT they will have to designate specific team members for each Team Control Number prior to the opening of the contest window. Team members cannot change after that time. Advisors should carefully check the order and spelling of team members' names when entering, as this listing will be used after the contest for participation and award certificates.



Contest Tip

Be sure to print or save a copy of the screen with each Team Control number. You will not receive confirmation of this team/control number designation. Teams must include this Team Control Number on their solution papers and all contest correspondence.

DURING THE CONTEST

14-Day Window. 36-Hour Problem. We now allow teams to schedule their contest work at times conducive to team members within the 14-day contest window. We made this change in order to provide students, advisors, and parents more flexibility to schedule contest time around other required school, academic, and extracurricular activities. Also, we felt this would relieve advisors, especially those with multiple teams, from trying to find and track a 36-hour window for each team. We emphasize that this change does not indicate an increase in difficulty of the problems, or a need for teams to spend more than 36 hours on their selected problem. The window is to provide teams flexibility for contest work sessions and, in turn, perhaps also encourage and allow participation by more students in this mathematical modeling activity.

Students do not have to be physically together at school for the full 14-day window and are not required to use the full 14 days. During the contest window, team members are free to break from the contest and each other. For example, students may break to attend classes, go home to sleep, go somewhere to eat, participate in sports or other activities, or go to school and family functions. The advisor must be present at the start of the contest to give the problems to the students/teams. The team advisor must also verify that the teams stop working at the end of the contest window. Once a team has submitted its solution report to COMAP, the students and team advisor must sign the team control sheet stating that they did not work past the 14-day window or violate any of the contest rules.



Contest Tip

Students do not have to be physically together at school for the full 14-day window and are not required to use the full 14 days. As in previous years, the problems are designed for teams to complete a solution within 36 hours of work.

Viewing Problems. The contest problems will become available at 3pm EST on the starting day of the contest. At this time the team members must be set and cannot change during the contest. When a team is ready to compete, the team advisor must [login](#) to view the problems. Once logged in look for the ***VIEW THE PROBLEMS*** link which will become active at 3:01 pm EST on the starting day of the contest. Once the advisor logs in and views the problems, we recommend that he or she print out copies for student/team members.

<http://www.comap.com/highschool/contests/himcm/login.php>.

Problem Choice. The contest problem page will contain a link to the two HiMCM problem choices. Teams are free to choose either problem, but should submit a solution to only one problem. Any relevant data files or supporting materials will be included on the contest website. During the contest you may find websites that appear to represent COMAP, asking you to purchase or pay for data and/or access to additional contest materials or information. These websites are **fake** and not official. COMAP will never ask you to purchase any material related to the contest. If you find such a site, please report site to himcm@comap.com.

The links below will become active at 3:01 p.m. EST Friday, Month, Day

[CLICK HERE TO VIEW THE PROBLEMS \(PDF\)](#)

[CLICK HERE TO VIEW THE PROBLEMS \(PDF\) \(Mirror Site\)](#)



Contest Tip

Be sure to read both problem statements and requirements carefully before choosing your team's problem. Each problem will have different and specific requirements, such as required memos or letters, specific solution format, and/or page limits. You can work on both problems, but should submit a solution to only one of the problems.

Contest Assistance. During the HiMCM contest period, teams **may not** seek help in obtaining answers, ideas, or information, or in locating appropriate resources, from any persons outside of their team to include their advisor, other teachers, other students, and/or experts or professionals in a field relevant to the problem. This restriction includes no use of electronic social media such as, but not limited to: emails, texting, chat rooms, interactive blogs, Twitter, Weibo, help or support sites, etc. Additionally, posting or sharing any part or all of the problem statement, your team's solution process, or any partial or complete work in any form or medium during the contest is strictly prohibited. COMAP will disqualify or deem unsuccessful any team that violates this rule. The relevant issue is one of intent: each team of students is expected to develop all of its substantive analysis and solution without the help of others. COMAP continually monitors the Internet during the contest period for violations of contest rules.

Comparison Software. COMAP compares each submitted solution to all other solutions of the problem your team chose. The result of this comparison identifies solutions and/or parts of solutions that are exactly and/or similar to other papers. COMAP uses these results to verify the originality of your team's solution.

Sources and References. Teams may use any inanimate source of data or materials: computers, software, references, websites, books, etc. All sources must be credited using in-line documentation, footnotes, or endnotes, as well as a full bibliographic citation in a Reference section. Failure to credit a source for data or materials (pictures, graphics, charts, background information, ideas, etc.) may result in a reduction of award level, or in disqualification if deemed plagiarism.

Problem Notes and Updates. Throughout the contest period, COMAP will post any problem notes and updates on the HiMCM website. If you have a question that is not covered on the website, please send an email to himcm@comap.com. Be sure to include your team number with your correspondence. Also, follow us @COMAPMath on Twitter or COMAPCHINAOFFICIAL on Weibo for the most up to date contest information.



Contest Tip

Be sure to check the website for any updates during the contest. COMAP will update the website with current contest information which may include problem specific updates. Updates will also be sent via Twitter @COMAPMath and via Weibo at COMAPCHINAOFFICIAL.

Solution Submission.

Solution Report Length. Your solution report should start with the Summary Sheet followed by the team's solution. Ensure your solution meets the 25 page limit requirement. A Table of Contents is encouraged and **does** count toward the page limit. Reference list (or Bibliography), notes pages, and any appendices now count toward the page limit and should be included after the solution pages. This change keeps the HiMCM aligned with our undergraduate contests, the Mathematical Contest in Modeling (MCM) and the Interdisciplinary Contest in Modeling (ICM). We have found that the 25 pages of the solution submission allows for teams to present and communicate a complete solution to their chosen problem. The summary page, any letters or memos, a reference list or notes page, and any appendices now count toward the page restriction.

Adobe PDF and 12-Point Type. Teams submit their entire solution report in one Adobe PDF document. Papers, including the Summary page, must be in English, typed in a readable font of **at least 12-point type**, and must use either US Letter or A4 page size. The solution should consist of written text, figures, charts, and supporting materials. Do not include or send programs, software, databases, and/or other files with your solution email, as they will not be used in the judging process.



Contest Tip

Solution file should start with the Summary Sheet followed by up to 24 pages of the team's solution (total of 25 pages). A "Table of Contents" is encouraged and does count toward the page limit. Reference list, notes pages, and any appendices count in the 25-page limit and should be included after the solution pages.

Team Control Number. Each solution paper must display the team control number and the page number at the top of every page; for example, use the following page header on each page:

Team # 1234

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Contest Tip

Be sure to carefully check your team number as it is not uncommon to mistype or transpose a number.

The names of the student team members, advisor, or institution should **NOT** appear on any page of the electronic solution. The solution should **NOT** contain any identifying information other than the team control number.



Contest Tip

Do not include any type of team identification such as student names, institution name or geographical region. If you are required to include a letter with your submission, be sure not to sign the letter with your name. If you feel as though you need to have a formal closing to such a letter we suggest using: Sincerely, Team #1234.

Submitting Solution Report. Teams may send solution reports whenever they complete their work, but not later than the solution deadline. Each team must submit an electronic copy of its solution paper (Adobe PDF file) by email to solutions@comap.com and identify the solution paper by the Team Control Number. Any team member or the advisor may submit this email.

- In the subject line of your email write: your team's control number. For example:
Subject: **1234**
- Use your team's control number as the name of your file attachments. For example:
1234.pdf



Contest Tip

Be sure to name your file carefully and check your team number, as it is not uncommon to mistype or transpose a number.

COMAP will accept only an **Adobe PDF** file of your solution. DO NOT include your Control Sheet, Parental/Guardian Authorization forms, programs or software with your email as they will not be used in the judging process. Limit one team solution per email. Your team's summary should be included as the first page of your file and NOT in a separate second file. ***Note: The attachment must be less than 17MB!! Do not use a cloud service such as Google Docs. Your email must contain an Adobe PDF attachment.**



Contest Tip

EMAIL SOLUTION SUBMISSION: Be sure NOT to use a cloud service such as Google Docs. Your email must contain an Adobe PDF attachment. Email checklist:

- Email subject is correct (_ _ _ _)
- Attachment (one file) is named correctly (_ _ _ .pdf) and attached to the email.
- The "to" address field is correct (solutions@comap.com).

Authenticity. By emailing a solution paper during the contest period, you are guaranteeing that the work is completely your own. COMAP investigates and takes all suspected instances of plagiarism seriously. HiMCM also uses comparison software to identify possible plagiarism within contest paper submissions. Plagiarism will result in disqualification.

AFTER THE CONTEST

Control Sheet/Authorization Form Submission: Control Sheets and Parental/Guardian Authorization forms are no longer required. This step is now part of the registration process. You should still keep a copy of the Parental/Guardian Authorization forms for your records. But you do not need to send them to COMAP Inc.



Contest Tip

EMAIL CONTEST FORMS: You no longer need to send Control Sheets and Parental/Guardian Authorization forms to COMAP Inc.

Receipt of Solution. One to two days after the contest has closed (last day of contest), we recommend that you login to the contest web site using the **Advisor Login** link to verify that your team's Electronic Solution was received at COMAP.

[*Click here to verify if you email submission has been received*](#)

[This link is now active. Updated 00/00/000 0:00PM](#)



Contest Tip

Electronic Solutions status will be updated after the contest deadline has passed. In most cases COMAP will have solution status posted 24-48 hours after the contest is over.

If after 48 hours your team solution is not listed in the list of received solutions, we did not receive an email submission from your team. If this occurs, contact us as soon as possible via email with your team control number.

Judging. Contest judging will be completed in January and the results will be posted on or before February 1st each year. COMAP will recognize successful Solution Papers in the categories of Outstanding, Finalist, Meritorious, Honorable Mention, and Successful Participant. Papers that do not adequately address the problem or violate contest rules will be designated as Unsuccessful or Disqualified.

COMAP will not rejudge any contest papers. All contest papers go through a rigorous judging process and COMAP stands behind the designations awarded to papers. We recommend that you review the outstanding papers and read the judges commentary after the contest for insights into the quality of the content and presentation of the best papers.

Once the results are made public on the website, PDF certificates will be available for download. The spelling and order of the student names on the certificate is input by your team advisor during registration and COMAP does not change or edit this information.



Contest Tip

Advisors should ensure they spell team members' names correctly when registering, as certificates will reflect these names. The order of the student names has no bearing or importance on participation. The name order reflects what the advisor entered.

If you find that there is an error with your certificate, email COMAP with your team number, the error and the correction. We will only correct spelling errors and typos. We will not change any other information.